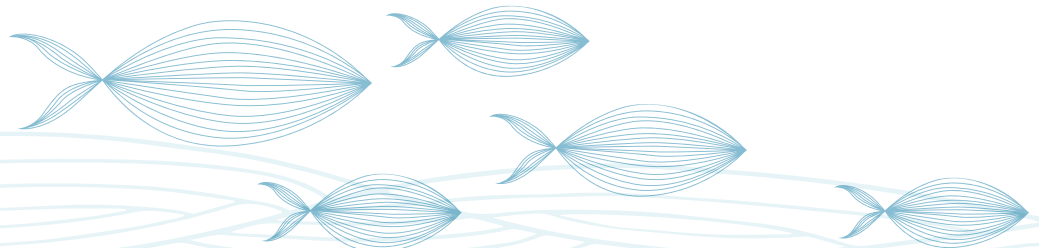




# Recreational fishers' satisfaction and expectations of Queensland's net-free zones

June 2017



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## Summary

On 1 November 2015, three net-free zones (NFZs) were established in Cairns, Mackay and Rockhampton. The objective of the NFZs is to increase recreational fishing opportunities in Queensland, thereby supporting tourism and economic growth.

Surveys undertaken in 2015 and 2016 examined whether recreational fishers' satisfaction and expectations of fishing in NFZs changed following the introduction of the NFZs. Recreational fishers who had fished within the NFZs were asked a series of questions about their satisfaction with their recent fishing experiences, and their expectations about recreational fishing in the NFZs over the coming 12 months. The surveys were undertaken during November and December in 2015, and November and December 2016.

Recreational fishers' satisfaction with fishing in the NFZs is generally positive and appears to be increasing. Overall, fishing satisfaction over the previous 12 months was greater in 2016 than in 2015. In Cairns and Rockhampton, satisfaction was similar between years, but in Mackay satisfaction was significantly greater in 2016.

In 2016, recreational fishers in the NFZs were more satisfied with the following activities compared to 2015:

- experiencing exciting fights with fish
- the number of big fish caught
- the number of fish caught
- the size of the fish caught
- overall fishing in the area.

Keen recreational fishers had the biggest increase in satisfaction—mean satisfaction increased more than 25% from 2015 to 2016.

Expectations varied depending on the NFZ and frequency of fishing. Interestingly, while catching a fish is important to recreational fishers, many people stated that it is not necessary for a satisfying fishing trip.

Further satisfaction surveys will be undertaken in 2017, with the aim of developing a time series into the future.

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## Introduction

On 1 November 2015, three net-free zones (NFZs) were established in Cairns, Mackay and Rockhampton (Table 1). The objective of the NFZs is to increase recreational fishing opportunities in Queensland, thereby supporting tourism and economic growth.

**Table 1: Areas of the new net-free zones**

Region	Local area	Area (km <sup>2</sup> )
Rockhampton	Capricorn coast	1 380
Mackay	St Helens to Cape Hillsborough	163
Cairns	Trinity Bay, Cairns	89

The introduction of these NFZs may have changed recreational fishers' satisfaction and expectations regarding fishing in these areas. To understand these changes, Fisheries Queensland is monitoring recreational fishers' satisfaction with, and expectations of, their fishing experiences within the NFZs on an annual basis, within the regions that provide access to the NFZs.

Recreational fishing provides non-monetary social benefits to a community. For example, people gain many health benefits from enjoyable, nature-based recreational experiences (Kaplan and Kaplan, 2011; Young et al., 2016). When recreational fishing is sustainably managed, increased participation in recreational fishing is likely to provide these non-monetary social benefits to more members of the community.

A person's satisfaction with an activity is a complex cognitive process (Arlinghaus 2006). While the number and size of fish caught contributes to satisfaction, there are many other factors at play. What people consider to be a satisfying experience is relative to their personal values and expectations. For example, a fisher who regularly catches 10 fish may consider a catch of 5 fish to be disappointing, whereas someone who catches 2 fish a trip may consider a catch of 5 fish to be very satisfying. Therefore, satisfaction with a fishing trip cannot be measured simply by the number or size of fish caught. In fact, many people report that a fishing trip can be successful even when no fish are caught (McInnes et al., 2012).

Likewise, expectations of change are often based on a person's personal perception of the potential for change. Once change has been observed, a fisher's expectations may lower if they expect little additional change in the future. Expectation can be thought of as independent of satisfaction (i.e. a person can be satisfied but not expect much change in the future). It may be a widely held view among recreational fishers that the introduction of NFZs will lead to improvements in recreational fishing within the zones. This would likely be reflected in positive responses to questions about their expectations of recreational fishing in the future.

In addition to these cognitive changes, it is expected that the NFZs may lead to changes, over time, in recreational fishing effort and the number and size of fish caught. To detect these changes, Fisheries Queensland is undertaking boat ramp surveys to monitor trends in the catch, effort and size of fish harvested by recreational fishers within the NFZs and elsewhere in Queensland. Results of the boat ramp surveys are reported separately.

The NFZs may also draw recreational fishers to an area from further afield. This may happen gradually over time if recreational fishing improves in the area and awareness spreads beyond the

local region. However, travellers may have multiple reasons for visiting a region e.g. there may be several nature-based activities in the area, or they may be visiting relatives or friends. Therefore, attributing an increase in visitation solely to NFZs in the area would be incorrect. There is a need to estimate the main purpose of the visit.

This satisfaction and expectation survey collected information about the fishers' residential suburbs, which can be used to estimate the distance travelled to the interview location. If more people visit the area from further afield and visit local tackle stores, then the average distance between fishers' residential suburbs and the interview location would increase through time. This distance measure is a coarse measure, but if it does increase over time then it would be consistent with the prediction that more fishers are visiting the area and have likely added to the economy by purchasing fishing tackle, accommodation, food and fuel etc. However, this survey did not ask questions that sought to understand the main purpose of the visit to the region.

Every additional question increases survey fatigue and reduces the number of people likely to participate in the survey. This may reduce the likelihood of obtaining accurate and considered responses from fishers. Asking people at tackle stores about how important recreational fishing was to their decision to visit the region can be time-consuming and require the fishers to answer several questions.

While these surveys did collect information enabling the distance travelled to be estimated, a better place to collect this visitation information is at boat ramps as part of Fisheries Queensland's boat ramp survey program. Similar residential suburb questions, including questions about the main purpose for the travel, are asked in the boat ramp surveys. The travel information collected in the boat ramp surveys is more likely to provide an insight into whether or not more people are visiting an area from further afield in the future. The results from the boat ramp surveys are presented in a separate report.



## Methods

### Data collection

Surveys were completed during November and December 2015, and repeated in the same months in 2016. The interview locations were fishing tackle and outdoor recreation stores where recreational fishers who had fished in the NFZs were likely to visit (Table 2) (Zischke and Griffiths, 2014).

**Table 2: Interview locations, November–December 2015 and 2016**

Net-free zone	Fishing tackle and outdoor recreation stores
Trinity Bay, Cairns	BCF Cairns Tackle World Cairns Tackle World Erskine's
St Helens Beach to Cape Hillsborough	Nashy's Compleat Angler, Mackay BCF, Mackay Tackle World, Mackay
Capricorn Coast	Barra Jacks, Rockhampton BCF, Rockhampton Tackle World, Rockhampton

Interviewers attended the stores for a series of 3 hour shifts and interviewed customers as they left the store. A target sample size of 100 complete eligible interviews was set for each region (a similar sample size to Beardmore et al., 2015). The fishers were asked a short questionnaire that collected their recalled avidity (i.e. how many times they remember going fishing in the last 12 months), their catch orientation (i.e. how important actually catching a fish on each trip is to them), how central fishing was to their lifestyle (i.e. how ingrained fishing is in their daily life), their expectations of fishing in the next 12 months, their satisfaction with fishing over the previous 12 months, their awareness of the NFZs and some demographic information (including their residential suburb).

In social surveys, the wording of the questions can bias the answers. Therefore, the questions were reviewed by an independent social scientist (Dr Vicki Martin, Cornell University) and interviewers were trained how to ask the questions. Individual question scripts were provided on the questionnaire to improve consistency and reduce bias (Appendix 1: Questionnaire).

Customers were asked if they had fished in the local area in the last 12 months by showing them a map of the NFZ that omitted any reference to the NFZ and its boundaries. Only people who said they had fished in the area were eligible for the questionnaire. This allowed interviewers to question people who had fished in the NFZ but were not aware of the NFZ, without informing them of its existence. The generalist outdoor recreation stores (i.e. BCF stores) were the busiest but, as expected, had a larger proportion of ineligible customers.

The interviewers recorded the eligible fishers' responses to the questionnaire. The questionnaire consisted of a series of statements to which the fisher indicated their agreement or disagreement based on a 1–7 Likert scale—1 being strongly negative (e.g. disagree or dissatisfied) and 7 being strongly positive (e.g. agree or satisfied). Prior to the interview, the interviewers explained how the Likert scale worked using a simple graphic. Statements were based around four topics:

1. catch orientation (i.e. how important actually catching a fish on each trip is to them)
2. centrality of fishing to the fisher's lifestyle (i.e. how ingrained fishing is in their daily life)

3. expectations of fishing in the next 12 months in the area
4. satisfaction with fishing over the last 12 months in the area.

Six statements were negatively worded (e.g. 'When I go fishing, I am just as happy if I **don't** catch a fish'). This was explained to fishers at the start of the survey. Having statements like this and warning fishers about them improved the quality of the responses by increasing the fishers' attention to what was being asked.

Fishers were asked about their usual residential suburb so the distance between their residence and the survey location could be calculated. For privacy reasons, precise residential information was not collected. They were also asked about their awareness of the NFZs and their age group, gender and fishing avidity to refine the analyses if required.

