# Usage patterns, behaviours, and knowledge of shark safety amongst marine recreational users in the Whitsundays

A report to the QLD Dept of Agriculture and Fisheries

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## Title Page Photo

Deep Water via Shuttershock

## Important Disclaimer

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**List of Abbreviations**

DAF – Queensland Department of Agriculture and Fisheries
GBR – Great Barrier Reef
GBRMP – Great Barrier Reef Marine Park
GBRMPA – Great Barrier Reef Marine Park Authority
LMAC – Local Marine Advisory Committee (facilitated by the GBRMPA)
WCBIA – Whitsunday Charter Boat Industry Association

# 1. Executive Summary

This project was commissioned by the Queensland Department of Agriculture and Fisheries (DAF) following several shark bites in the Whitsundays region of the Great Barrier Reef. The Whitsundays are an internationally renowned tourist destination and are an iconic area of the Great Barrier Reef Marine Park. This project sought to explore the patterns of use, behaviour, perceptions, values and beliefs held by recreational users of the Whitsundays to help understand what factors people believed may have contributed to these incidents, and to identify opportunities to increase bather safety and reduce the risk of further incidents.

The project methods and sampling design were developed in close consultation with stakeholders and industry representatives from the Whitsundays region. An online survey was distributed through industry and social networks with 218 responses received. The survey was followed by semi-structured interviews with seven individuals with extensive experience in the region.

The survey responses represented a cross section of residents and visitors, and both genders, although respondents were mainly from the target group, i.e. recreational boaters, and between 40 and 70 years old. While there were a wide range of perceptions, values, and opinions expressed, several perceptions and beliefs emerged as being held by the majority of respondents.

Use patterns highlighted some bays as being more intensely used than others, but there were conflicting perceptions about how usage had changed over time. Nevertheless, most comments indicated either increasing boat numbers or no change, and few respondents stated that numbers were declining. Increasing boat and tourist numbers were widely cited by respondents, with some respondents mentioning overcrowding.

Most respondents respected and valued sharks and their place in the ocean ecosystem, and these values had not changed since the Cid Harbour incidents. Respondents generally believed that ignorance was a key issue in increasing risk, and cited perceived links to provisioning sharks through baiting and waste disposal. Some also felt that overfishing could be a contributing factor. There were also mentions of significant changes in the area in recent years, such as cyclone Debbie, which some believe may have contributed to changes in shark behaviour and unusual incidences. Respondents also highlighted the importance of personal responsibility in keeping safe, and while many felt relatively well informed about shark smart behaviours, it was generally felt that further education and awareness raising would be the most effective means of reducing future risks. Lethal control measures (nets and drumlines) were generally viewed as being ineffective in reducing risk in the Whitsundays, although perceptions about these measures were the most polarised between respondents.

Several opportunities have emerged from the research that could help inform policy responses to these incidents. There is a perceived need for increased shark smart education and awareness raising regarding shark smart behaviours, and several avenues emerged to deliver this information. One potential avenue is through the 100 Magic Miles publication, which is widely used. Respondents also indicated that there could be opportunities to provide training to tourism crews about shark smart behaviours to better inform visitors. Lastly, responses suggest that in some locations, sharks are being intentionally or unintentionally fed. These practices have been demonstrated to change shark behaviour in other locations, and thus this practice could be changing shark behaviour and movement in the Whitsundays. The extent of provisioning, and the mechanisms to reduce it, could be further explored.

# 2. Introduction

Unwanted shark encounters, including 'shark bites' and 'close calls', often generate intense media interest and scrutiny, conflict between stakeholder groups, fears for public safety and tourism, and interventions by politicians and/or governments (Gibbs et al. , Neff 2012, Neff & Yang 2013, Crossley et al. 2014). In the years 2018 and 2019, Cid Harbour in the Whitsundays region of the Great Barrier Reef Marine Park (GBRMP) experienced an unprecedented series of 'shark bites'. In particular, shark bites were concentrated at Cid Harbour on the west coast of Whitsunday Island. This site is where the only fatal incident of the 2018-2019 cluster of bites occurred on 5 November 2018. Cid Harbour is a very popular yacht anchorage and bay with reportedly high numbers of vessels moored in the harbour at peak times. However, incidents have also occurred at Hardy Reef (March 2019) and in Hook Passage (October 2019). Globally, the majority of shark bites resulting in serious injuries or deaths are from three species, the white shark (*Carcharodon carcharias*), bull shark (*Carcharhinus leucas*), and tiger shark (*Galeocerdo cuvier*) (West 2011). While the species involved in the incidents at Cid Harbour is/are not known, it is unlikely that it was a white shark as this species is a temperate species that would be very unlikely to be present in the warm waters of a shallow bay during the north Queensland summer.

The Whitsundays region is very important to Queensland Tourism, and is a hub of tourist activity in the Great Barrier Reef Marine Park (GBRMPA 2014). Tourism is a major economic activity for Queensland and the Great Barrier Reef, and there is often concern that tourism and visitation will decline following shark incidents, causing negative economic flow-on effects for local communities. In addition, shark bites, particularly those that result in deaths, can be very traumatic for local residents and communities. A cluster of shark incidents can make residents feel unsafe, especially when several incidents occur within a short time span. These concerns often drive responses from authorities which range from safety and awareness raising on to active measures to remove sharks that are considered dangerous (Neff 2012).

The Queensland Government, through the Department of Agriculture and Fisheries (DAF) responded to the shark incidents in late 2018 with a series of actions including public education through 'Shark Smart' safety messaging, as well as targeted research in the Whitsundays region. This project began in late 2018 to explore the human dimensions surrounding shark incidents and human safety in the Whitsundays. User awareness is of special interest to the DAF as the Department has launched awareness raising activities to promote shark smart behaviors. Specifically, DAF asked that researchers deliver a social science project that surveyed recreational users, particularly boaters that used harbours and anchorages in the Whitsundays to better understand boater behaviours and

awareness of shark safety messages in order to inform actions to increase bather safety and reduce risk of further incidents.

James Cook University (JCU) was subcontracted by Biopixel Oceans Foundation to deliver this social science component – surveys of how recreational users are using the Whitsundays, their activities and practices, and their awareness of 'shark smart' behaviors. The project ran from Nov 2018 until Nov 2019, and the project team worked closely with the Whitsundays community, DAF, and other stakeholders to deliver the research.

# 3. Study approach and methods

This project required a transparent and collaborative approach as the subject was highly sensitive and required access to recreational users and tourists visiting the Whitsundays region. Such access required close working relationships with the tourism industry, and stakeholder 'buy in' of the process and eventual results was considered essential. As such, the JCU team worked members of the local community and industry groups such as the Whitsundays Charter Boat Industry Association (WCBIA) and local marinas to refine project methods and access visitors.

The JCU research team identified and engaged key stakeholders in the region with interests in, or an ability to provide input and advice into the recreational user surveys. Effective consultation was especially important given the sensitivity surrounding the shark-human incidents in the region, and fears and concerns held by tourism operators concerned about guest safety and destination reputation. Consultation and engagement with residents, tourists and visitors, and managers responsible for managing access and use of these areas was also vital.

Initial consultation was focused on key participants known to the research team through their experience in the region. The Great Barrier Reef Marine Park Authority (GBRMPA) Whitsunday Local Marine Advisory Committee (WLMAC) is a multi-stakeholder consultative body that provided a valuable entry point for community and industry engagement. The DAF is also regularly engaging with industry and community representatives regarding the issue. These consultations generated a list of key individuals who were contacted in late 2018, with initial consultation culminating in a workshop in Airlie Beach held between 8-20 Feb 2019. During this process, the JCU research team met with ten local stakeholders and industry representatives to explain the project, gain an understanding of the local context, and to begin preparing survey tools (e.g. survey questions), and sampling design (i.e. how to inform residents and visitors about the survey and encourage them to participate).

The social science project had two parts. Using advice from local stakeholders, the JCU research team developed (1) an online survey for Whitsundays visitors, and (2) conducted semi-structured

interviews with key participants identified though the aforementioned consultation processes. This initial 'convenience survey' and consultation provided an initial sample and then further contacts within the social network which facilitated 'snowball sampling' (Sadler et al. 2010, Heckathorn 2011).

On 18 March 2019, a draft survey was circulated to the stakeholder network and DAF and extensive feedback was received. The draft survey was refined using stakeholder feedback, including the addition of new questions and careful choice of wording to accurately ask questions related to the industry. The online survey was beta-tested and revised with an independent group of volunteers for two weeks in early April, and the final survey was publicly launched on the 24th April 2019.

The launch of the survey focused on sending the survey invitation and an active link to the target respondents, recreational boaters using the Whitsundays region. A link to the online survey (implemented through survey monkey) was sent to key social media networks identified through the consultative processes, including local and industry Facebook pages. Flyers (Appendix 1) were circulated using local networks and posted at locations regularly used by the recreational marine community (e.g. marinas, the volunteer Coast guard). Periodic reminders were sent out to maintain respondent interest in the survey, and the survey culminated with Whitsunday Race Week in 2019, and closed on 25th August 2019. The survey captured the peak tourism season for the Whitsundays as reported by industry consultations, with highest boater numbers in the winter months of May to August.

The second part of the project entailed key participant interviews to access expert knowledge to explore some of the key themes arising from the online surveys of recreational users. These interviews can last for extensive periods and their flexible approach allows researchers to explore emergent themes and interviewee perceptions and knowledge. Key participant interviews were held at Airlie Beach between the 25th and 27th of September 2019.

All research conducted through this project adhered to the principles and practices of free prior and informed consent by respondents, and was carried out according to JCU Human Research Ethics Permit H7689. In accordance with these provisions, this report does not contain any personal or confidential information, and all responses are 'de-identified' so that none of the responses herein are identifiable or attributable to any specific person or persons.

# 4. Results – online survey

The online survey yielded 213 individual survey responses. In general, the survey population represented a balanced mix of residents and visitors to the Whitsundays and a balanced mix of genders. However, survey respondents were mainly between 40 and 70 years of age, which may reflect the user groups targeted. Respondents were not required to answer all questions, although almost all chose to do so.

## 4.1 | Demographic Data

**Summary:** The average age of Cid Harbour marine users who participated in the survey was 53 years (+/- 12.28), with an equal spread in gender between male (50.00%) and female (50.00%) respondents. Respondents originated from six different nations, with the majority Australian (91.1%). Other nationalities included New Zealand (3.7%); British (3.7%); German (0.5%); French (0.5%) and Norwegian (0.5%). Most respondents (n=127 (59.6%)) were Whitsundays residents. The most common uses of the marine environment by participants (n=125) included resident boat owners that live aboard (17.6%)); recreational fishers (17.6%) and self-sail charter boat guests (12.8%). The most common occupation amongst respondents (n=91) was nursing alongside managerial positions (4.55%). However, the vast majority of respondents were retired (31.85%).

**Question 1: Do You Wish to Continue With this Survey**

Response: Yes: 100% (218 Responses)

No: 0%

**Question 2: What is Your Age?**

Respondent ages ranged from 9-80 years, with the average age of Cid Harbour marine users 53 years (+/- 12.28). This was close to the median user age of 56, and mode age of 60 (Table 1). When classifying respondents into age groups, the 50-59 year-old category was the most dominant with 67 users (Figure 1).

Table 1: Descriptive statistics for the age of respondents.

| Statistic | Age (Years) |
|---|---|
| **Count** | 213 |
| **Minimum** | 9 |
| **Maximum** | 80 |
| **Average** | 53 |
| **Standard Deviation** | 12.28 |
| **Mode** | 60 |
| **Median** | 56 |

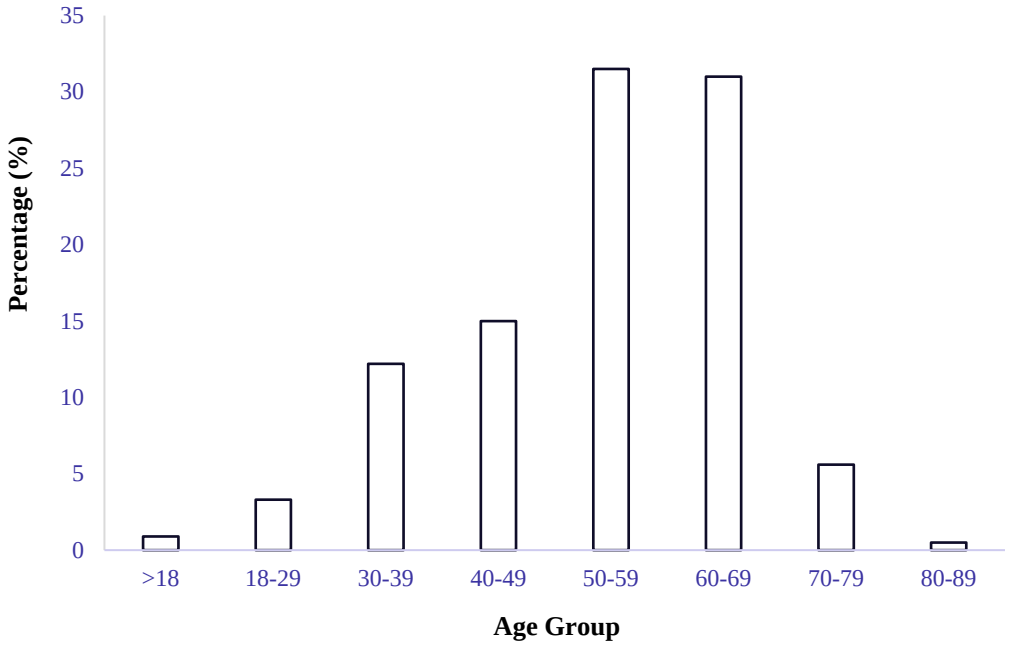


Figure 1: The age frequencies of respondents ranging from >18 - 80-89 (n=213).