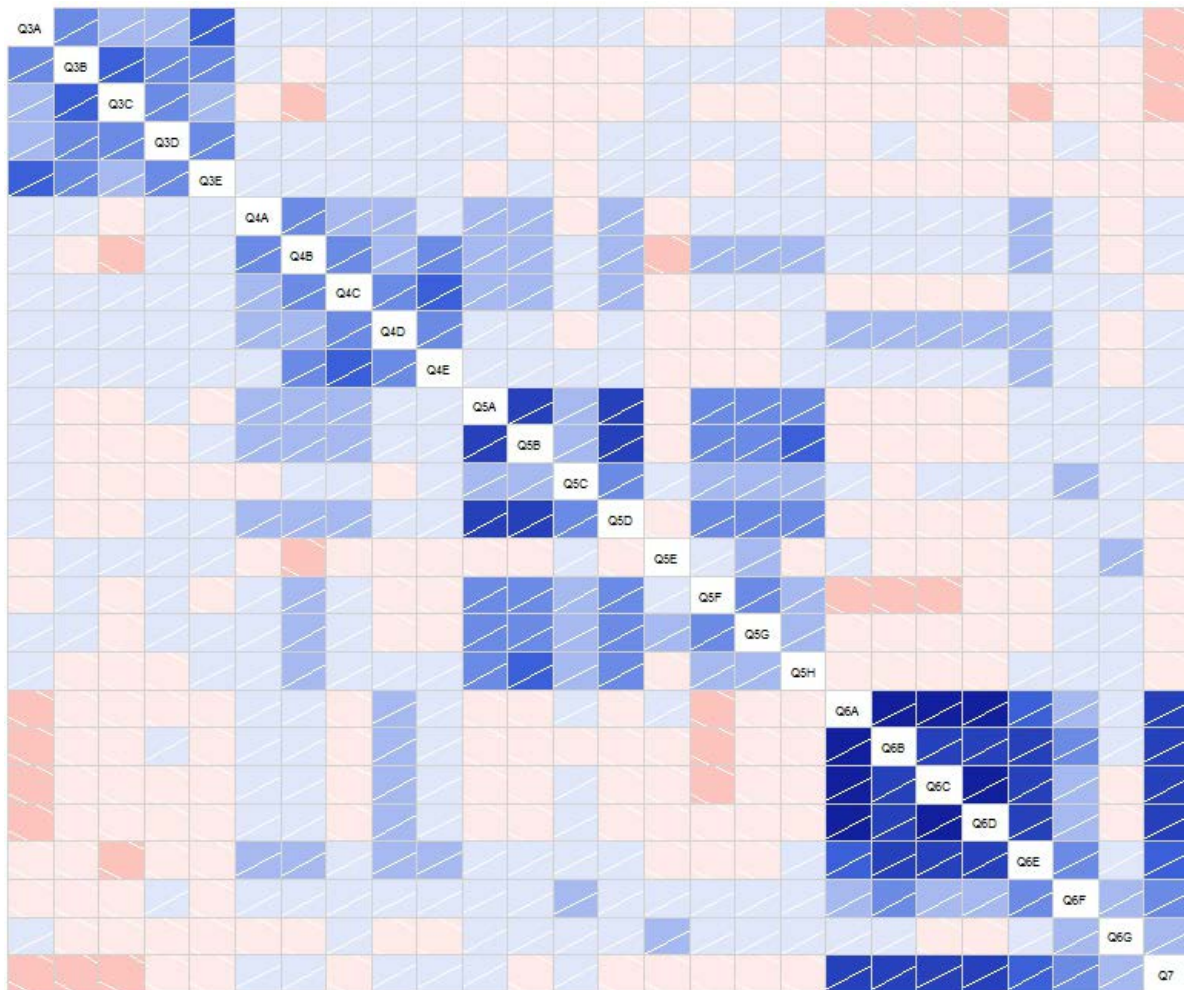
## **Data analysis**

Data were analysed using the R programming language (R Core Team, 2014). Six negatively worded statements were reverse-scored prior to analysis. To define the underlying constructs in the interview data, an Exploratory Factor Analysis (EFA) was run with a promax rotation using the 'psych' package in R (Revelle, 2017). Factorability was confirmed using the Kaise-Meyer-Olkin test (KMO index = 0.81) and Bartlett's test ( $p < 0.001$ ), and internal stability was confirmed using Cronbach's  $\alpha$ . An EFA reduces the survey's statements into fewer variables, by identifying which statements group together. Most statements in this survey grouped together as expected. The EFA identified four constructs in the data: Catch orientation (all statements of question 3), centrality to lifestyle (all statements of question 4), fishing expectation (all statements of question 5, except 5e) and fishing satisfaction (all statements of questions 6 and 7, except 6f and 6g) (Figure 1). Statements 5e, 6f and 6g did not form part of any analysis. Each fisher was given a score for each construct, which was calculated as the mean (average score) of their responses to the statements of each construct. These scores (i.e. mean of catch orientation, centrality to lifestyle, fishing expectations and fishing satisfaction) were used in subsequent analyses.

## **Interpreting box plots**

The box plots presented show the 1st and 3rd quartiles as the bounds of the box. The dividing line within the box represents the median value. The upper whisker represents 1.5 times the inter quartile range added to the 3rd quartile, and the lower whisker represents 1.5 times the inter quartile range subtracted from the 1st quartile. Circles represent outliers.

**Figure 1: Correlation matrix of the recreational fishers' responses to the questionnaire statements (Q3-Q7)—blue indicates a positive correlation, red indicates a negative correlation**



and darker shades indicate stronger relationships

### Distance travelled

The distance between the interview location (fishing tackle or outdoor recreation store) and the centroid of the fishers' residential suburb by the shortest road route was calculated using ArcGIS. This question tested the hypothesis that visitors to tackle stores are coming from further afield from year to year. It did not investigate whether or not they had travelled to the area with the main purpose being to fish in the local NFZ. A two-factor ANOVA tested for a significant difference between the years for each region.

## Results

### Sampling

There were 254 completed interviews in 2015, and 265 in 2016 (Table 3). The refusal rate was 17% in 2015 and 29% in 2016.

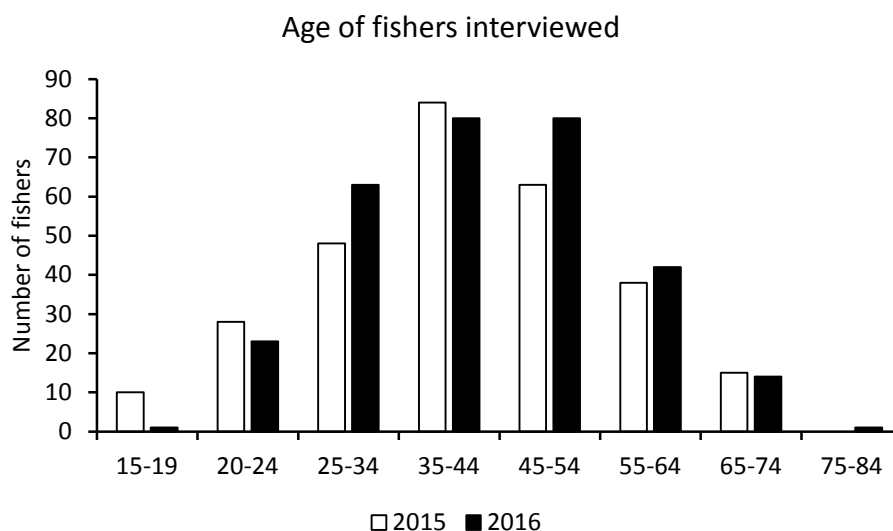
**Table 3: Number of recreational fishers interviewed by interview stage and year**

Interview stage	2015		2016	
	No.	%	No.	%
Refusals	131	17%	237	29%
Ineligible	345	45%	262	32%
Incomplete questionnaires	34	4%	43	5%
Complete interviews	254	33%	265	33%

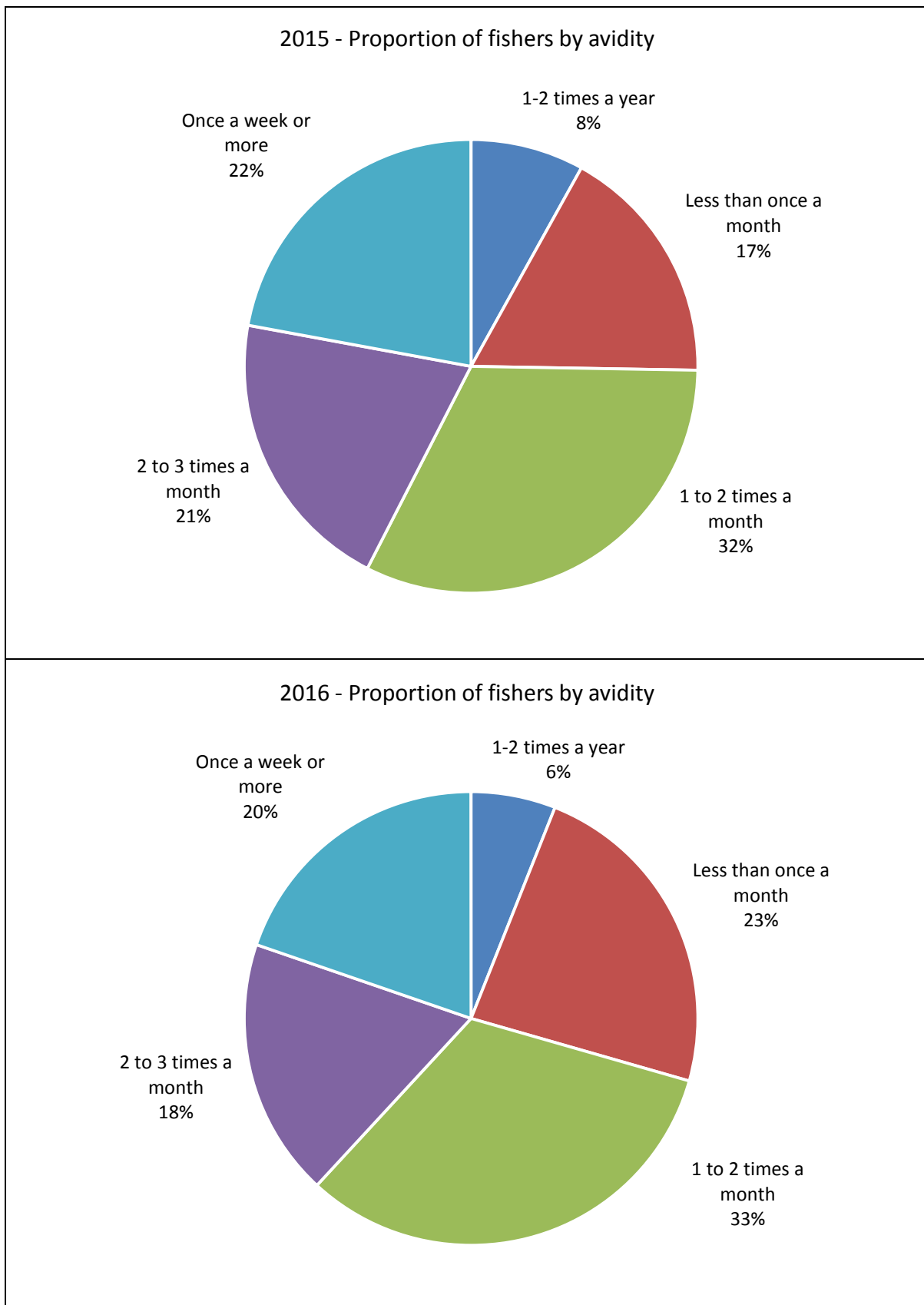
### Fisher demographics and avidity

Overall, more males were interviewed than females—in 2015, 9% of the interviewees were female and in 2016, 11% were female. The fishers interviewed in 2016 tended to be older than those interviewed in 2015 (Figure 2). The avidity (number of days fished in a year) of interviewed fishers was similar in both years (Figure 3). Approximately one-third of fishers said they fished ‘once or twice a month’, with ‘once or twice a year’ being the smallest proportion. There was very little change between 2015 and 2016.

**Figure 2: Age distribution of recreational fishers interviewed in 2015 and 2016**



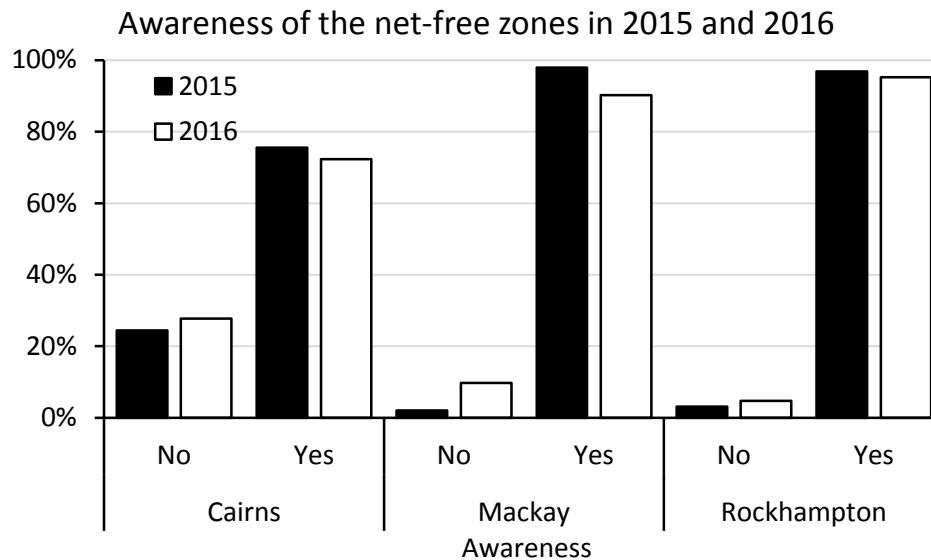
**Figure 3: Avidity of recreational fishers interviewed in 2015 and 2016 (for previous 12 months)**



## Awareness of the net-free zones

Recreational fishers in Mackay and Rockhampton were more aware of their local NFZ than recreational fishers in Cairns (Mackay and Rockhampton > 90%, Cairns > 70%). The level of awareness was high and relatively consistent across the two years (Figure 4). There was a slight movement towards less of the population being aware of the NFZs.

**Figure 4: Awareness of the existence of net-free zones in the local area by zone and year**



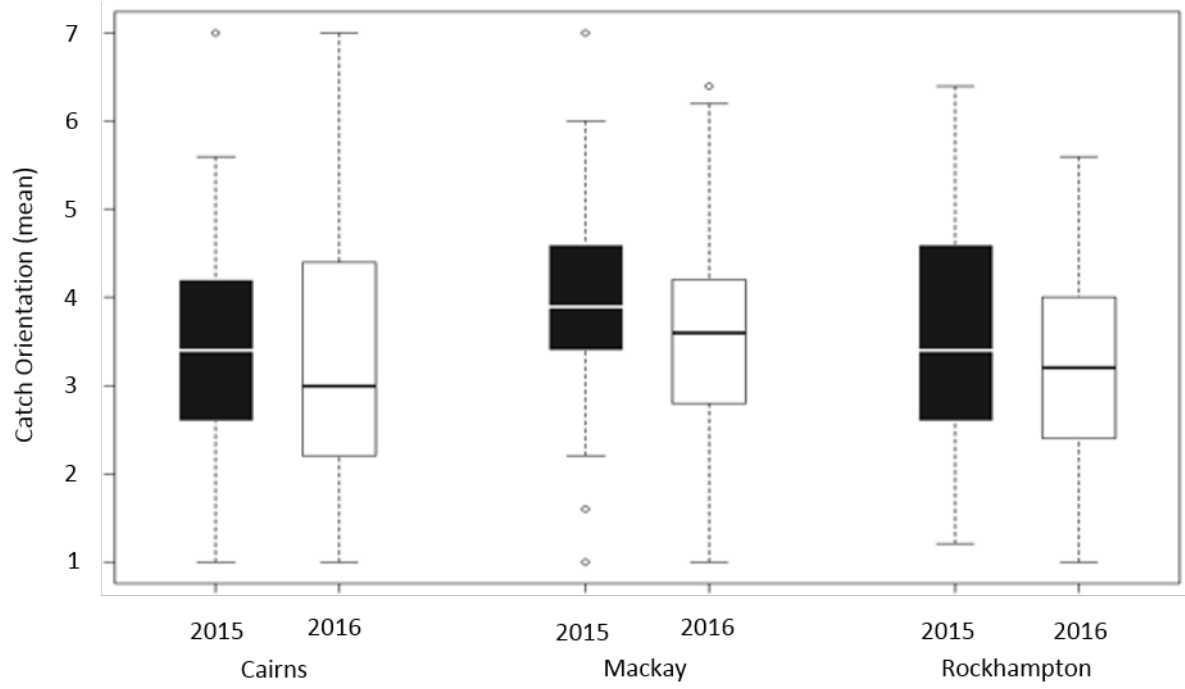
## Responses to topics

### Catch orientation (catch orientation topic—question 3)

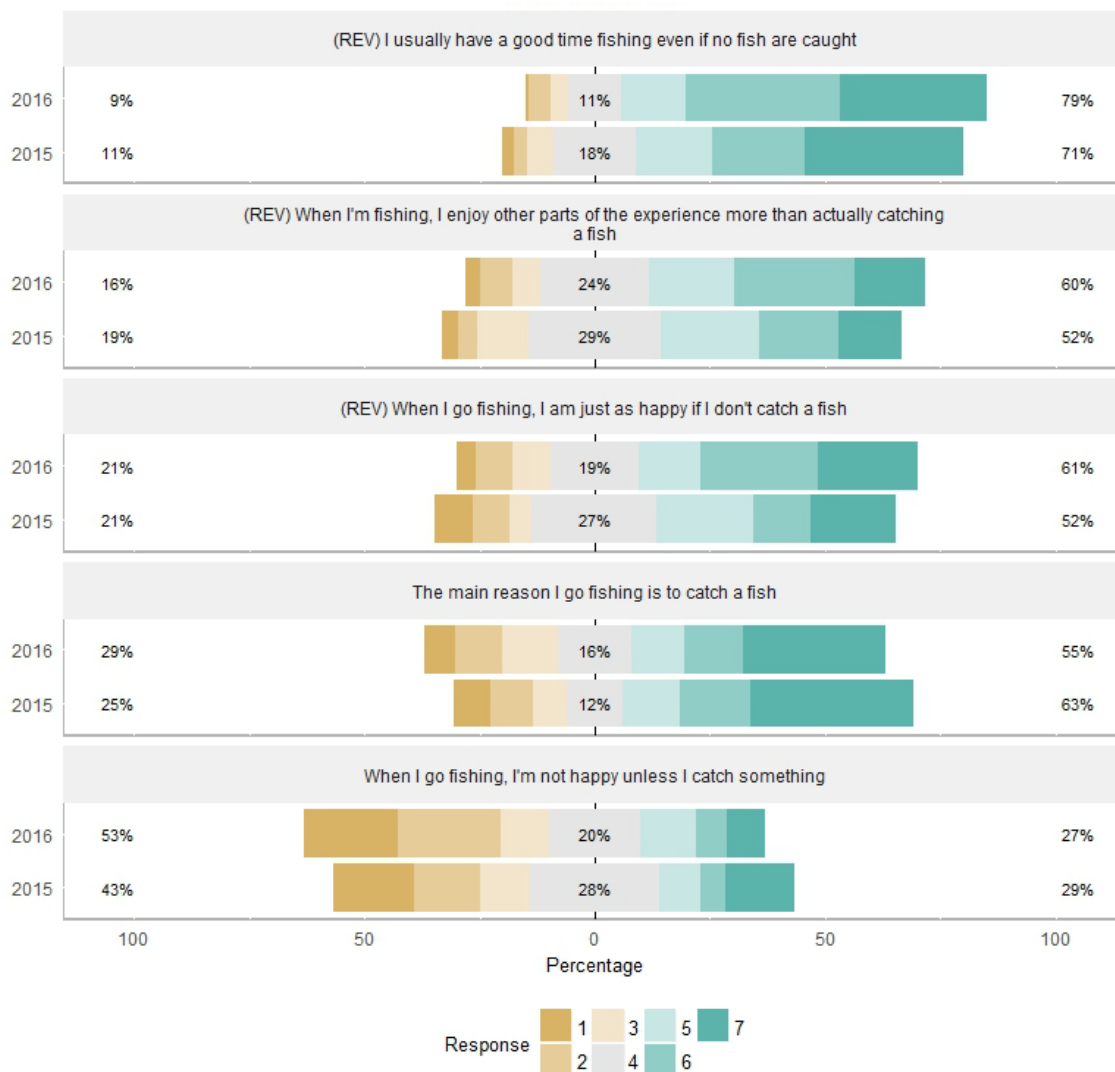
On average, fishers had a low to medium degree of catch orientation (Figure 5). Generally, their responses suggested that catching fish was not required in order to enjoy their fishing experience (Figure 6: 52%–79% agreed and 9%–21% disagreed over both years with the first three statements).

However, catching fish was a strong reason for going fishing in the first place, which suggests that catching a fish is expected, at least on some trips. There was no significant difference between the two survey years, showing consistency through time (Figure 6).