**Question 3: What is Your Gender?**

The survey returned an equal number of male and female participants (n=106 (50.0%)) with a total number of 212 responses (Table 2; Figure 2). An 'other' response ('there is no other gender') was excluded from results.

Table 2: The number of male and female respondents (n=212).

| Gender | Male | Female | Total |
|---|---|---|---|
| **Respondent Number** | 106 | 106 | 112 |
| **Percentage (%)** | 50 | 50 | 100 |

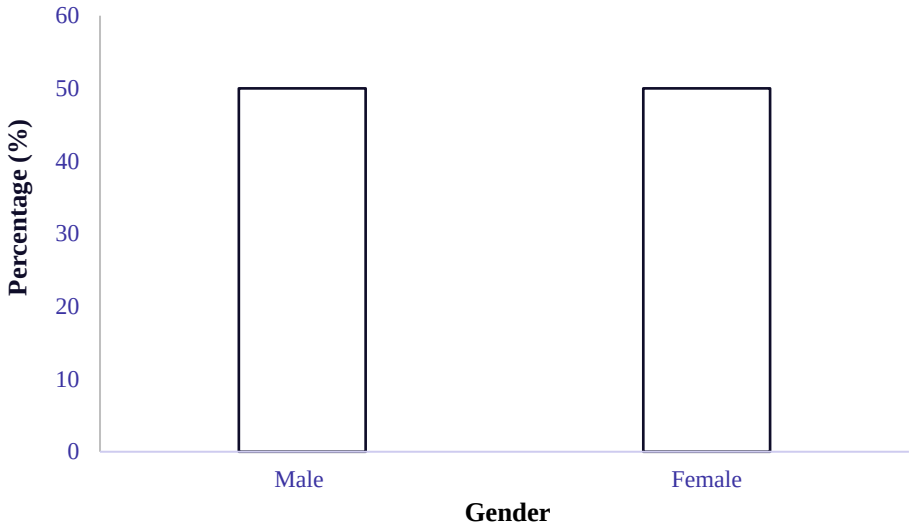


Figure 2: The percentage of male and female respondents (n=112).

**Question 4: What is Your Nationality?**

Survey respondents comprised 6 different nationalities. Respondents were primarily Australian (91.1%), followed by British (3.7%) and New Zealanders (3.7%); remaining respondents were German (0.5%), French (0.5%) and Norwegian (0.5%) (Table 3).

Table 3: The nationality of Cid Harbour respondents (n=213).

| Nationality | Australia | NZ | UK | France | Germany | Norway | Total |
|---|---|---|---|---|---|---|---|
| **Respondent Number** | 194 | 8 | 8 | 1 | 1 | 1 | 213 |
| **Percentage (%)** | 91.1 | 3.7 | 3.7 | 0.5 | 0.5 | 0.5 | 100 |

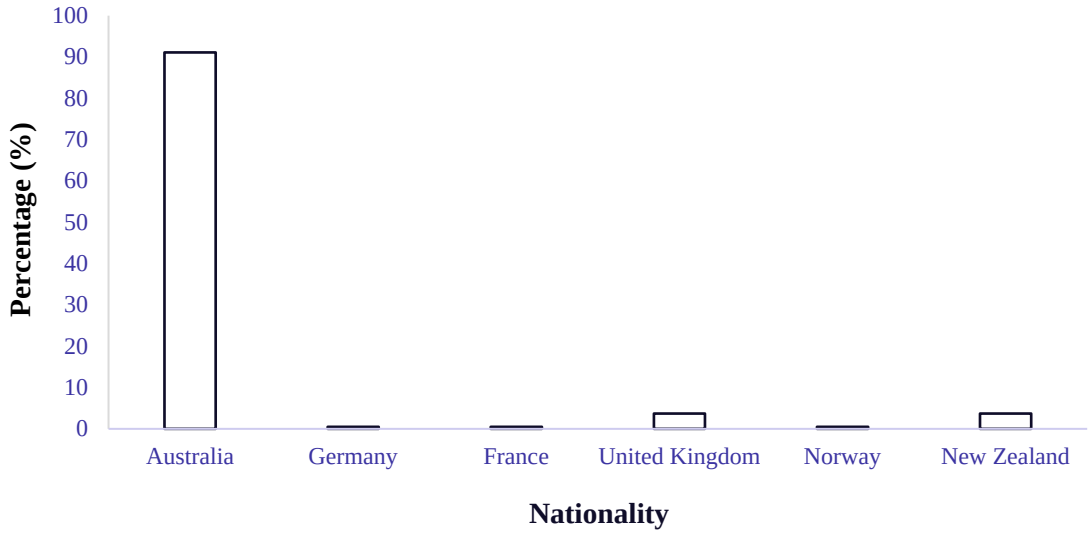


Figure 3: The percentage of respondents (n=213) from individual nations.

**Question 5: Are You Currently a Resident of the Whitsundays?**

Of 213 respondents, 127 were RESIDENTS of the Whitsundays region, (59.6%) whilst 86 where VISITORS that came from other locations (40.4%) (Table 4; Figure 4).

Table 4: The number of respondents that are residents of the Whitsundays (n=213).

| Whitsunday Resident | Yes | No | Total |
|---|---|---|---|
| **Respondent Number** | 127 | 86 | 213 |
| **Percentage (%)** | 59.6 | 40.4 | 100 |

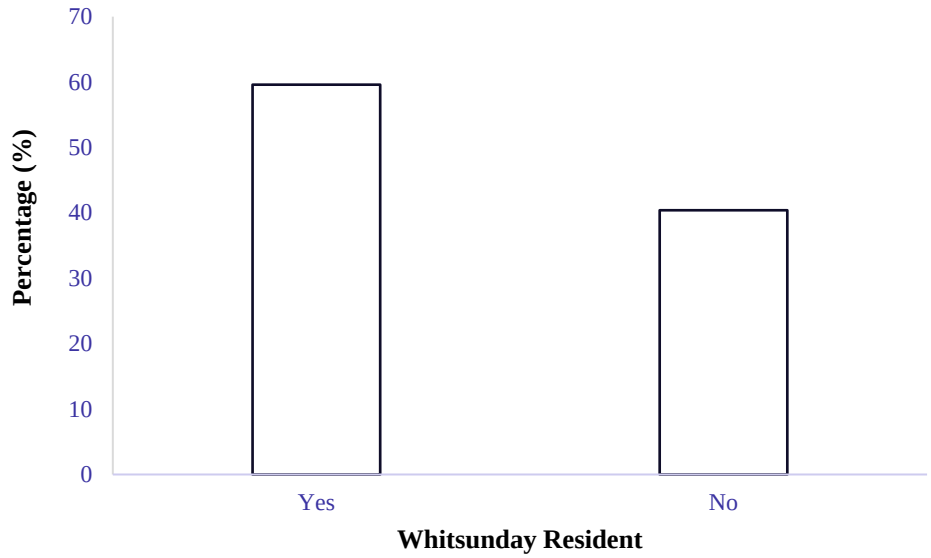


Figure 4: The percentage of respondents that are a resident of the Whitsundays (n=112).

**Question 6) How Would You Classify Yourself with Respect to Your Main Use of the Marine Environment in the Whitsundays? Question for RESIDENTS to the Whitsundays.**

From 125 **resident** respondents, the majority classified themselves within the 'other' category (34.40%) in relation to their main use of the marine environment. This was followed by resident boat owners (17.60%) and recreational fishers (17.60%) (Table 5; Figure 5). No respondents classified themselves as crewed charter boat guests; visiting boat owners; or spearfishers. Within the other category, the most prevalent response related to boat owners that live ashore (18.33%). Other prominent categories (n=60) included general boat owners (16.67%) and tourism employees (11.67%) including (but not limited to) cleaners, deckhands, photographers and marketing coordinators.

Table 5: The primary marine user categories of respondents within the Whitsundays (n=125).

| **User Type** | CBGSS | CBO(O/M) | CBS | CF | OTE | RBO(L) | RF | Other | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Frequency** | 1 | 20 | 9 | 1 | 3 | 22 | 22 | 43 | 125 |
| **Percentage** | 0.8 | 16.0 | 7.2 | 0.8 | 2.4 | 17.6 | 17.6 | 34.4 | 100 |

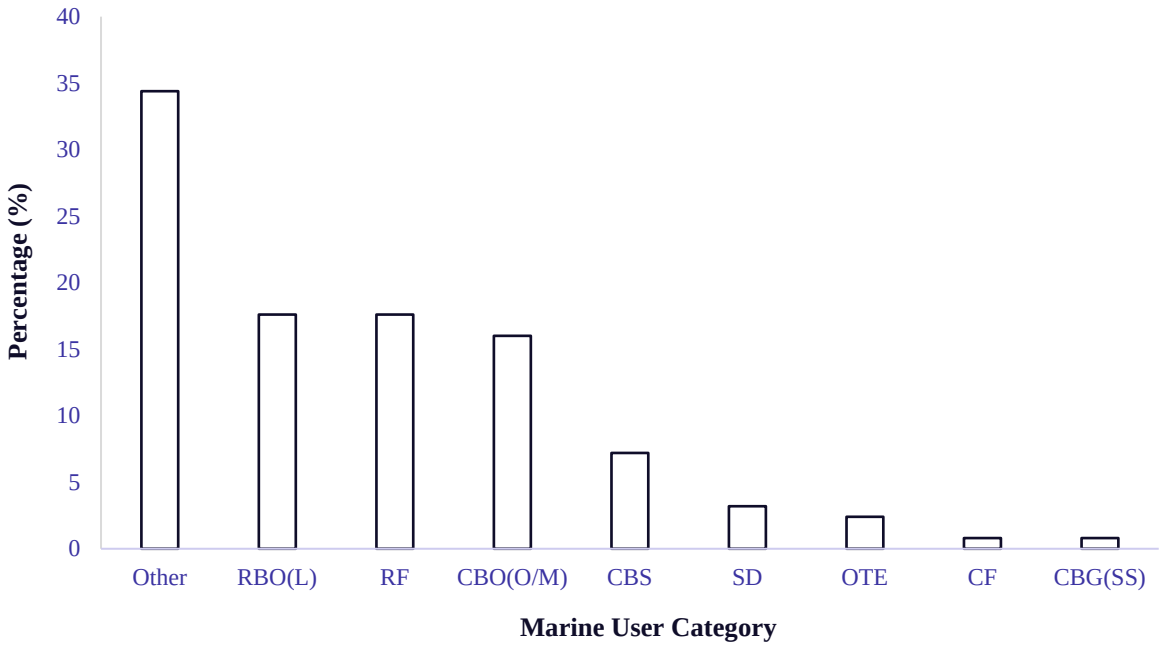


Figure 5: The percentage of resident respondents (n=125) who use the marine environment in the Whitsundays as a RBO(L) (resident boat owner; lives on boat); RF (recreational fishers); CBO(OM) (charter boat operator; owner/manager); CBS (charter boat staff); SD (SCUBA diver); OTE (other tourism employee); CF (commercial fisher); CBG(SS) (charter boat guest self-sail); other (n=125).

**Question 7) How Would You Classify Yourself with Respect to Your Main Use of the Marine Environment in the Whitsundays? Question for VISITORS to the Whitsundays**

Of 86 **visitor** respondents, the majority were visiting boat owners (68.6%), followed by self-sail charter boat guests (12.8%) (Table 6; Figure 6). Contrasting to Question 6, 1.2% of respondents stated their main use of the marine environment was spearfishing and crewed charter boat guests respectively. Responses from the other category (n=4) comprised a charter vessel master (1.2%); ex-commercial operator (1.2%) private yacht guest (1.2%) and a user that undertook all stated activities (1.2%).

Table 6: The primary marine user categories of respondents within the Whitsundays (n=86).

| **User Type** | CBG(SS) | CBGC | CBO(O/M) | Other | SF | VBOE | **Total** |
|---|---|---|---|---|---|---|---|
| **Frequency** | 11 | 1 | 10 | 4 | 1 | 59 | 86 |
| **Percentage** | 12.8 | 1.2 | 11.6 | 4.7 | 1.2 | 68.5 | 100 |

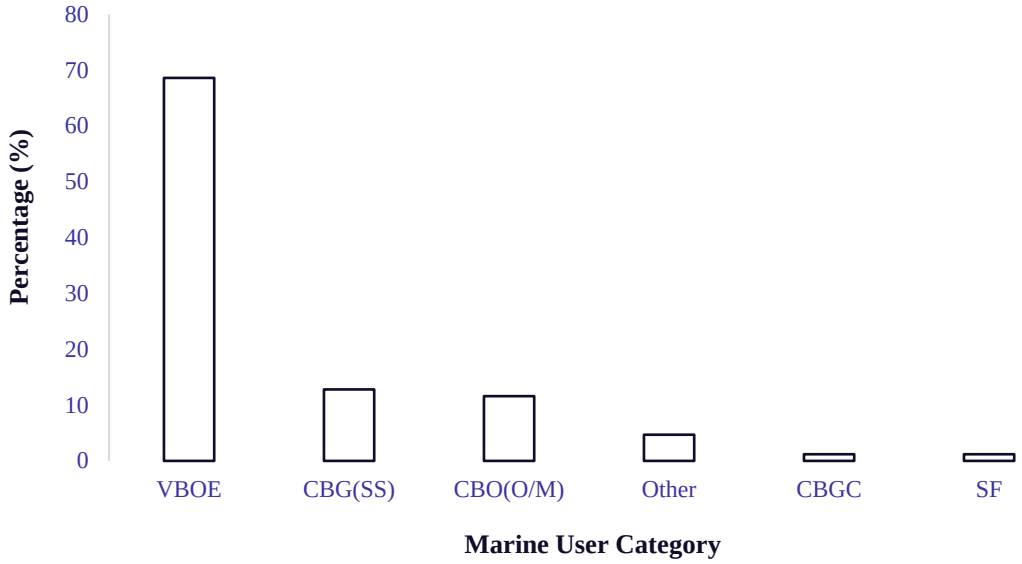


Figure 6: The percentage of respondents (n=86) who use the marine environment in the Whitsundays as VBO (visiting boat owners); CBG(SS) (self-sail charter boat guests); Other; CBGC (crewed charter boat guest) and SF (spearfishers) (n=86).

**Question 8: What is Your Occupation? [Recreational boat users and owners only]**

Out of 91 **recreational** respondents that answered the question 'what is your occupation', the majority (31.85%) were retired. This was then followed by managerial (4.55%) and nursing (4.55%) positions, and subsequently engineering (2.73%); company director (2.73%) and self-employment (2.73%). An overview of respondent occupations has been broadly categorised within Table 7.

Table 7: Respondents occupations by category (n=91).

| Occupation | Frequency | Percentage |
|---|---|---|
| Healthcare | 9 | 9.89 |
| Education | 5 | 4.49 |
| Finance | 3 | 3.30 |
| Sales & Marketing | 4 | 4.40 |
| Manager/Director | 10 | 11.00 |
| IT | 3 | 4.49 |
| Property | 2 | 2.20 |
| Engineer/Mechanic | 4 | 4.40 |
| Marine Industry | 7 | 7.69 |
| Mining | 2 | 2.20 |
| Pilot | 1 | 2.00 |
| Environmental Sector | 1 | 2.00 |
| Self Employed | 3 | 3.30 |

| | | |
|---|---|---|
| Retired | 37 | 40.70 |
| **Total** | **91** | **100** |

## 4.2 | Vessel Types

**Summary:** Most respondents own a sailing yacht that is berthed within a Whitsundays marina (63.87%); with 78.15% owning a sailing yacht of some variety (e.g. cruising, anchored, moored). The majority of vessels carry between 6-10 passengers (59.70%).

Within Whitsunday commercial tourism operations the most common vessels were sailing yachts (46.67%); with most operations owning between 1-5 vessels (73.2%) but some owning as many as 40 vessels. Smaller operations had a passenger capacity of between 8-10 people, with the five largest operations having the capacity to carrying between 200 and 320 people per day across all their vessels. Vessel owners primarily owned sailing yachts berthed at the marina (31.10%). The majority of the commercial tourism vessels (46%) carried between 1 to 10 passengers.

General tourists and residents who used the Whitsundays for purposes aside from boating or sailing still relied heavily on vessel use, with only 8.74% of these general users not owning or using a vessel for their marine recreation.

**Question 9: What Type of Vessel Do You Own? [Recreational boat users and owners]**

The majority of recreational respondents (n=119) own a sailing yacht that is berthed within a Whitsundays marina (63.87%) (Figure 7). In total 78.15% of respondents owned sailing yachts, this included those that were cruising (5.88%), anchored (4.2%) or moored (4.2%) in alternate locations. Other boat types included motor yachts (11.76%); motor boats (3.36%); catamarans (5.04%) and sailing boats (1.68%) (Table 8).

Table 8: The main vessel type used by recreational respondents (n=119).

| Vessel Type | Acronym | Frequency | Percentage |
|---|---|---|---|
| Sailing Yacht (berthed at marina) | SY(BM) | 76 | 63.87 |
| Motor Yacht (berthed at marina) | MY(BM) | 14 | 11.76 |
| Motor Boat (towed or launched from boat ramp) | MB(TL) | 4 | 3.36 |

| | | | |
|---|---|---|---|
| ***Other*** | | | |
| Cruising Catamaran | CC | 4 | 3.36 |
| Sailing Catamaran (anchored) | SC(A) | 2 | 1.68 |
| Cruising Yacht | CY | 7 | 5.88 |
| Sailing Yacht (anchored) | SY(A) | 5 | 4.20 |
| Sailing Yacht (moored) | SY(M) | 5 | 4.20 |
| Sailing boat (anchored) | SB(A) | 2 | 1.68 |
| | **Total** | **119** | **100** |

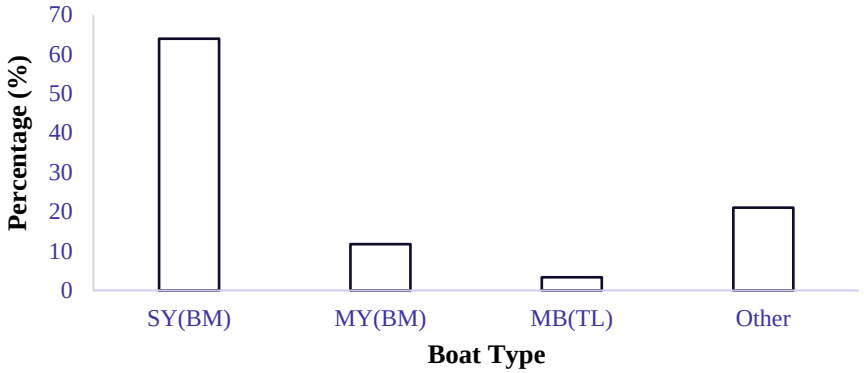


Figure 7: The primary vessel types owed by respondents (n=119) including Sailing Yachts berthed at a marina (SY(BM)); Motor Yachts berthed at the marina (MY(BM)) and Motor boats towed or launched from a boat ramp (MB(TL)) (n=119).

### Question 10: How Many People Does the Boat Carry?

From the above vessels, the majority of vessels owned/used by **recreational** boaters carried between 6-10 passengers (59.70%). The smallest vessels carried a single passenger (2.1%); whilst the largest carried 22 (1.1%). The most common passenger number across all vessels was 6 (24.5%) (Table 9). Figure 8 displays vessel number by grouping.

Table 9: The number of passengers that can be carried by respondent vessels (n=94).

| Passenger Number | Frequency | Percentage | Passenger Number | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 2 | 2.13 | 8 | 19 | 20.21 |
| 2 | 15 | 16.00 | 9 | 1 | 1.06 |
| 3 | 3 | 3.19 | 10 | 12 | 12.78 |
| 4 | 16 | 17.02 | 11 | 1 | 1.06 |
| 6 | 23 | 24.47 | 22 | 1 | 1.06 |
| 7 | 1 | 1.06 | **Total** | **94** | **100.00** |

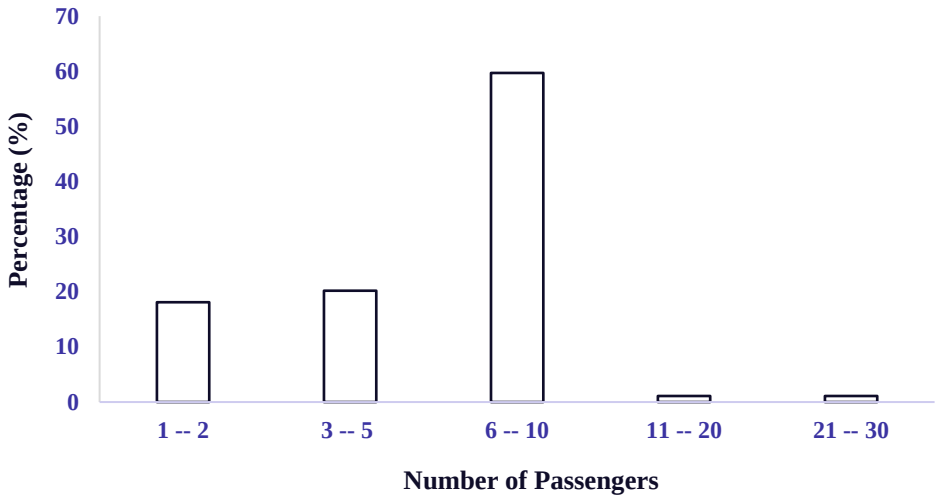


Figure 8: The number of passengers (grouped) carried by respondent vessels (n=94).

**Question 11: What Types of Vessels Are in Your Operation? [Commercial owners/operators of charter vessels or tourism operations]**

Sailing yachts were the most common vessel type owned by commercial use respondents (46.67%); however, 30% of respondents owned both a motor yacht and sailing yacht. A single 'other' response was recorded, relating to the owner of a motor RIB (Table 10; Figure 9).

Table 10: The number of respondents (n=30) that own motor/sailing yachts or RIBS.

| Vessel Type | Motor Yacht | Sailing Yacht | Both | Motor Rib | Total |
|---|---|---|---|---|---|
| **Frequency** | 6 | 14 | 9 | 1 | 30 |
| **Percentage** | 20.00 | 46.67 | 30.00 | 3.33 | 100 |

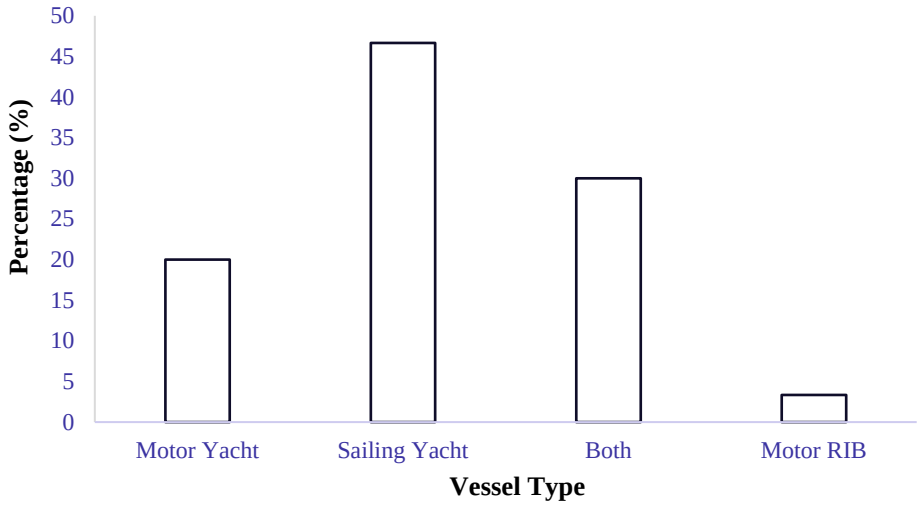


Figure 9: The percentage of respondents with motor yachts; sailing yachts; both or motor RIBS (n=30).

**Question 12: How Many Vessels Do You Have in Your Operation?**

Most commercial charter or tourism operations within the Whitsundays own a single vessel (43.33%); with 40 vessels the maximum number owned by any one operation (6.67%) (Table 9). The majority of operations own between 1-5 vessels (73.2%) (Figure 10).

Table 11: The number of vessels owned by operations in the Whitsundays (n=30).

| Vessel Number | Frequency | Percentage | Vessel Number | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 13 | 43.33 | 21 | 1 | 3.33 |
| 2 | 4 | 13.33 | 22 | 1 | 3.33 |
| 3 | 1 | 3.33 | 25 | 1 | 3.33 |
| 4 | 3 | 10.00 | 30 | 2 | 6.67 |
| 5 | 1 | 3.33 | 40 | 2 | 6.67 |
| 7 | 1 | 3.33 | **Total** | **30** | **100** |

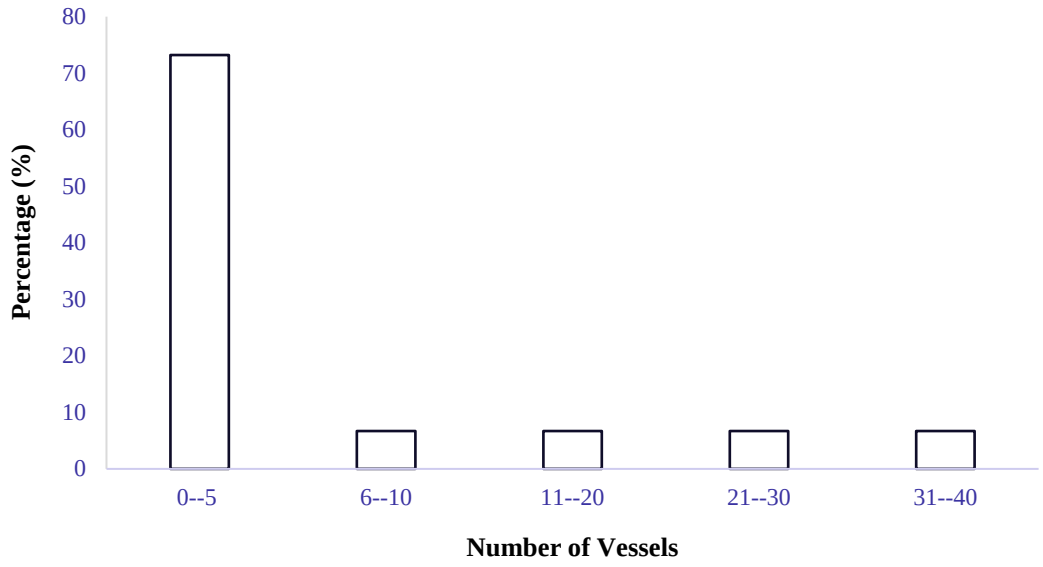


Figure 10: The number of vessels owned by commercial operations in the Whitsundays (n=30).