**Figure 5: Mean measure of catch orientation by year and net-free zone using the transformed Likert scaled responses to question 3 (scale reflects a low (1) to high (7) catch orientation, bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**



**Figure 6: Raw Likert scale responses to five catch orientation questions for 2015 and 2016 for all net-free zones combined (response of 1 is strongly disagree and 7 is strongly agree, positive response for statements marked 'REV' indicates a lower degree of catch orientation, these data were transformed prior to further analysis)**



### Centrality to lifestyle (lifestyle topic—question 4)

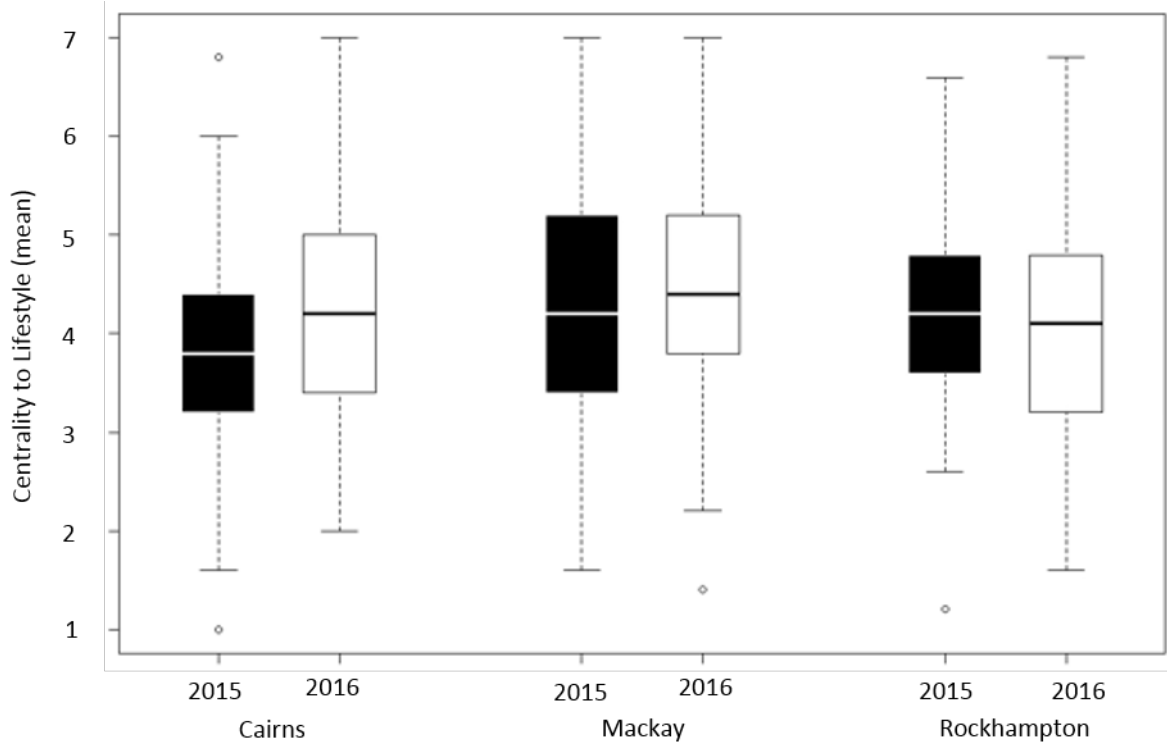
On average, interviewed fishers revealed that recreational fishing was only moderately central to their lifestyle in both 2015 and 2016. The results were consistent (no significant difference) across the years and between the NFZs (Figure 7). Responses to individual statements reveal that recreational fishers have a strong affection for recreational fishing. In both years, the vast majority of interviewed fishers agreed with the statement 'Going fishing is one of the most enjoyable thing I do'—in 2015, 85% agreed and in 2015, 78% agreed; only 8% and 6% disagreed in the respective years (Figure 8).

However, the interviewed fishers tended to disagree with statements that would be associated with fishing being very central to their lifestyle—'I would see my friends less often if I stopped fishing' and 'If I couldn't go fishing, I wouldn't know what else to do'. In 2016, 56% and 64% disagreed with those

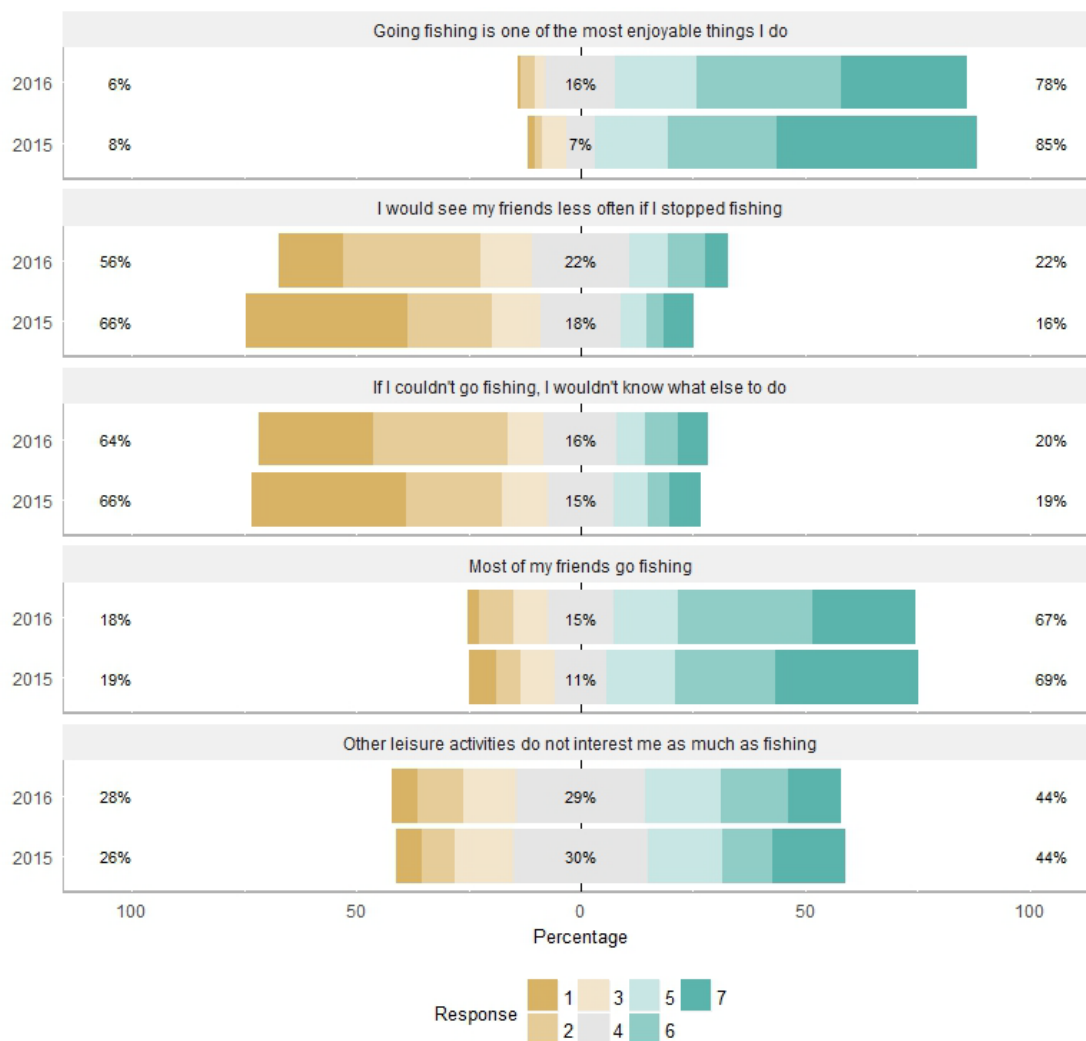


two statements respectively and in 2015, 66% and 66% disagreed. This suggests that they participate in, or are aware of, alternative social and recreational activities—this is corroborated by the more moderate agreement with the statement ‘Other leisure activities do not interest me as much as fishing’ (Figure 8)

**Figure 7: Mean measure of centrality to lifestyle by year and net-free zone using Likert scaled responses to question 4 (scale reflects a low (1) to high (7) centrality to lifestyle, bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**