**Question 13: What is the Total Capacity of Your Operation?**

On average operational vessels (n=30) in the Whitsundays have a capacity of 8 persons (23.33%) (Table 12). However, vessel capacity ranges widely from 4 (6.67%) to 320 (3.33%) people. 46.67% of operational vessels carry between 1-10 people. This is followed by 11-50 people (16.67%) and 151-200 people (10%). Within the recorded operational vessels, four operators (16.7%) had the capacity to carry ≥200 people (Figure 11).

Table 12: The total capacity of Whitsunday vessel operations (n=30).

| Total Capacity | Frequency | Percentage | Total Capacity | Frequency | Percentage |
|---|---|---|---|---|---|
| 4 | 2 | 6.67 | 80 | 1 | 3.33 |
| 5 | 1 | 3.33 | 86 | 1 | 3.33 |
| 6 | 2 | 6.67 | 120 | 1 | 3.33 |
| 8 | 7 | 23.33 | 126 | 1 | 3.33 |
| 10 | 2 | 6.67 | 180 | 1 | 3.33 |
| 12 | 1 | 3.33 | 200 | 2 | 6.67 |
| 30 | 1 | 3.33 | 240 | 1 | 3.33 |
| 35 | 2 | 6.67 | 280 | 1 | 3.33 |
| 40 | 1 | 3.33 | 320 | 1 | 3.33 |
| 52 | 1 | 3.33 | **Total** | **30** | **100** |

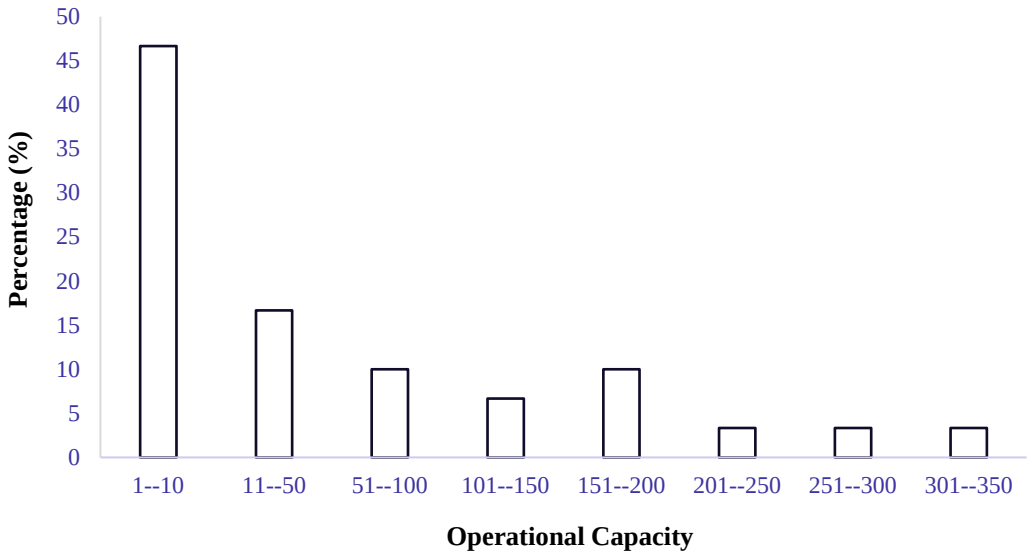


Figure 11: The operational capacity of commercial vessels in the Whitsundays (n=30).

**Question 14: What Type of Vessel Do You Own? [Charter boat crew, other tourism staff, general tourists/visitors – i.e. not sailing/boating focused]**

Most of these general respondents use a sail yacht that is berthed at a marina (31.10%); followed by motor boats launched from boat ramps (22.33%). From the 'other' category (15.84%), 3.88% of respondents used both a sail and motor vessel, and 2.91% owned a moored motor boat and sail yacht respectively (Table 13). Of all respondents 8.74% did not use/own a boat for their marine activity (Figure 12).

Table 13: Vessel types owned by respondents (n=103).

| Vessel Type | Frequency | Percentage | Vessel Type | Frequency | Percentage |
|---|---|---|---|---|---|
| Sail Yacht (berthed at marina) | 31 | 30.10 | Motor Boat (moored) | 3 | 2.91 |
| Motor Yacht (berthed at marina) | 22 | 21.36 | Commercial Vessel (moored) | 1 | 0.97 |
| Motor boat (towed and launched from boat ramp) | 23 | 22.33 | Recreational vessel | 1 | 0.97 |
| I don't use a boat for my marine activity | 9 | 8.74 | Marine Rescue Vessel | 2 | 1.94 |
| ***Other*** | | | Kayak | 3 | 2.91 |

| | | | | | |
|---|---|---|---|---|---|
| Sail & Motor Vessel | 4 | 3.88 | Whitsunday Cruise | 1 | 0.97 |
| Sail Yacht (moored) | 3 | 2.91 | **Total** | **103** | **100.00** |

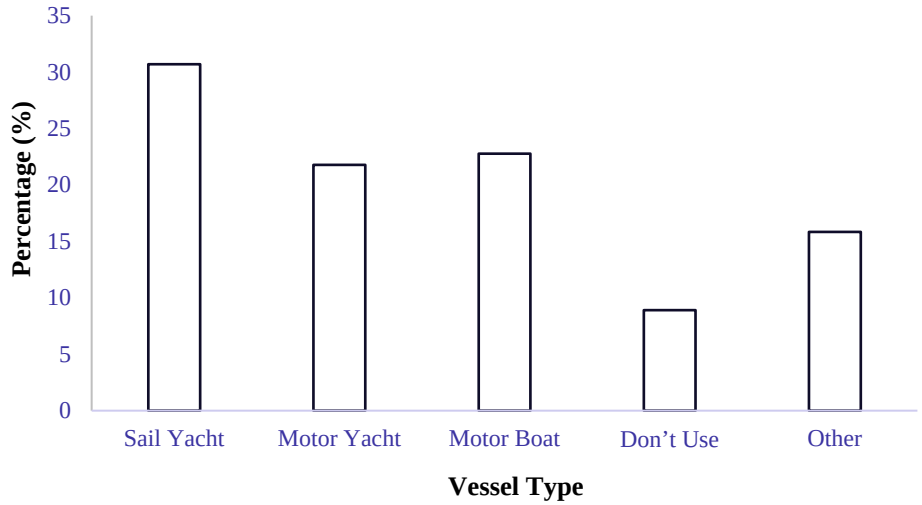


Figure 12: The type of vessel owned by respondents (n=101), including moored sail and motor yachts and towed motor boats.

**Question 15: How Many People Does the Boat Carry?**

Most vessels owned by these respondents carry a maximum of 6 passengers (21.62%), followed by 8 (17.57%) (Table 15; Figure 13). Vessel size ranges from 1 passenger to 100 passengers. There are a minimal number of vessels that can carry from 16-100 passengers (14.85%) (Table 14).

Table 14: Descriptive statistics of passenger numbers for respondent vessels (n=74).

| Statistic | Passenger Number |
|---|---|
| **Count** | 74 |
| **Minimum** | 1 |
| **Maximum** | 100 |
| **Average** | 11.41 |
| **Standard Deviation** | 14.48 |
| **Mode** | 6.00 |
| **Median** | 6.50 |

Table 15: The total number of passengers respondents vessels can carry (n=74).

| Passenger Number | Frequency | Percentage | Passenger Number | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 2 | 2.70 | 14 | 2 | 2.70 |
| 2 | 2 | 2.70 | 16 | 1 | 1.35 |
| 3 | 1 | 1.35 | 20 | 1 | 1.35 |
| 4 | 9 | 12.16 | 25 | 1 | 1.35 |
| 5 | 7 | 9.46 | 30 | 2 | 2.70 |
| 6 | 16 | 21.62 | 32 | 2 | 2.70 |
| 7 | 1 | 1.35 | 35 | 1 | 1.35 |
| 8 | 13 | 17.57 | 40 | 1 | 1.35 |
| 10 | 5 | 6.76 | 60 | 1 | 1.35 |
| 11 | 1 | 1.35 | 100 | 1 | 1.35 |
| 12 | 4 | 5.41 | **Total** | **74** | **100.00** |

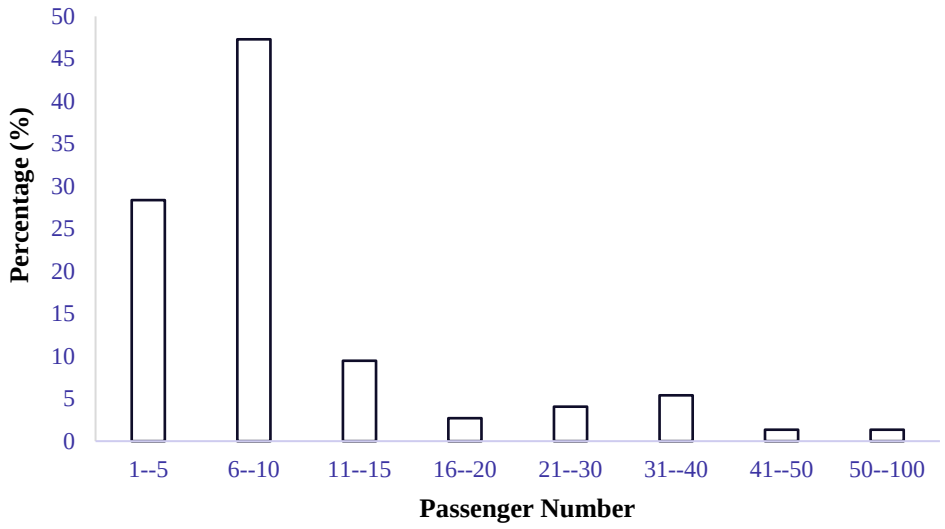


Figure 13: The number of passengers carried by respondent's vessels (n=74).

# 4.3 | Marine Encounters

These questions sought to identify respondent experiences and encounters with marine life in the Whitsundays to determine which types of animals are most frequently noticed.

**Question 16: Please Score the Following Marine Wildlife with Respect to How Often You Have Encountered them while in the Whitsundays.**

The most commonly reported marine wildlife is fish, reported to be seen 'always' by 64.22% of respondents. Following this, rays (9.85% 'always') and jellyfish (7.46% 'always') were most often seen by respondents. The least reported group was crocodiles, with 73.76% of respondents claiming to never

see these animals; followed by dugong (33.38% 'never'). Whales, turtles and dolphins were sometimes encountered by respondents at 51.49%; 51.49% and 51.47% respectively (Table 16; Figure 14).

Table 16: The amount respondents encounter marine wildlife on a scale from 1 (never) to 5 (always).

| Wildlife | Never | Hardly Ever | Sometimes | Often | Always | Total |
|---|---|---|---|---|---|---|
| **Fish** | | | | | | |
| Frequency | 1 | 2 | 13 | 57 | 131 | 204 |
| Percentage | 0.49 | 0.98 | 6.37 | 27.94 | 64.22 | 100.00 |
| **Turtle** | | | | | | |
| Frequency | 6 | 31 | 105 | 62 | 0 | 204 |
| Percentage | 2.94 | 15.19 | 51.47 | 30.39 | 0.00 | 100.00 |
| **Ray** | | | | | | |
| Frequency | 8 | 17 | 85 | 73 | 20 | 203 |
| Percentage | 3.94 | 8.37 | 41.87 | 35.96 | 9.85 | 100.00 |
| **Whale** | | | | | | |
| Frequency | 7 | 42 | 104 | 35 | 14 | 202 |
| Percentage | 3.46 | 20.79 | 51.49 | 17.33 | 6.93 | 100.00 |
| **Dolphin** | | | | | | |
| Frequency | 7 | 42 | 104 | 35 | 14 | 202 |
| Percentage | 3.47 | 20.79 | 51.49 | 17.33 | 6.93 | 100.00 |
| **Shark** | | | | | | |
| Frequency | 29 | 68 | 70 | 23 | 13 | 203 |
| Percentage | 14.29 | 33.50 | 34.48 | 11.33 | 6.40 | 100.00 |
| **Dugong** | | | | | | |
| Frequency | 68 | 101 | 29 | 3 | 0 | 201 |
| Percentage | 33.83 | 50.25 | 14.43 | 1.49 | 0.00 | 100.00 |
| **Crocodile** | | | | | | |
| Frequency | 149 | 38 | 12 | 2 | 1 | 202 |
| Percentage | 73.76 | 18.81 | 5.94 | 0.99 | 0.50 | 100.00 |
| **Jellyfish** | | | | | | |
| Frequency | 12 | 47 | 71 | 56 | 15 | 201 |
| Percentage | 5.97 | 23.38 | 35.32 | 27.86 | 7.46 | 100.00 |