**Figure 8: Likert scale responses to five centrality to lifestyle questions for 2015 and 2016 for**

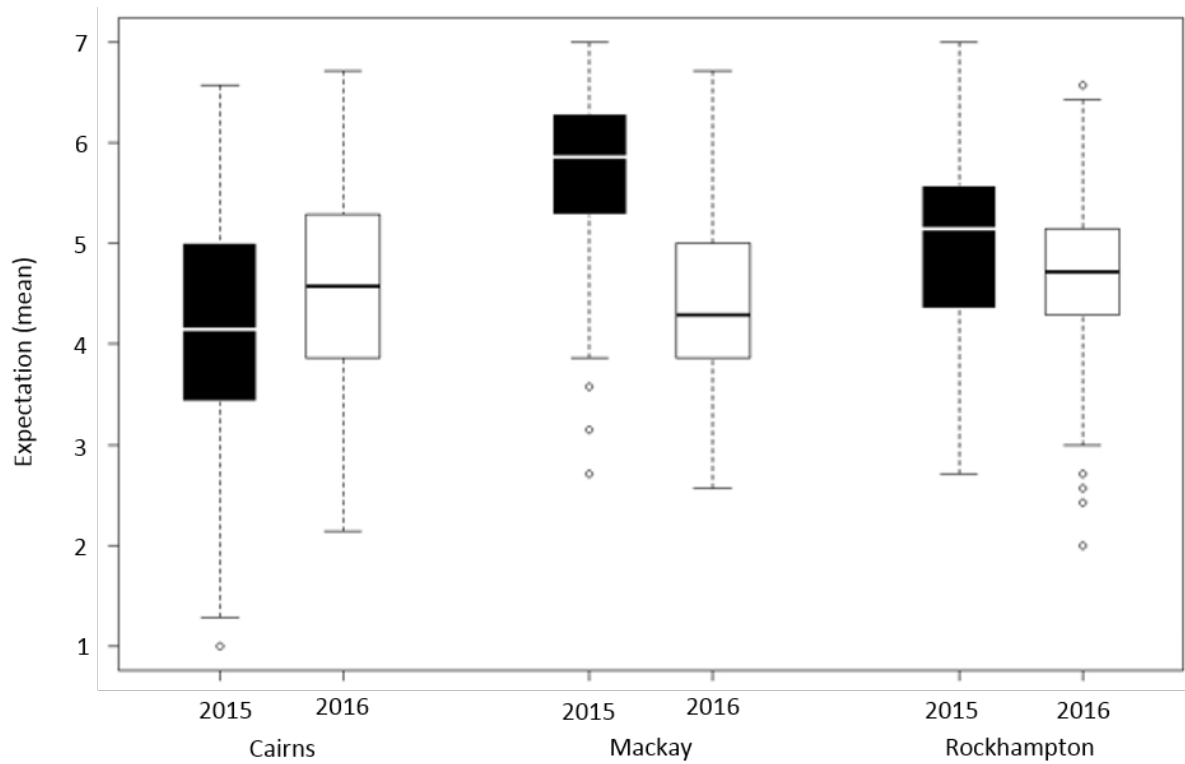


**all net-free zones combined (1 indicates strongly disagree and 7 indicates strongly agree)**

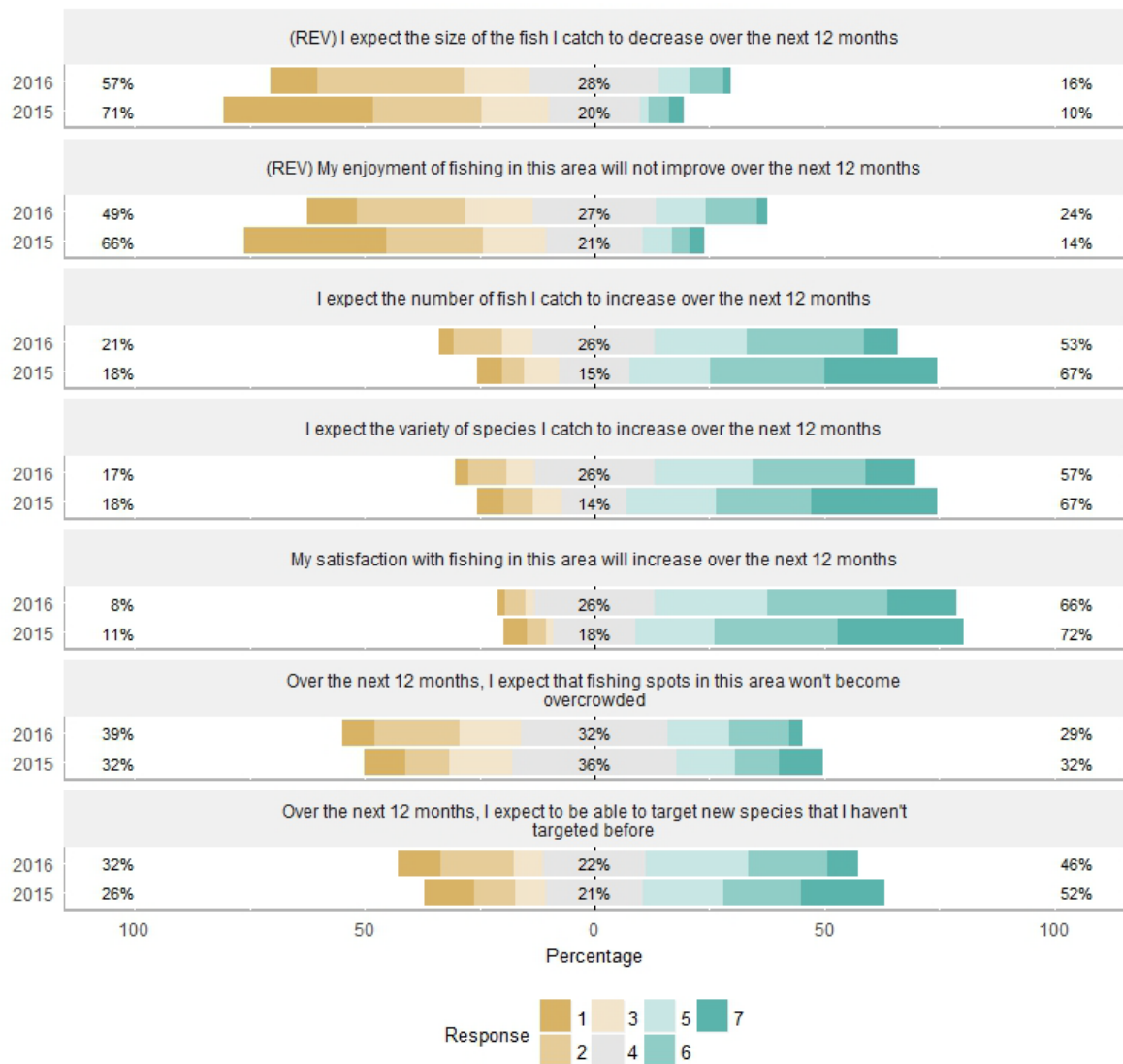
### Expectation of fishing in the next 12 months (expectation topic—question 5)

Recreational fishers' expectations about fishing in the next 12 months were significantly different in 2015 and 2016 (Figure 9). Expectations at all NFZs and for both years were neutral to positive. Cairns was the only region where expectations were higher in 2016 than in 2015 ( $p < 0.01$ ). In Rockhampton, fishers' expectations decreased significantly by 2016 ( $p < 0.01$ ). The largest decrease was seen in Mackay, where fishers had the greatest expectations of any region in 2015, but this decreased significantly by 2016 ( $p < 0.001$ ). In the Mackay NFZ, the responses became more moderate, explaining the reduced expectations and settling into a position consistent with the other NFZs (Figure 10 and Figure 11).

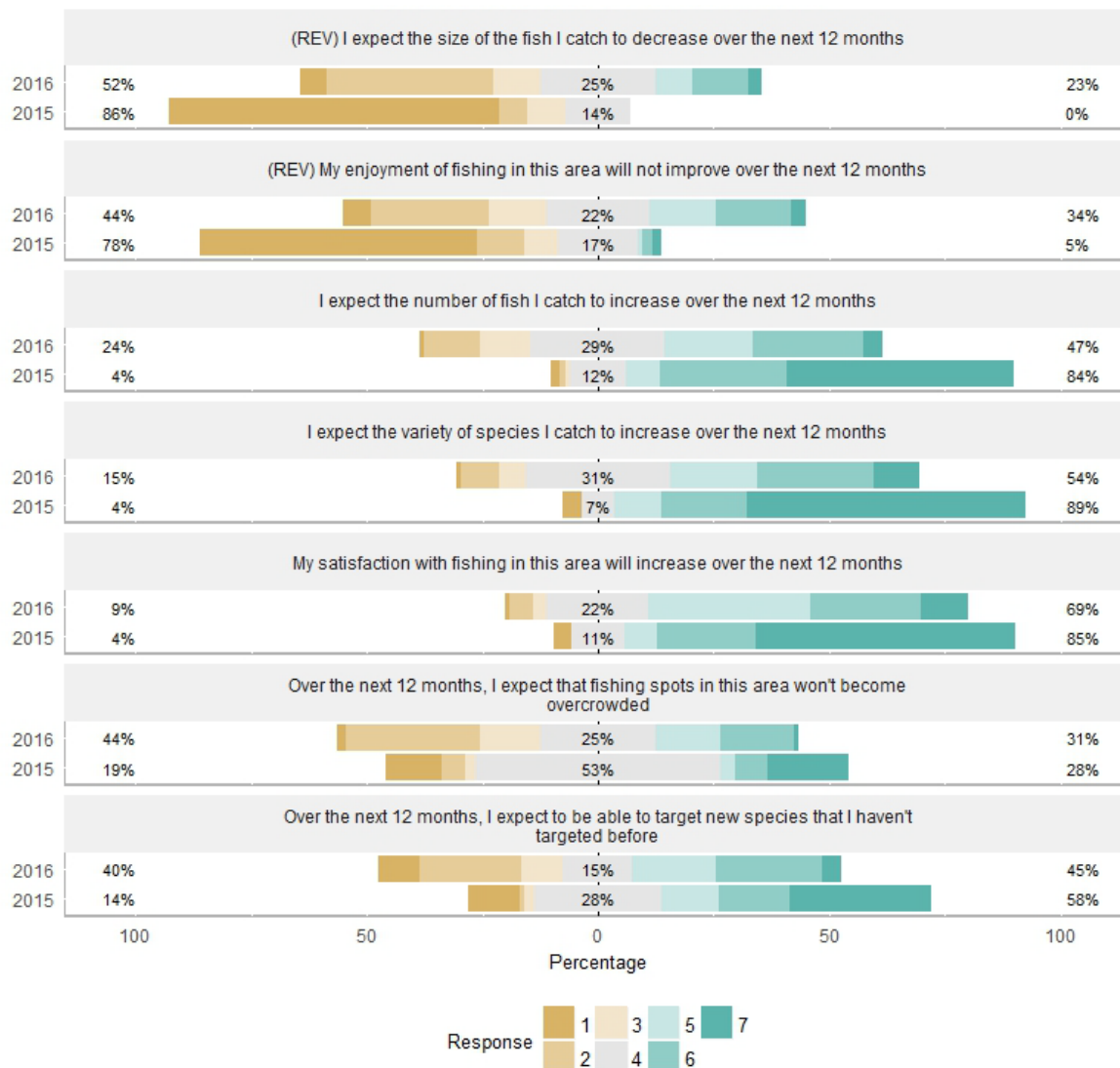
**Figure 9: Mean measure of expectation for the next 12 months in 2015 and 2016 by net-free zone using transformed Likert scaled responses to question 5 (scale reflects a low (1) to high (7) expectation, bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**



**Figure 10: Raw Likert scale responses to five expectation statements for 2015 and 2016 for all net-free zones combined (REV highlights responses that were transformed prior to analysis, 1 indicates strongly disagree and 7 indicates strongly agree)**



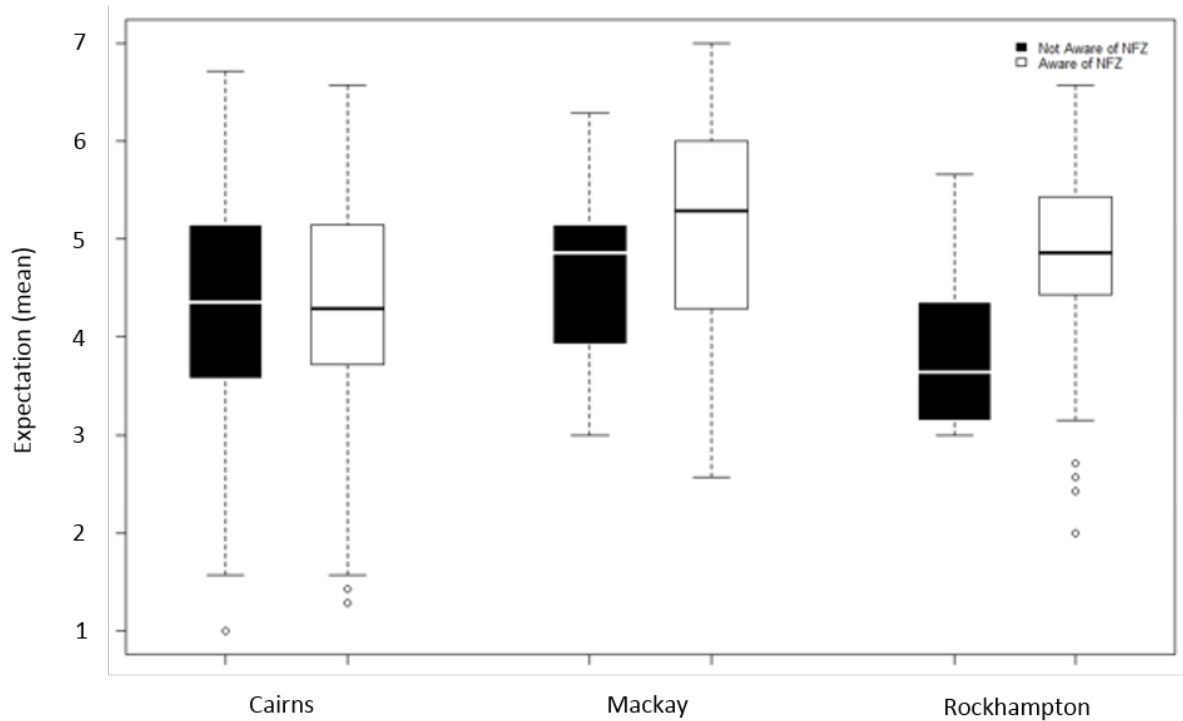
**Figure 11: Raw Likert scale responses to five expectation statements for 2015 and 2016 for the Mackay region only (REV highlights responses that were transformed prior to analysis, 1 indicates strongly disagree and 7 indicates strongly agree)**