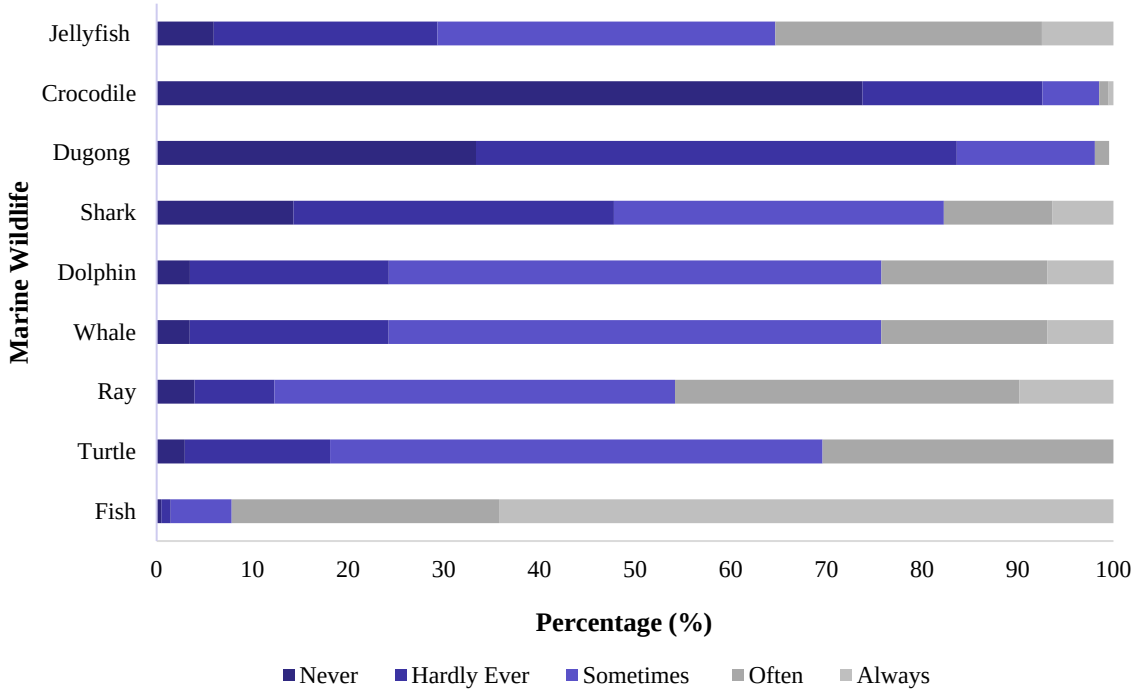


Figure 14: The percentage of times marine wildlife is encountered by respondents ranging from never (left hand-side) to always (right hand-side).

## 4.4 | Respondent Opinions on Sharks

**Summary:** Respondents most strongly believed that 'sharks are an important part of the marine ecosystem' (62.75%), and most strongly disagreed with the statement that 'sharks are pests and should be removed/reduced' (56.96%). Additional views on sharks mainly related to the 'banning of shark control devices within the Whitsundays' (12.93%); however, 7.48% of respondents believed more shark controls should be introduced. The majority of respondents had not changed their views on sharks in the past 12 months (53.74%). Where opinions have changed, it mainly related to an increased vigilance of 'shark smart' practices (38.24%).

**Question 17: How Do You Feel About Sharks and Their Existence in the Ocean?**

Respondents agreed most strongly with the statement 'sharks are an important part of the marine ecosystem (62.75%); followed by the statement 'sharks have the right to be here' (56.16%). The statement respondents most strongly disagreed with (56.95%) regarded 'sharks are pests, that should

be removed/reduced'. The 'importance of sharks to tourism' obtained the highest percentage of neutral responses at 31.03% (Table 17; Figure 15).

Table 17: The opinion of respondents concerning sharks existence in the ocean, opinions range from strongly disagree, to strongly agree.

| Statement | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Total |
|---|---|---|---|---|---|---|
| **They have the 'right' to be here** | | | | | | |
| Frequency | 7 | 7 | 20 | 55 | 114 | **203** |
| Percentage | 3.45 | 3.45 | 9.85 | 27.09 | 56.16 | **100.00** |
| **They are dangerous animals that should be avoided** | | | | | | |
| Frequency | 30 | 33 | 40 | 68 | 31 | **202** |
| Percentage | 14.85 | 16.34 | 19.80 | 33.66 | 15.35 | **100.00** |
| **They are pests that should be removed/reduced** | | | | | | |
| Frequency | 111 | 31 | 26 | 18 | 16 | **202** |
| Percentage | 54.95 | 15.35 | 12.87 | 8.91 | 7.92 | **100.00** |
| **They are important parts of the marine ecosystem** | | | | | | |
| Frequency | 3 | 5 | 21 | 47 | 128 | **204** |
| Percentage | 1.47 | 2.45 | 10.29 | 23.04 | 62.75 | **100.00** |
| **They are important tourism attractions** | | | | | | |
| Frequency | 52 | 52 | 63 | 24 | 12 | **203** |
| Percentage | 25.62 | 25.62 | 31.03 | 11.82 | 5.91 | **100.00** |
| **They are threatened animals that need protection** | | | | | | |
| Frequency | 26 | 31 | 46 | 51 | 47 | **201** |
| Percentage | 12.94 | 15.42 | 22.89 | 25.37 | 23.38 | **100.00** |
| **I don't really have any positive or negative feelings towards sharks** | | | | | | |
| Frequency | 33 | 51 | 71 | 28 | 14 | **197** |
| Percentage | 16.75 | 25.89 | 36.04 | 14.21 | 7.11 | **100.00** |

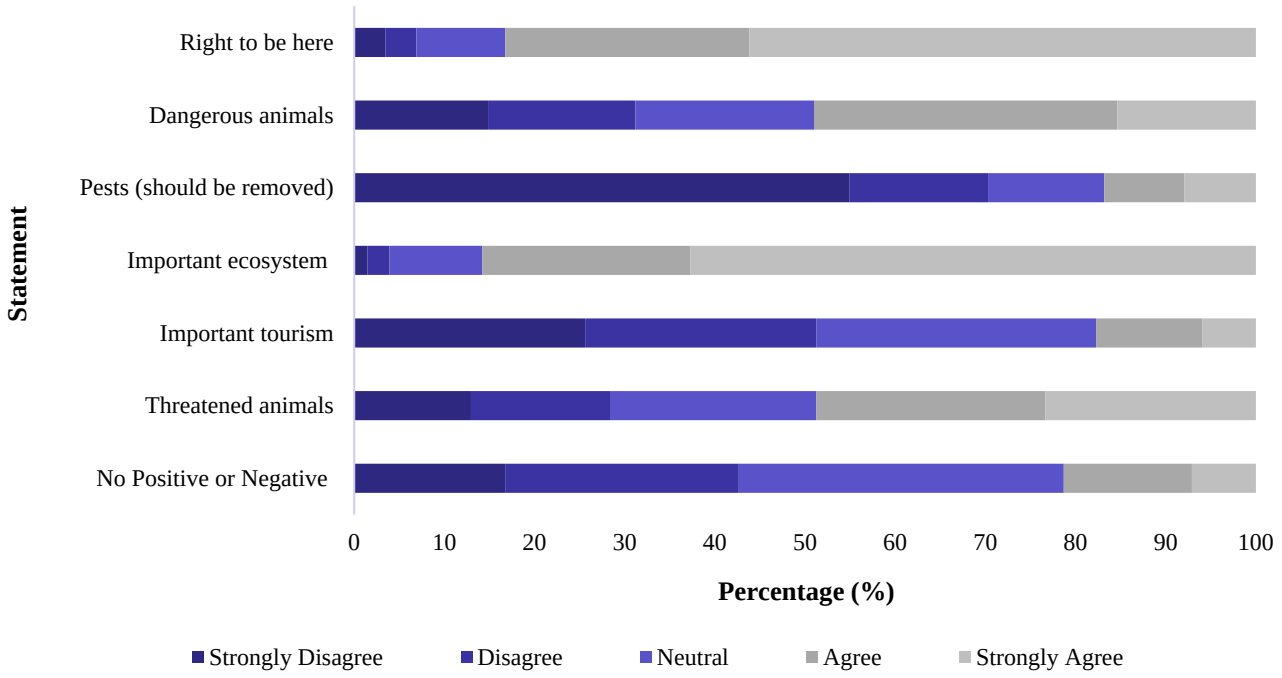


Figure 15: Respondents opinions regarding the existence of sharks in the ocean ranging from (1) 'strongly disagree' to (5) 'strongly agree'.

**Question 18: Is There Anything Else You'd Like to Mention About Your View of Sharks?**

The most common view of respondents (n=112) concerned the banning of shark control devices within the Whitsundays (12.93%). This was supported by the second most common response, concerning the sharks important ecosystem role (9.52%) and the importance of personal responsibility when in the ocean (8.16%). The following responses directly contrasted with these opinions, suggesting that following an increase in shark numbers (7.48%) more shark controls should be re-introduced (6.80%) including culling (6.12%). A full list of responses can be found in Table 18.

Table 18: Respondents opinions on sharks (n=112).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Ban shark control devices | 19 | 12.93 | Their presence prevents me from swimming | 4 | 2.72 |
| Important ecosystem role | 14 | 9.52 | Views vary depending on species | 3 | 2.04 |
| Personal responsibility is essential | 12 | 8.16 | Reduce overfishing | 3 | 2.04 |
| Shark numbers have increased | 11 | 7.48 | Reduce media hype | 3 | 2.04 |
| Need to introduce more shark controls | 10 | 6.80 | Don't swim in unsafe areas | 3 | 2.04 |
| Re-introduce culling | 9 | 6.12 | Important for tourism | 2 | 1.36 |
| Need to be respected | 9 | 6.12 | People are more important than sharks | 2 | 1.36 |
| No comment | 8 | 5.44 | Ban waste disposal from boats | 2 | 1.36 |
| Re-introduce shark fishing | 5 | 3.40 | Introduce licenced shark diving operator | 1 | 0.68 |
| Awareness & education is essential | 5 | 3.40 | Increase in tourism | 1 | 0.68 |
| Big sharks are rarely seen in the water | 5 | 3.40 | Government needs to do more | 1 | 0.68 |
| Sharks are responding to environmental change | 5 | 3.40 | Increase public moorings near beaches | 1 | 0.68 |
| They are beautiful creatures | 5 | 3.40 | Increase beach protection | 1 | 0.68 |
| More research and monitoring is needed | 4 | 2.72 | **Total** | **147** | **100.00** |

n=112 comprising 147 responses.

**Question 19: Have Any of Your Views About Sharks Changed in the Last 12 Months?**

Most respondents views (n=79 (53.74%)) of sharks have not changed over the past 12 months (Figure 16). Those opinions that have changed (n=68 (46.26%)) mainly relate to respondents increased vigilance of 'shark smart' practices (38.24%); increased fear (22.06%) and no longer swimming where attacks have taken place (13.24%) (Table 19).

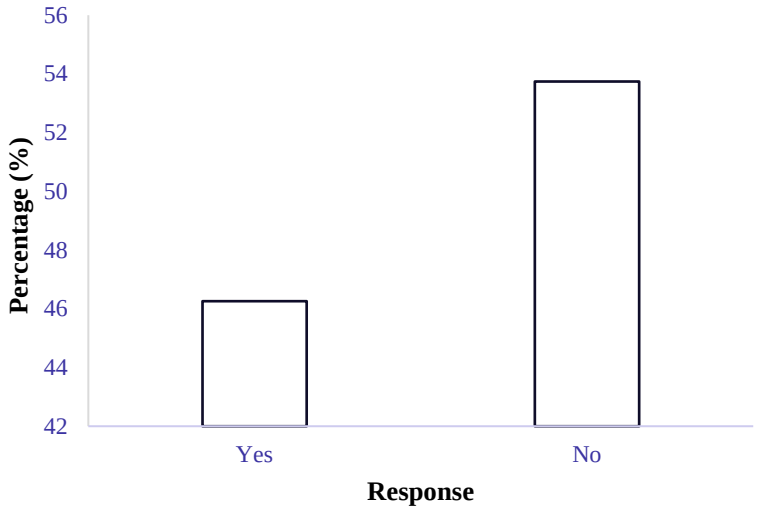


Figure 16: The percentage change in respondents view of sharks over the last 12 months (n=147).

**If yes, how has your view changed?**

Table 19: The explanation for respondents view change of sharks over the past 12 months (n=68).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| More vigilant in 'shark smart' practices | 26 | 38.24 | More education is needed | 2 | 2.94 |
| Increased fear | 15 | 22.06 | Impacted local tourism | 1 | 1.47 |
| Wouldn't swim where attacks happened | 9 | 13.24 | They're coming closer to the beaches | 1 | 1.47 |
| Disappointed by media sensationalism | 5 | 7.35 | Will no longer swim | 1 | 1.47 |
| Need to re-introduce culling | 3 | 4.41 | Blame bad management | 1 | 1.47 |
| More supportive in their protection | 3 | 4.41 | **Total** | **68** | **100.00** |

# 4.5 | Swim Safe Knowledge

**Summary:** Most respondents (89.39%) had been informed of swim safe messages, with primary sources including online (40.66%) or through the media (39.01%). The majority of respondents were not in the Whitsundays when they learnt of swim safe messages (59.74%), rather obtaining this

knowledge during their childhood (21.70%), their own experience (11.32%) or hometowns (8.49%). Most respondents (75.94%) were not aware of the organisation responsible for designing swim safe guidelines. Of those that believed they were, GBRMPA (19.23%); QLD fisheries (15.38%) and the Marine Parks Authority (7.69%) were the most common. When planning a trip to the Whitsundays 100 magic miles was the most popular source consulted by respondents (32.31%). This was followed by websites (18.85%) and friends/family (15.00%).