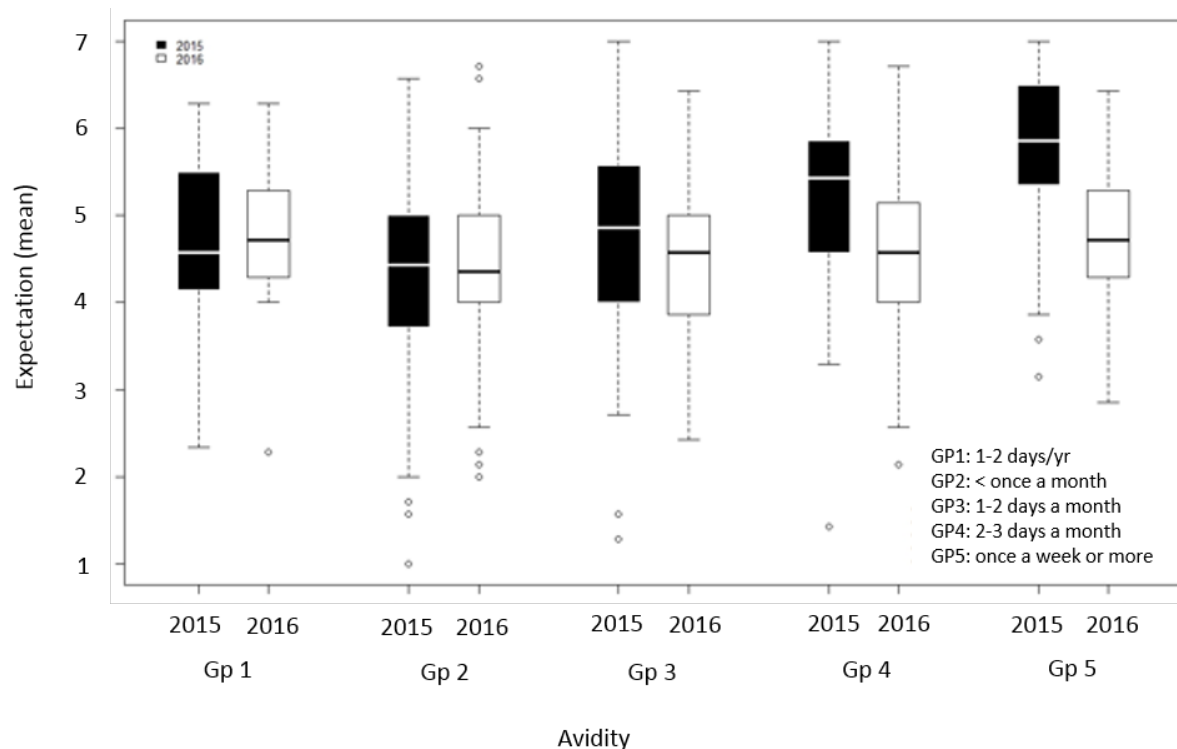
In both Mackay and Rockhampton, recreational fishers who were aware of the NFZs had higher expectations of their fishing experiences in the next 12 months than those who were unaware. In Cairns, however, their expectations were similar (Figure 12).

When looking at changes in expectation through time by avidity group, we see that all avidity groups had similar positive expectations in 2016. However, there was a greater reduction in expectation from 2015 as avidity increased (Figure 13).

**Figure 12: Expectations of recreational fishing in the next 12 months for fishers who were aware or not aware of the introduction of the three net-free zones (bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**



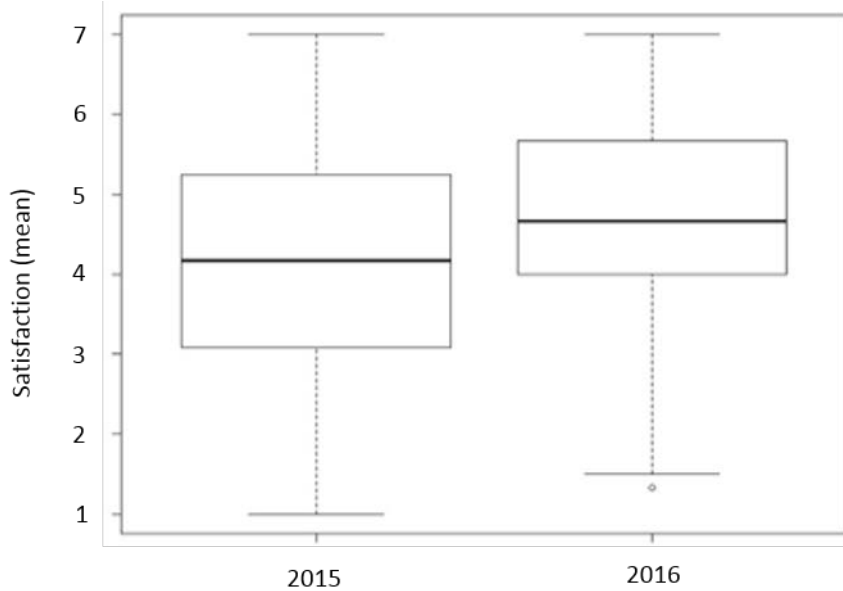
**Figure 13: Expectation by reported avidity group in 2015 and 2016 for all net-free zones combined (bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**



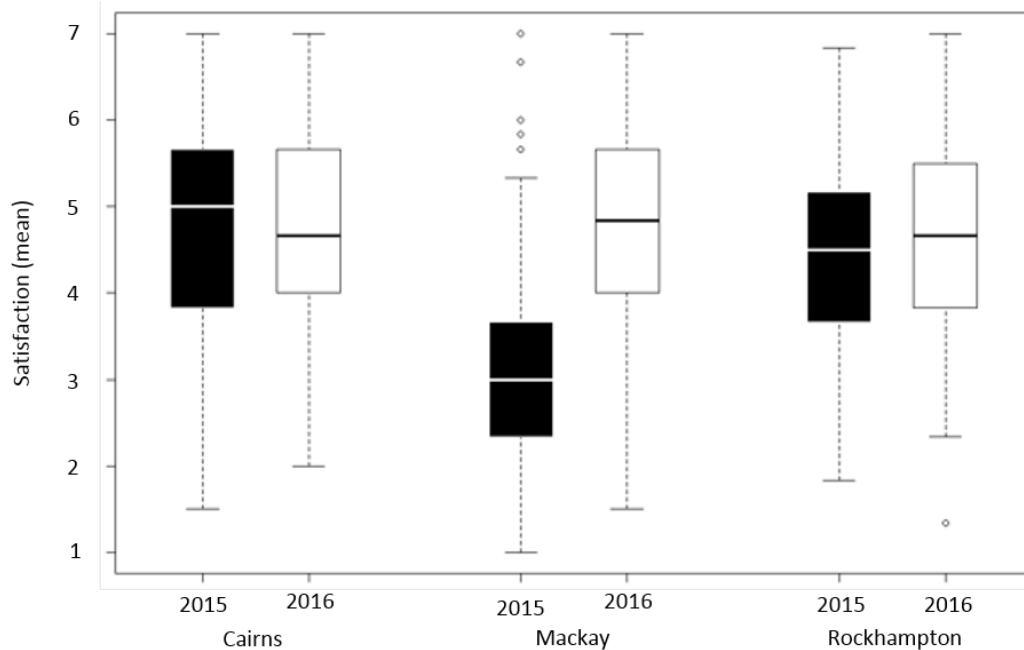
**Satisfaction with fishing in the previous 12 months (satisfaction topic—questions 6 and 7)**

Overall, fishing satisfaction over the previous 12 months was greater in 2016 than in 2015 (Figure 14). In Cairns and Rockhampton, satisfaction was similar between years ( $p > 0.05$ ), but in Mackay satisfaction was significantly greater in 2016 ( $p < 0.01$ ) (Figure 15). Responses to the individual statements within the topic all tend to be positive and were more so in 2016, mainly driven by the change in satisfaction detected in the Mackay NFZ (Figure 16).

**Figure 14: Mean measure of satisfaction by year for all net-free zones combined using Likert scaled responses to questions 6 and 7 (scale reflects a low (1) to high (7) satisfaction, bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**

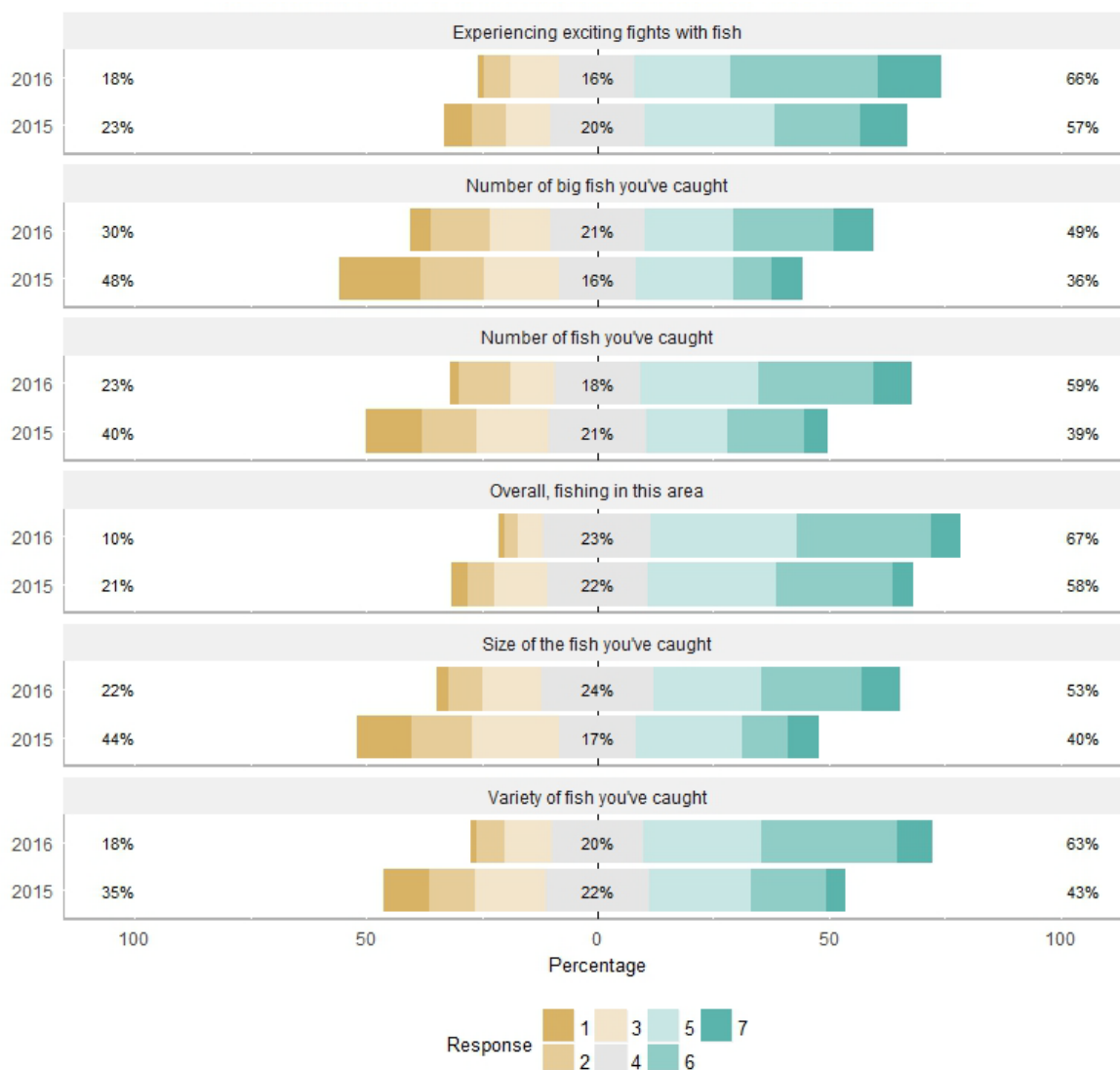


**Figure 15: Mean measure of satisfaction by year and NFZ using Likert scaled responses to question 6 and 7 (scale reflects a low (1) to high (7) satisfaction, bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**





**Figure 16: Likert scale responses to five satisfaction statements for 2015 and 2016 for all net-**



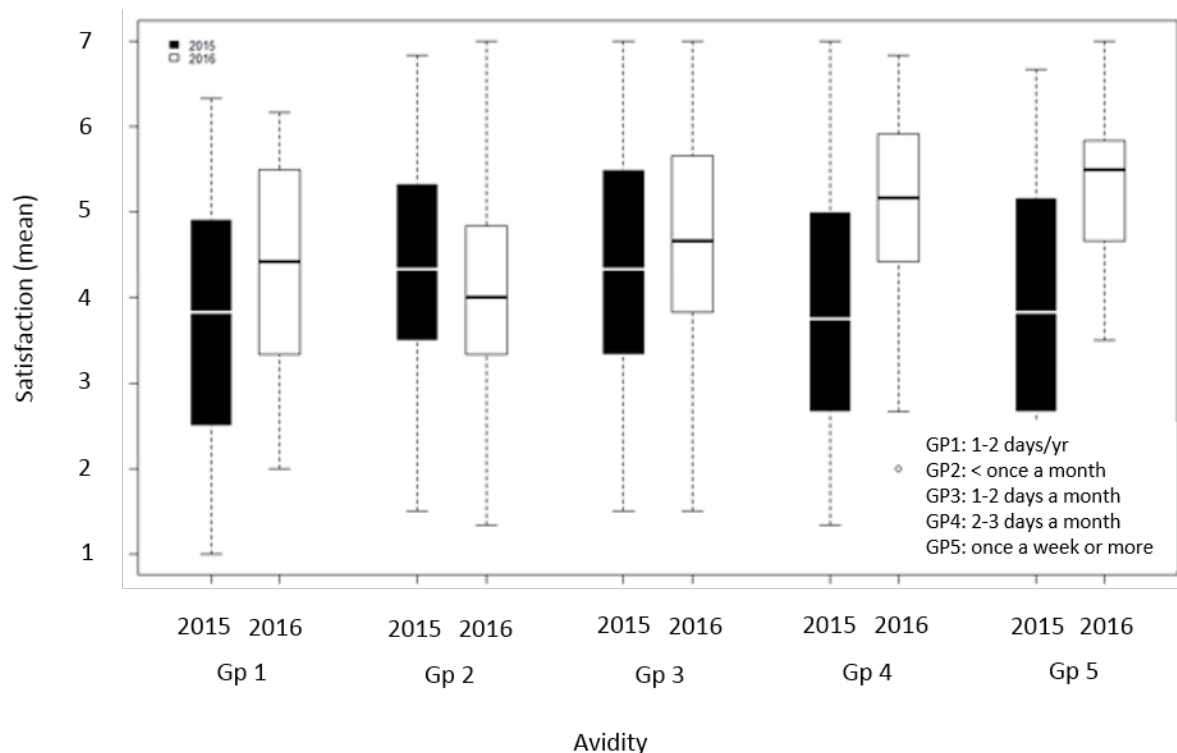
free zones combined (1 indicates strongly disagree and 7 indicates strongly agree)

### Expectations and satisfaction by avidity

Expectations about recreational fishing differed among the reported avidity groups in 2015, but were similar in 2016. For infrequent fishers, expectations were similar in both years; however, expectation decreased from 2015 to 2016 for the more avid fishers (Figure 13).

Satisfaction with recreational fishing changed in the opposite direction to expectation. Satisfaction was similar across avidity groups in 2015. In 2016, however, satisfaction increased and became more consistent among the more avid or keen fishers (fishers who reported fishing more than two days a month). The mean satisfaction scores for fishers who reported fishing more than two to three days a month rose from 3.9 to 5.1 from 2015 to 2016 (Figure 17).

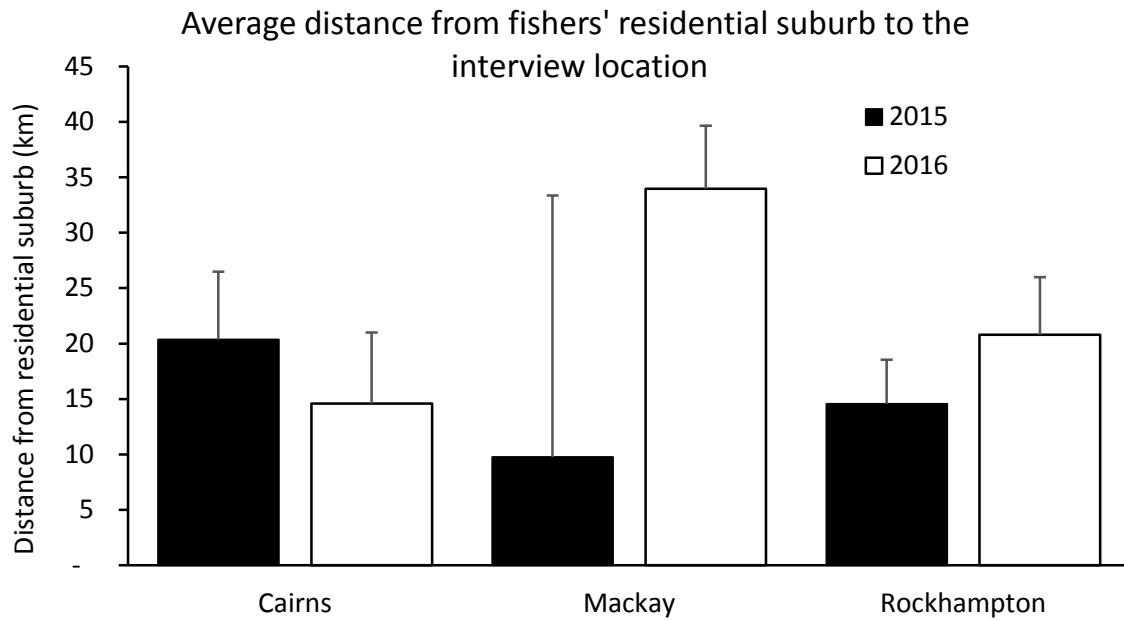
**Figure 17: Satisfaction by avidity and year using Likert scaled responses to question 6 (scale reflects a low (1) to high (7) expectations, bounds of each box represent the 1st and 3rd quartiles, the line within the box is the median, refer to the methods for whiskers and circles)**



## Distance travelled

There was no significant difference in the distance by road between the fishers' usual residential suburb and the interview location by year, region or year interacting with region (Figure 18). In Mackay, the variance in 2015 was relatively large compared to the other years and locations. This prevented the estimates from being statistically significantly different. This data point is not an erroneous outlier to be excluded—travellers such as these are genuine and do contribute to the activity within a region.

**Figure 18: Average distance between the interview site and the fisher's residential suburb or postcode (2015: n = 90 Cairns, 98 Mackay and 99 Rockhampton; 2016: n = 101, 100 and 106 respectively; distances > 300 km excluded: 5 interviews)**



## Discussion

Overall, recreational fishers' satisfaction and expectations with recreational fishing in the NFZs were positive in both 2015 and 2016. Satisfaction increased and expectations decreased from 2015 to 2016. The satisfaction of fishers who fished the NFZ in the Mackay region increased the most between the two years. Their expectations decreased more than fishers in the Cairns and Rockhampton regions, but they remained positive. Fishers in Cairns and Rockhampton maintained similar positive satisfaction and expectations between years. Overall, the results demonstrate that fishers were satisfied with the fishing experience in the NFZs and expect things to improve further over the coming year.

The results presented are raw and have not been adjusted to reflect the underlying demographics of recreational fishers in these regions. The results should be treated as reflective of fishers that would visit fishing tackle or outdoor recreation stores on any given day in November or December (Lohr, 1999). They may not be reflective of the situation at all times throughout the year, nor of fishers who do not frequently visit tackle stores.

### Awareness

There was a very high level of awareness of the local NFZs among fishers from all three regions. However, a greater proportion of fishers in Mackay and Rockhampton were aware of their respective local NFZ (both > 90%) than fishers in Cairns (> 70%) (Figure 4). There are many possible explanations for this, but this survey did not aim to investigate these.

### Expectations and satisfaction

Fishers in Mackay and Rockhampton who were aware of the NFZ had greater expectations for fishing in the local area than those who were not aware of the NFZ. This is predictable if people are thinking that the NFZ will improve recreational fishing. However, a similar pattern was not apparent in recreational fishers from Cairns (Figure 12). In Cairns, recreational fishers who were aware of the NFZ and those who were unaware of it had almost identical expectation scores. There are many possible explanations for the anomaly in Cairns—for example, recreational fishers have positive expectations for the Cairns area generally (whether or not they are aware of the NFZs), or fishers who are aware think that it will take longer than 12 months for the effects of the NFZ to become apparent.