**Question 20: Have You Ever Been Informed of Any Safe Swimming Messages to Minimise the Risk of Unwanted Shark Encounters?**

Most respondents (n=177 (89.39%)) have been informed of safe swimming messages, the remaining 8.01% (n=16) were unaware (Figure 17).

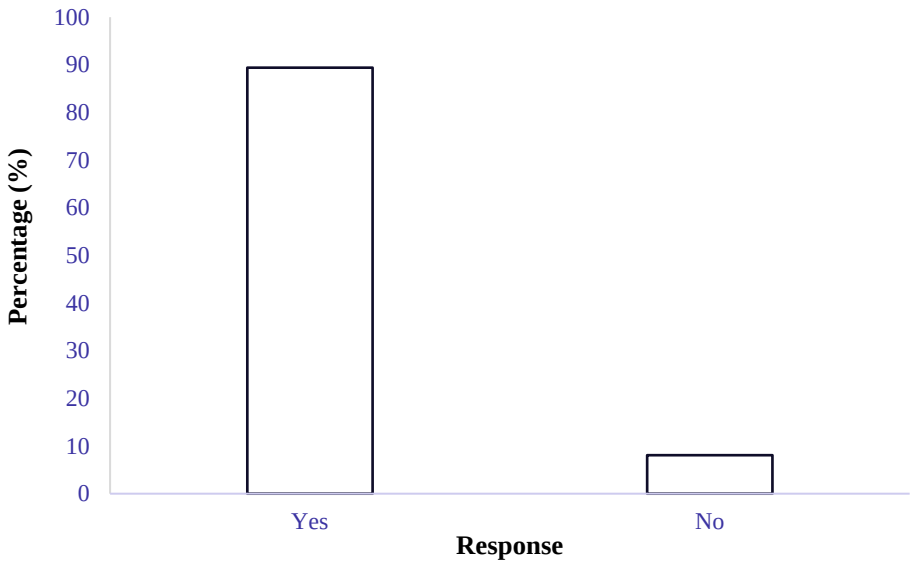


Figure 17: The percentage of respondents that have/haven't been informed of safe swimming messages (n=198).

**Question 21: If You Have Been Informed About Safe Swimming Messages, How Did You Receive This Information?**

The majority of respondents have been informed about safe swimming messages either by online sources (n=74 (40.66%)) or through the media (n=71 (39.01%)). The least common method of receiving

information included casually talking with tourism staff (n=31 (17.03%)) or through briefings given by tourism staff (n=37 (20.33%)) (Table 20; Figure 18).

Table 20: The sources through which respondents have been informed of safe swim messages (n=182).

| Source | Frequency | Percentage |
|---|---|---|
| Poster or pamphlet on the boat | 45 | 24.73 |
| Through my job | 47 | 25.82 |
| Through a briefing given by tourism staff | 37 | 20.33 |
| When talking casually with tourism staff | 31 | 17.03 |
| Through a friend or family member | 53 | 29.12 |
| Through the media (TV, print, radio) | 71 | 39.01 |
| From online sources (website, social media) | 74 | 40.66 |
| Other | 50 | 24.47 |
| **Total** | **408** | **100.00** |

*n=182 comprising 408 responses

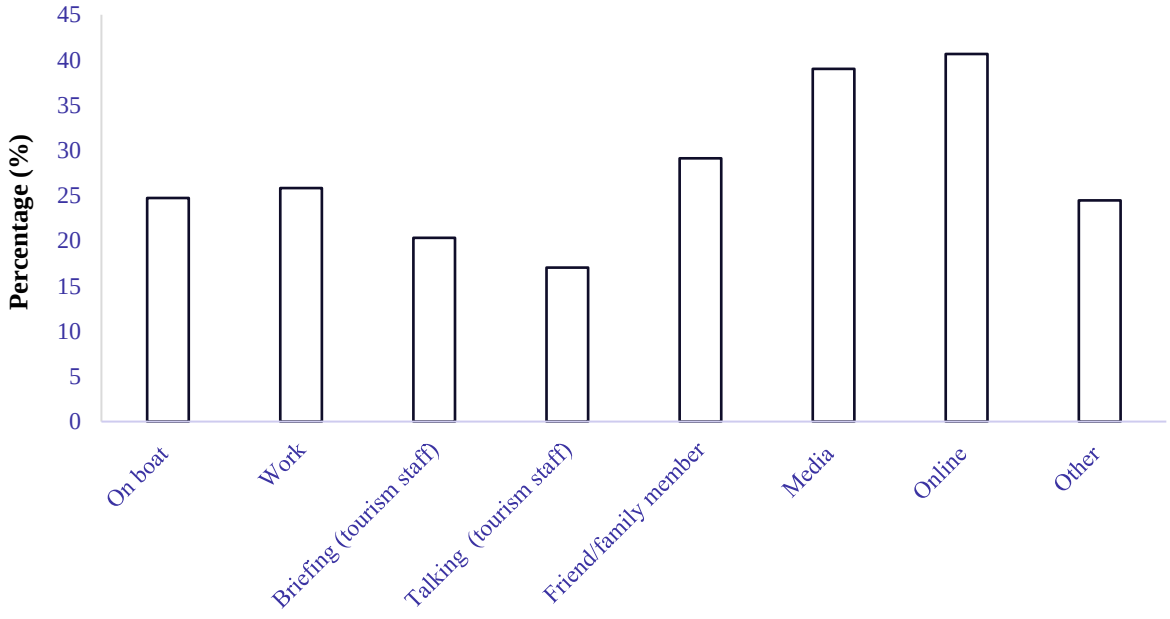


Figure 18: The sources from which respondents received safe swimming messages (n=182).

**Define 'other' sources.**

The most commonly cited other source of safe swim messages included common sense (17.24%), personal experience (13.79%) and signage (12.07%) (Table 21).

Table 21: Other sources through which respondents have received swim safe information (n=50).

| Other Source | Frequency | Percentage | Other Source | Frequency | Percentage |
|---|---|---|---|---|---|
| Common sense | 10 | 17.24 | Charter company | 2 | 3.45 |
| Personal experience | 8 | 13.79 | School | 2 | 3.45 |
| Signs | 7 | 12.07 | General knowledge | 2 | 3.45 |
| Fisheries patrol | 5 | 8.62 | General public | 1 | 1.72 |
| Diving course | 4 | 6.90 | 100 magic miles | 1 | 1.72 |
| Local knowledge | 4 | 6.90 | Marine park authority | 1 | 1.72 |
| Parents | 3 | 5.17 | Police | 1 | 1.72 |
| Books | 3 | 5.17 | Documentaries | 1 | 1.72 |
| Sailing club | 2 | 3.45 | Through work | 1 | 1.72 |
| | | | **Total** | **58** | **100.00** |

n=50 corresponding to 58 responses

**Question 22: Were You in the Whitsundays When You First Learned of These Safe Swimming Messages?**

The majority of respondents were not in the Whitsundays when they learned of swim safe messages (n=119 (59.47%)). These respondents primarily learnt of these messages during their childhood (21.70%); through their own experience in and on the water (11.32%) or in their hometowns (8.49%) (Table 22). Within Australia, respondents most commonly learned swim safe messages within New South Wales (12.26%). The remaining respondents (n=77 (40.53%)) learnt of these messages within the Whitsundays (Figure 19).

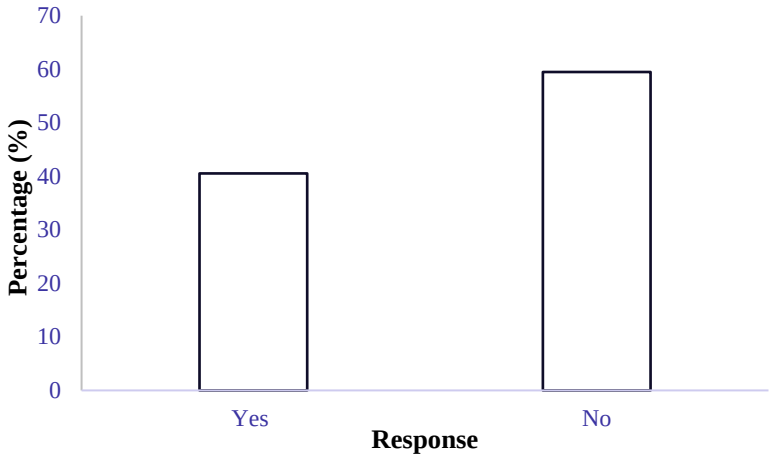


Figure 19: The percentage of participants that were in the Whitsundays when they first learned of safe swim messages (n=190).

**If no, where were you when you learned about these messages?**

Table 22: The location/source of safe swim messages for respondents outside of the Whitsundays (n=106).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Childhood | 23 | 21.70 | South Australia | 4 | 3.77 |
| Personal experience | 12 | 11.32 | Tasmania | 3 | 2.83 |
| Hometown | 9 | 8.49 | New Zealand | 2 | 1.89 |
| Common knowledge | 6 | 5.66 | South Africa | 2 | 1.89 |
| New South Wales | 13 | 12.26 | Caribbean | 2 | 1.89 |
| Victoria | 7 | 6.60 | Mexico | 1 | 0.94 |
| Queensland | 12 | 11.32 | Common sense | 2 | 1.89 |
| Western Australia | 3 | 2.38 | Through work | 2 | 1.89 |
| Northern Territory | 2 | 1.89 | SCUBA course | 1 | 0.94 |
| | | | **Total** | **106** | **100.00** |

**Question 23: Do You Know Which Organisation Was Responsible for Designing These Safe Swimming Guidelines?**

A number of respondents (n=45 (24.06%)) believed they were aware of the organisation that was responsible for designing swim safe guidelines; with GBRMPA (19.23%), QLD fisheries (15.38%) and the Marine Parks Authority (7.69%) being the most common (Table 23). The remaining respondents (n=142 (75.94%)) were not aware of the organisation responsible (Figure 20).

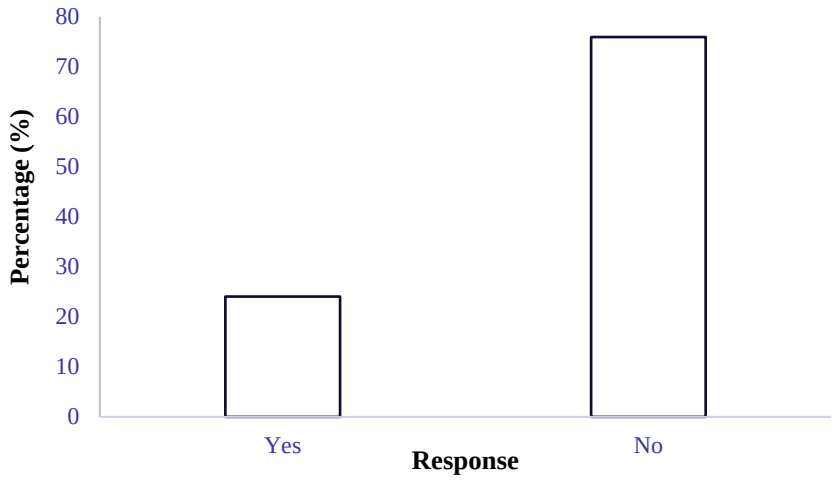


Figure 20: The percentage of respondents that are aware of the organisation responsible for designing swim safe guidelines (n=187).

**If yes, please list the organisation**

Table 23: The organisations responsible for designing swim safe messages seen by respondents (n=45).

| Source | Frequency | Percentage | Source | Frequency | Percentage |
|---|---|---|---|---|---|
| GBRMPA | 10 | 19.23 | Tourism Whitsundays | 1 | 1.92 |
| QLD Fisheries | 8 | 15.38 | National Parks QLD | 1 | 1.92 |
| Marine Parks Authority | 4 | 7.69 | QPW (Gov) | 1 | 1.92 |
| Charter companies | 4 | 7.69 | Australian Maritime Safety Authority | 1 | 1.92 |
| State government | 3 | 5.77 | Charter boat association | 1 | 1.92 |
| Maritime Safety Queensland | 3 | 3.85 | 100 Magic Miles | 1 | 1.92 |
| International Maritime Authority | 2 | 3.85 | University | 1 | 1.92 |
| Local politicians | 2 | 3.85 | Shark watch app | 1 | 1.92 |
| Family/friends | 2 | 3.85 | NSW Fisheries | 1 | 1.92 |
| Common sense | 2 | 3.85 | Worldwide navies | 1 | 1.92 |
| Word of mouth | 1 | 1.92 | PADI | 1 | 1.92 |
| | | | **Total** | **52** | **100.00** |

*n=45 corresponding to 52 responses.

**Question 24: What Source of Information Did/Do You Consult When Planning a Trip Itinerary in the Whitsundays?**

From 119 respondents, 100 magic miles was the most popular source that respondents referred to when planning a trip to the Whitsundays (32.31%). This was followed be websites (18.85%) and friends/family (15.00%). The least popular source of information was travel agents (0.77%) and magazines (2.69%) (Table 24; Figure 21). The most popular 'other' source (n=25) used by respondents related to the consultation of weather reports (33.33%). This was followed by cruising guides (18.52%) (in particular Alan Lucas' 'Cruising the Whitsundays') and marine charts (11.11%) (Table 25).

Table 24: The source of information consulted by respondents before planning a trip in the Whitsundays (n=119).

| Source | Frequency | Percentage | Source | Frequency | Percentage |
|---|---|---|---|---|---|
| None | 18 | 6.92 | Travel agent | 2 | 0.77 |
| Websites | 49 | 18.85 | Tour company | 12 | 4.62 |
| Magazine | 7 | 2.69 | Friends/family | 39 | 15.00 |
| 100 magic miles | 84 | 32.31 | Other | 25 | 9.62 |
| Social media | 24 | 9.23 | **Total** | **260** | **100.00** |

*n=119 corresponding to 260 responses

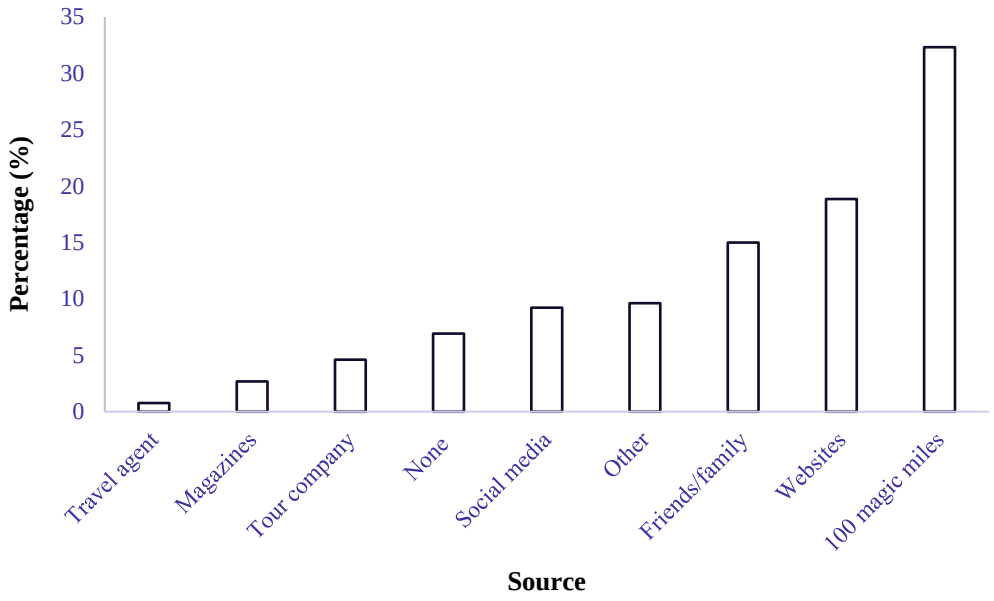


Figure 21: The key sources of information consulted by respondents when planning a trip in the Whitsundays (n=119).

**What other sources of information do you use?**

Table 25: The other sources of information respondents consult when planning a trip to the Whitsundays (n=25).

| Source | Frequency | Percentage | Source | Frequency | Percentage |
|---|---|---|---|---|---|
| Weather reports | 9 | 33.33 | Charter boat company | 1 | 3.70 |
| Cruising guides | 5 | 18.52 | Cumberland charter yachts | 1 | 3.70 |
| Charts | 3 | 11.11 | Other boat users | 1 | 3.70 |
| Resident knowledge | 2 | 7.41 | Previous experience | 1 | 3.70 |
| Regular visitor | 1 | 3.70 | Facebook sailing groups | 1 | 3.70 |
| Marine charter | 1 | 3.70 | **Total** | **27** | **100.00** |

*n=25 corresponding to 27

# 4.6 | Shark Smart Practices

**Summary:** Respondents knowledge of shark smart practices was roughly split, with 37% claiming to know a great deal and 38% knowing only a little. The most important shark safety tip heard by respondents related to 'not swimming at dawn and dusk' (29.27%) and 'not swimming in murky water' (17.86%). These were also regarded the most important shark smart practices, with 75.65% classifying these as 'very important' messages respectively. The least important practice related to not swimming near schools of fish (4.15%).

**Question 25: In General, How Well Informed Do You Feel About 'Shark Smart' Practices?**

There was a clear split between respondents knowledge of shark smart practices (n=200), with 37% claiming to know a great deal, whilst 38% know only a little. Significantly 0% of respondents claimed to know nothing about shark safe practices (Table 26; Figure 22). The most important shark safety tip that had been heard by respondents (n=121) related to 'not swimming at dawn and dusk' (29.27%). This was followed by 'don't swim in murky water' (17.68%) and 'don't throw food scraps overboard' (8.84%). Respondents had heard of 28 different shark safety tips in total (Table 27).

Table 26: The amount respondents feel informed about 'shark smart' practices (n=200).

| Statement | Frequency | Percentage |
|---|---|---|
| I know a great deal about what I should do or avoid doing | 74 | 37.00 |
| I know a lot about what I should do or avoid doing | 16 | 8.00 |
| I know a moderate amount about what I should do or avoid doing | 34 | 17.00 |
| I know a little bit about what I should do or avoid doing | 76 | 38.00 |
| I know nothing about what I should do or avoid doing | 0 | 0.00 |
| **Total** | **200** | **100.00** |

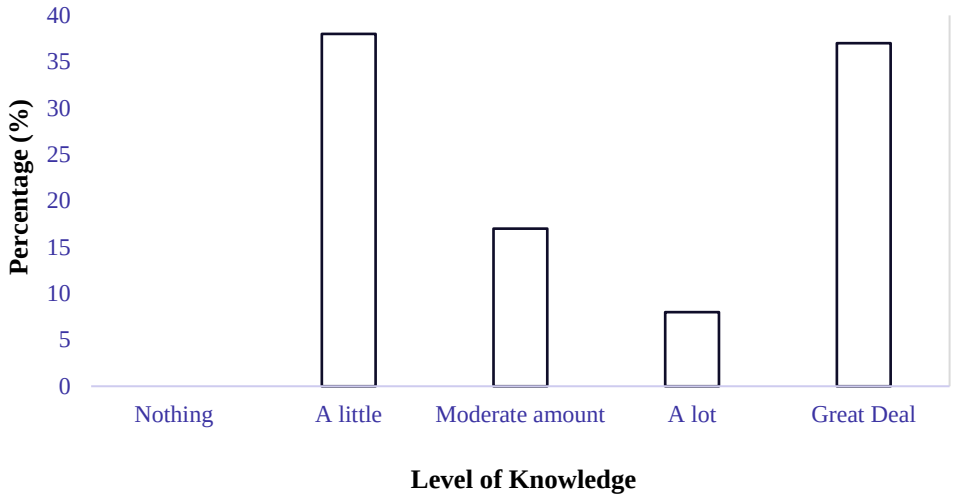


Figure 22: The percentage of respondents that were informed of 'shark smart' practices, ranging on a scale from (1) 'nothing' to (5) 'a great deal' (n=200).

**Tell us about the most important shark safety tips you've heard about. Leave blank if you don't know any.**

Table 27: The most important shark safety tips respondents have heard (n=121).

| Shark Safety Tip | Frequency | Percentage | Shark Safety Tip | Frequency | Percentage |
|---|---|---|---|---|---|
| Don't swim at dawn or dusk | 96 | 29.27 | Only swim in patrolled areas | 4 | 1.22 |
| Don't swim in murky water | 58 | 17.68 | Don't swim | 4 | 1.22 |
| Don't throw food scraps overboard | 29 | 8.84 | Don't use bait/burley/chum when fishing | 3 | 0.91 |
| Don't swim around fishers | 26 | 7.93 | Keep to the shallows when swimming | 3 | 0.91 |
| Avoid swimming in known shark spots | 23 | 7.01 | Don't swim after fishing has occurred | 3 | 0.91 |
| Don't splash in the water | 13 | 3.96 | Don't release holding tanks in anchorages | 2 | 0.61 |
| Don't swim near fish cleaning | 11 | 3.35 | Use common sense | 2 | 0.61 |
| Don't swim when bleeding | 8 | 2.44 | Respect sharks in their environment | 1 | 0.30 |
| Don't swim alone | 8 | 2.44 | Utilise local knowledge | 1 | 0.30 |
| Don't throw fish waste overboard | 7 | 2.13 | Avoid swimming in anchorages | 1 | 0.30 |

| | | | | | |
|---|---|---|---|---|---|
| Don’t swim near schools of baitfish | 6 | 1.83 | Carry a knife when spearfishing | 1 | 0.30 |
| Be aware of surroundings when in the water | 6 | 1.83 | Avoid spearfishing | 1 | 0.30 |
| Don’t carry speared fish/bait bag in the water | 5 | 1.52 | Don’t urinate whilst swimming | 1 | 0.30 |
| Don’t swim off the back of boats | 4 | 1.22 | Only swim from the shore | 1 | 0.30 |
| | | | **Total** | **328** | **100.00** |

*n=121 comprising 328 responses

**Question 26: How Important Do You Think the Following ‘Shark Smart’ Practices are in Reducing the Risk of Unwanted Shark Encounters in and on the Water?**

When presented with a list of ‘Shark Smart” messages, respondents regarded the statements ‘don’t swim at dawn or dusk’ and ‘always swim in clear water’ as the most important shark smart practices (75.65% ‘very important’). This was followed by ‘don’t throw food scraps/fish waste overboard’ (69.95%); ‘don’t swim near shark control equipment’ (69.59%) and ‘leaving the water if a shark is sighted’ (64.43%). The least important (i.e. ‘irrelevant’) shark smart practices as ranked by respondents included ‘following local signage’ (8.76%) and ‘don’t swim near schools of fish’ (4.15%). Respondents seemed uncertain as to the importance of the statement ‘don’t swim where fish are cleaned’ receiving the largest number of ‘somewhat important’ responses (84.97%) (Table 28; Figure 23).

Table 28: The ranked importance of 'shark smart practices' ranging from irrelevant to very important.

| Shark Smart Practice | Irrelevant | Unimportant | Somewhat Unimportant | Important | Very Important | Total |
|---|---|---|---|---|---|---|
| **Don’t swim at dawn or dusk** | | | | | | |
| Frequency | 1 | 1 | 6 | 39 | 146 | 193 |
| Percentage | 0.52 | 0.52 | 3.11 | 20.21 | 75.65 | 100.00 |
| **Always swim in clear water (not in murky water, estuary mouths, anchorages or canals)** | | | | | | |
| Frequency | 1 | 2 | 8 | 37 | 146 | 194 |
| Percentage | 0.52 | 1.03 | 4.12 | 19.07 | 75.26 | 100.00 |
| **Don’t throw food scraps or fish waste overboard** | | | | | | |
| Frequency | 3 | 4 | 17 | 34 | 135 | 193 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Percentage | 1.55 | 2.07 | 8.81 | 17.62 | 69.95 | 100.00 |
| **Don't swim where fish are being cleaned, and don't clean fish where people are swimming** | | | | | | |
| Frequency | 4 | 25 | 164 | 0 | 0 | 193 |
| Percentage | 2.07 | 12.95 | 84.97 | 0.00 | 0.00 | 100.00 |
| **Always, swim, surf, snorkel, paddle or dive with a buddy** | | | | | | |
| Frequency | 5 | 13 | 25 | 49 | 102 | 194 |
| Percentage | 2.58 | 6.70 | 12.89 | 25.26 | 52.58 | 100.00 |
| **Follow local signage and swim between the flags at patrolled beaches** | | | | | | |
| Frequency | 17 | 4 | 22 | 34 | 117 | 194 |
| Percentage | 8.76 | 2.06 | 11.34 | 17.53 | 60.31 | 100.00 |
| **Leave the water immediately if a shark is sighted** | | | | | | |
| Frequency | 2 | 9 | 27 | 31 | 125 | 194 |
| Percentage | 1.03 | 4.64 | 13.92 | 15.98 | 64.43 | 100.00 |
| **Never swim when bleeding** | | | | | | |
| Frequency | 3 | 12 | 25 | 35 | 118 | 193 |
| Percentage | 1.55 | 6.22 | 12.95 | 18.13 | 61.14 | 100.00 |
| **Do not swim near schools of fish** | | | | | | |
| Frequency | 8 | 31 | 50 | 47 | 57 | 193 |
| Percentage | 4.15 | 16.06 | 25.91 | 24.35 | 29.53 | 100.00 |
| **Do not swim near, or interfere with shark control equipment** | | | | | | |
| Frequency | 5 | 3 | 9 | 42 | 135 | 194 |
| Percentage | 2.58 | 1.55 | 4.64 | 21.65 | 69.59 | 100.00 |
| **Be aware if you see diving birds and baitfish, sharks may be present** | | | | | | |
| Frequency | 3 | 8 | 40 | 70 | 73 | 194 |
| Percentage | 1.55 | 4.12 | 20.62 | 36.08 | 37.63 | 100.00 |

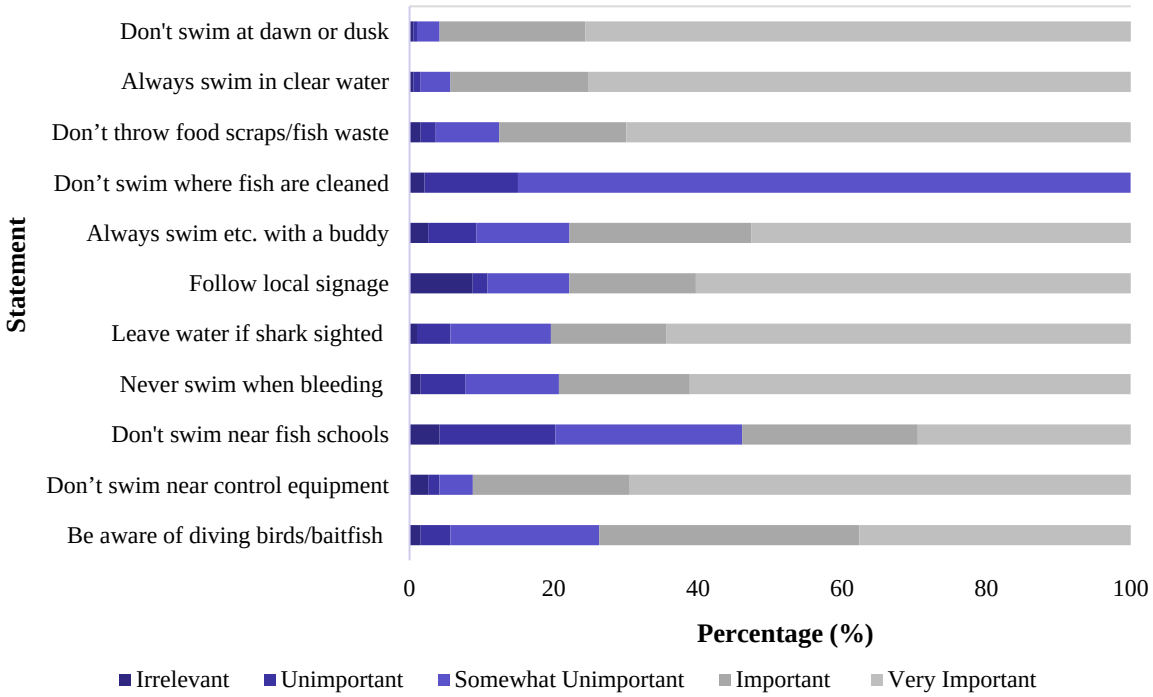


Figure 23: The importance of shark smart practice guidelines as ranked by respondents ranging from (1) irrelevant to (5) very important.

## 4.7 | Shark Safety Measures

**Summary:** Most respondents were aware of the best swimming locations in the Whitsundays (78.4%); these were commonly discovered by personal experience (32.54%), local knowledge (28.4% and the use of 100 magic miles (13.02%). Correspondingly, 91.7% of respondents were aware of where swimming is not advised. This knowledge primarily came from media reports (20.72%). The majority of respondents did not believe there were additional safety message that need to be promoted (58.95%). Those that did, thought better public education was required (18.18), alongside an emphasis on personal responsibility on the water (16.88%). Most respondents (54.4%) believe safety messages should be more widely publicised. This particularly related to the implementation of compulsory briefings on commercial vessels (25.25%). Personal responsibility was considered absolutely crucial in reducing the risk of unwanted shark encounters by 56.02% of respondents. The primary reasons respondents believed an increase in unwanted shark encounters may occur related to a lack of awareness/ignoring shark safe practices (20.90%), followed by the practice of discarding food

waste/fish remains off boats (14.43%). Respondents believed the most effective measure to reduce this risk was education of shark smart practices (40.74%). Shark control measures were considered the least effective, including drumlines (27.81%) and shark nets (27.27%). A number of respondents (41.40%) believe additional management measures should be implemented to reduce the risk to swimmers; this primarily related to increasing the availability of shark smart practice information (19.35%).

**Question 27: Are You Aware of the Best Swimming Locations in the Whitsundays?**

Most respondents (n=152 (78.4%)) were aware of the best swimming locations in the Whitsundays (Figure 24). The most common method of discovering these locations related to personal experience (32.54%), local knowledge (28.4%) and use of the 100 Magic Miles guide (13.02%) (Table 29). The remaining respondents (n=42 (21.6%)) were not aware of the best swimming locations.

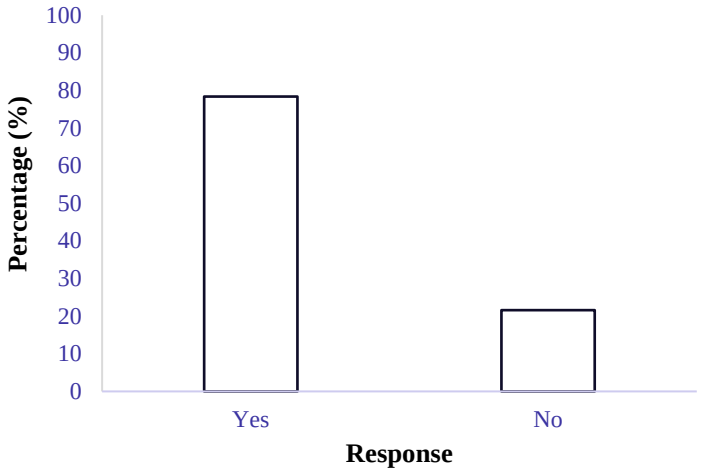


Figure 24: The percentage of respondents that are aware of the best swimming locations in the Whitsundays (n=194).

**If you answered 'Yes' how did you find out about these locations?**

Table 29: The methods through which respondents learned of the best swimming locations in the Whitsundays (n=137).

| Response Category | Frequency | Percentage | Response Category | Frequency | Percentage |
|---|---|---|---|---|---|
| Experience | 55 | 35.54 | Social Media | 3 | 1.78 |
| Local knowledge | 48 | 28.40 | Websites | 3 | 1.78 |
| 100 magic miles | 22 | 13.02 | Following shark smart practices | 2 | 1.18 |
| Word of mouth | 9 | 5.33 | I don't swim | 2 | 1.18 |

| | | | | | |
|---|---|---|---|---|---|
| Tour operator | 7 | 4.14 | Marine radio | 1 | 0.59 |
| Charter company | 5 | 2.96 | General knowledge | 1 | 0.59 |
| Cruising guides | 5 | 2.96 | Spear fishing guide | 1 | 0.59 |
| Local signs | 4 | 2.37 | I can't remember | 1 | 0.59 |
| | | | **Total** | **169** | **100** |

*n=137 comprising 169 responses.

**Question 28: Are You Aware of Locations in the Whitsundays Where Swimming is Not Advised?**

Of 192 respondents 91.7% (n=176) were aware of the locations where swimming is not advised (Figure 25). Their knowledge of these locations primarily came from media reports (20.72%); reports of local attacks (13.96%) and local knowledge (16.67%) (Table 30).

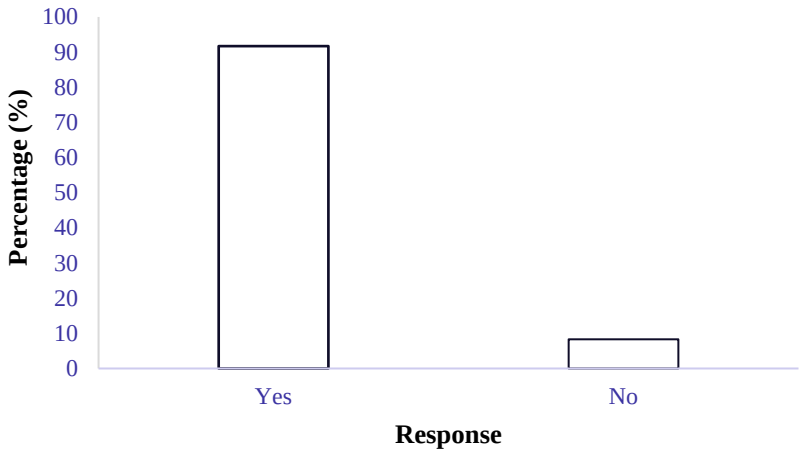


Figure 25: The percentage of respondents aware of the locations in the Whitsundays where swimming is not advised (n=192).

**If you answered 'Yes' how did you find out about these locations?**

Table 30: The methods by which respondents learned of areas not to swim in the Whitsundays (n=192).

| Response Category | Frequency | Percentage | Response Category | Frequency | Percentage |
|---|---|---|---|---|---|
| Media (TV, radio, newspapers, internet) | 46 | 20.72 | Social media | 8 | 3.60 |
| Local knowledge | 37 | 16.67 | Common knowledge | 6 | 2.70 |
| Attack reports (Cid Harbour, Nara Inlet, Proserpine River, Gulnare Inlet, Macona Inlet, Hook Reef, Dent Island) | 31 | 13.96 | 100 magic miles | 6 | 2.70 |

| | | | | | |
|---|---|---|---|---|---|
| Word of mouth | 18 | 8.11 | Government sources (e.g. GBRMPA, DAF, QPWS) | 5 | 2.25 |
| Common sense | 15 | 6.76 | Cruising guides | 4 | 1.80 |
| Charter boat company | 12 | 5.41 | Tour operators | 3 | 1.35 |
| Local signage | 11 | 4.95 | Local council guidelines | 2 | 0.90 |
| Personal experience | 9 | 4.05 | Marine radio | 1 | 0.45 |
| Workplace knowledge | 8 | 3.60 | **Total** | **222** | **100.00** |

*n=192 comprising 222 responses.

**Question 29: Do You Believe That There Are Additional Important Safety Messages That Could Be Used to Further Reduce the Risk of Unwanted Shark Encounters in and on the Water?**

Most participants (n= 112 (58.95%)) do not believe that there are additional important safety messages that could be used to further reduce the risk of unwanted shark encounters. Of those that do (n=78 (41.05%)), the most prominent responses included the requirement for better individual awareness and personal responsibility in and on the water (16.88%); better public education (18.18%) and the provision of better information on safe swimming locations and shark safe practices by charter boat and tour operations (14.29%) (Figure 26; Table 31).

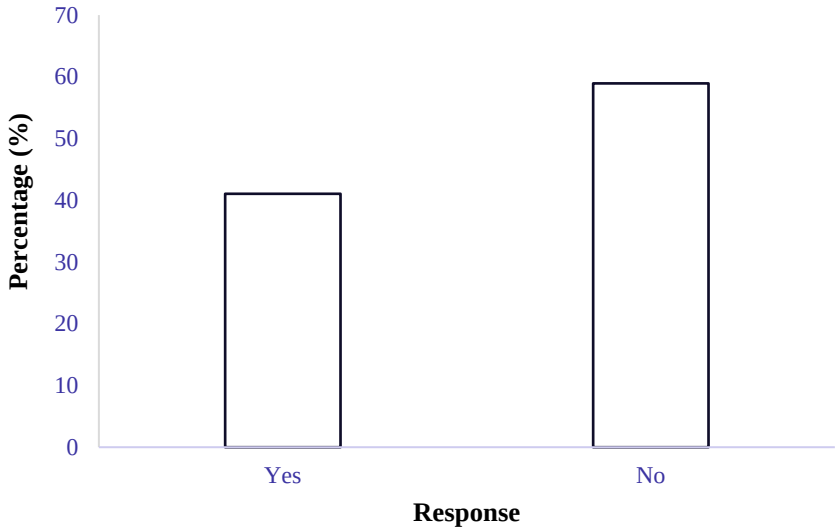


Figure 26: The percentage of respondents that believe there are additional important safety messages that could be used to reduce the risk of unwanted shark encounters (n=190).

**If answered 'Yes' please describe these measures.**

Table 31: Additional safety measure proposed by respondents (n=76).

| Additional Safety Measure | Frequency | Percentage | Additional Safety Measure | Frequency | Percentage |
|---|---|---|---|---|---|
| Better public education | 14 | 16.88 | Develop documentaries on shark behaviour | 1 | 1.3 |
| Better awareness and emphasis on personal responsibility | 13 | 18.18 | Reduce negative press | 1 | 1.3 |
| Charter boat/tour operations provide better information on where to swim and shark safe practices | 11 | 14.29 | Include shark safety on GBRMPA zoning maps | 1 | 1.3 |
| All tourists given information package on arrival | 4 | 5.19 | Don't carry catch bags in water | 1 | 1.3 |
| Process developed to immediately communicate sightings | 3 | 3.9 | Implement swim times | 1 | 1.3 |
| Ban and monitoring of throwing food waste out of boats | 3 | 3.9 | Properly net all swimming areas | 1 | 1.3 |
| Implement culling | 3 | 3.9 | Ban swimming in certain areas | 1 | 1.3 |
| Better availability of printed information (posters, pamphlets etc) | 3 | 3.9 | Monitor and reduce number of tourists on commercial vessels | 1 | 1.3 |
| Better signage/information about where swimming is not advised | 3 | 3.9 | Ban the use of underwater lights in marinas | 1 | 1.3 |
| Better availability of information online | 3 | 3.9 | Ban bareboat charters for those without a skipper ticket/private boat licence | 1 | 1.3 |
| No SCUBA feeding shark tourist activities | 2 | 2.6 | Ban fishing in anchorages | 1 | 1.3 |
| An