More keen or more avid fishers tended to have different changes in satisfaction and expectations between the years than their less avid peers. In 2015, expectations were greatest among the more avid fishers though, while remaining positive, they decreased more than the change in expectations held by less avid fishers between 2015 and 2016 (Figure 13). This may be because the more avid fishers were more interested in the potential effects of the NFZs and were predicting larger positive changes than their less avid and perhaps less interested peers. In 2016, these expectations seem to have reduced somewhat but remained positive, perhaps because they considered some of the benefits had already been realised or, alternatively, they had simply reduced their expectations.

Interestingly, mean satisfaction levels of fishing in the NFZs was similar among all the avidity groups in 2015, but was greater in 2016 among the more avid groups (Figure 17). It appears that the more avid fishers expected large positive changes in 2015, became more satisfied with their fishing in 2016 and now expect smaller positive changes into the future. Meanwhile, the expectations and satisfaction of the less avid fishers has remained consistent (i.e. slightly positive over the two years).

## **Catch orientation**

Catch orientation is a measure of how recreational fishers value actually catching fish on a trip. For example, some fishers may be quite happy not to catch a fish on every trip, while others may desire to catch their possession limit more often than not. People can have different degrees of catch orientation. Understanding the catch orientation of recreational fishers can help when choosing management strategies that are acceptable to the majority of recreational fishers.

The responses to catch orientation over the two years showed that, generally, fishers have a low to moderate catch orientation. This agrees with surveys completed by Fisheries Queensland and other researchers, which show that the benefits derived from recreational fishing are more than simply catching fish (McInnes et al., 2012; Beardmore et al., 2015). Catch orientation is a character of a fisher's psyche that is unlikely to change suddenly. Therefore, we would expect that there would be little change in catch orientation of fishers between the two survey years. The results show very little change across years (Figure 5 and Figure 6) indicating that the survey sample size is sufficient and is collecting consistent information through time.

Changes to catch orientation among recreational fishers may occur over an extended period in the presence of strong social drivers directing that change. Examples from other areas of human behaviour include the extensive campaigns to encourage people to recycle, give up smoking and be more physically active (e.g. the 'Life. Be in it.' campaign).

## **Centrality to lifestyle**

How central an activity is to a person's lifestyle provides some insight into how much they value that activity. People who spend much of their recreation time doing a particular activity indicates that they place a high value on that activity. Other lines of evidence, such as associating with people who also participate in that activity, also suggests that it is central to their lifestyle and is highly valued. However, it is important to realise that recreation time is a resource for which other activities compete. How cognitively difficult a person would find it to spend their recreation time on different activities also indicates how central the activity is to their lifestyle.

The results from the lifestyle statements suggest that, overall, recreational fishing was only moderately central to the lifestyle of the recreational fishers interviewed (Figure 7). Looking at the responses to the individual statements, however, we see that enjoying recreational fishing and associating with people who go fishing were both rated very highly (Figure 8). This suggests that recreational fishers are enjoying their fishing, as do most of their friends. However, the responses to the statement 'Other leisure activities do not interest me as much as fishing' were not as positive. This suggests that recreational fishers are aware of other recreational activities and many are interested in them. This suggests that recreational fishing is susceptible to competition from other recreational activities. Most recreational fishers disagreed with the statements 'I would see my friends less often if I stopped fishing' and 'If I couldn't go fishing I wouldn't know what else to do' (Figure 8). That suggests that if they chose not to participate in recreational fishing they would continue to interact with friends and find other enjoyable recreational activities.

It appears that the recreational fishers interviewed are keen recreational fishers and certainly value the activity. However, it also appears that fishing is potentially subject to competition from other activities. The recreational fishing industry needs to be aware of this potential for competition for recreational time and maintain its attractiveness into the future.

## **Distance**

The variability in the distance travelled indicates that a larger sample size is required to detect any significant change over time. Fisheries Queensland's boat ramp survey program interviews more fishers over a wider area for 12 months of the year, including at ramps that provide access to the NFZs. Additionally, the boat ramp surveys ask about the purpose for leaving home, thereby distinguishing between multipurpose trips and recreational fishing being the primary purpose of the trip. The information collected in the boat ramp surveys is more likely to provide an insight into whether or not more people are visiting an area from further afield in the future.

## **Summary**

As the time series develops and the effects of the NFZs evolve, these social surveys will reveal changes in fishers' satisfaction and expectations, and changes to their catch orientation and the centrality of recreational fishing to their lifestyle. These first two surveys have already revealed that satisfaction of fishers within the NFZs is positive and appears to be increasing. However, it has also revealed that while recreational fishing is very important to them, their future participation is not guaranteed.

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# Appendix 1: Questionnaire



NFS01 (NET FREE ZONES TACKLE STORE SURVEY)  
INTERVIEW SHEET 2016  
DAF FISHERY MONITORING

SurveyID: \_\_\_\_\_  
SessionID: \_\_\_\_\_

Verify  
Check \_\_\_\_\_

Session: ____:____-____	Store: _____
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<b>Q1</b> Hi, My name is ( <i>your name here</i> ) and I am doing some research on recreational fishing for Fisheries Queensland. In the past 12 months, have you been recreational fishing in this area? <i>*** Show map if necessary: NFZ area and surrounds If No, record as ineligible on the cover sheet ***</i>		<b>YES.</b> If <b>NO</b> , do not interview.	<b>Interview #</b> 
<b>Q2</b> How many times have you been recreational fishing <b>in Queensland</b> in the last 12 months?	1. 1-2 times a year (1-2 days/yr) 2. more than 1-2 times a year, but less than once a month (<12 days/yr)	3. 1-2 times a month (13-24 days/yr) 4. 2-3 times a month (25-36 days/yr) 5. once a week or more (52+ days/yr)	
<b>Q3</b> <i>Catch orientation</i> – These next statements are about catching fish and what it means to you. Looking at this scale; 1 being strongly disagree, 7 being strongly agree and 4 being neutral... On a scale of 1 to 7, rate how strongly you agree with the following statements: <i>*** Important: Read these statements exactly as they are written ***</i>			
a. “When I go fishing, I’m <b>not</b> happy unless I catch something”		1 : 2 : 3 : 4 : 5 : 6 : 7	
b. “When I go fishing, I am just as happy if I <b>don’t</b> catch a fish”		1 : 2 : 3 : 4 : 5 : 6 : 7	
c. “I usually have a good time fishing even if no fish are caught”		1 : 2 : 3 : 4 : 5 : 6 : 7	
d. “When I’m fishing, I enjoy other parts of the experience <b>more</b> than actually catching a fish”		1 : 2 : 3 : 4 : 5 : 6 : 7	
e. “The main reason I go fishing is to catch a fish”		1 : 2 : 3 : 4 : 5 : 6 : 7	
<b>Q4</b> <i>Lifestyle</i> – These questions are about your <b>fishing generally over the last 12 months</b> . Looking at this scale again ... On a scale of 1 to 7, rate how strongly you agree with the following statements: <i>*** Important: Read these statements exactly as written ***</i>			
a. “Most of my friends go fishing”		1 : 2 : 3 : 4 : 5 : 6 : 7	
b. “Going fishing is one of the most enjoyable things I do”		1 : 2 : 3 : 4 : 5 : 6 : 7	
c. “Other leisure activities <b>do not</b> interest me as much as fishing”		1 : 2 : 3 : 4 : 5 : 6 : 7	
d. “I would see my friends less often if I stopped fishing”		1 : 2 : 3 : 4 : 5 : 6 : 7	
e. “If I couldn’t go fishing, I wouldn’t know what else to do”		1 : 2 : 3 : 4 : 5 : 6 : 7	
<b>Q5</b> These questions are about your <b>expectations of fishing in this area in the next 12 months</b> . Looking at this scale again and thinking about your expectations, on a scale of 1 to 7, rate the following statements: <i>*** Important: Read these statements exactly as written ***</i>			
a. “My satisfaction with fishing in this area will <b>increase</b> over the next 12 months”		1 : 2 : 3 : 4 : 5 : 6 : 7	
b. “I expect the <b>variety</b> of species I catch to <b>increase</b> over the next 12 months”		1 : 2 : 3 : 4 : 5 : 6 : 7	
c. “Over the next 12 months, I expect that fishing spots in this area <b>won’t</b> become overcrowded”		1 : 2 : 3 : 4 : 5 : 6 : 7	
d. “I expect the <b>number</b> of fish I catch to <b>increase</b> over the next 12 months”		1 : 2 : 3 : 4 : 5 : 6 : 7	
e. “Over the next 12 months, I expect that boat ramps in this area <b>will</b> become overcrowded”		1 : 2 : 3 : 4 : 5 : 6 : 7	
f. “My enjoyment of fishing in this area <b>will not</b> improve over the next 12 months”		1 : 2 : 3 : 4 : 5 : 6 : 7	
g. “I expect the <b>size</b> of the fish I catch to <b>decrease</b> over the next 12 months”		1 : 2 : 3 : 4 : 5 : 6 : 7	
h. “Over the next 12 months I expect to be able to target new species that I haven’t targeted before”		1 : 2 : 3 : 4 : 5 : 6 : 7	
<b>Q6</b> These questions are about your <b>satisfaction with fishing over the last 12 months in this area</b> . Looking at this scale: 1 being very dissatisfied, 7 being very satisfied...and thinking about your satisfaction with fishing over the past 12 months in this area, how satisfied have you been with the following: <i>*** Important: Read these statements exactly as written ***</i>			
a. “Number of fish you’ve caught”		1 : 2 : 3 : 4 : 5 : 6 : 7	
b. “Variety of fish you’ve caught”		1 : 2 : 3 : 4 : 5 : 6 : 7	
c. “Number of big fish you’ve caught”		1 : 2 : 3 : 4 : 5 : 6 : 7	
d. “Size of the fish you’ve caught”		1 : 2 : 3 : 4 : 5 : 6 : 7	
e. “Experiencing exciting fights with fish”		1 : 2 : 3 : 4 : 5 : 6 : 7	
f. “Number of uncrowded fishing spots”		1 : 2 : 3 : 4 : 5 : 6 : 7	
g. “Parking space and boat ramp access”		1 : 2 : 3 : 4 : 5 : 6 : 7	
<b>Q7</b> Overall, how satisfied are you with fishing in this area in the past 12 months?		1 : 2 : 3 : 4 : 5 : 6 : 7	
<b>Q8</b> Have you heard that a Net Free Zone is now in place in this area, since 1 <sup>st</sup> of November 2015? <i>*** If unsure, No***</i>			Yes : No
<b>Q9</b> What age group do you belong to? Are you...?	15 – 19 : 20 – 24 : 25 – 34 : 35 – 44 : 45 – 54 : 55 – 64 : 65 – 74 : 75 – 84 : 85+		
<b>Q10</b> Gender - don’t ask, just record	Male : Female		
<b>Q11</b> What is the suburb or town in which you live? <i>OR</i> Postcode?	Suburb or Town:		Postcode: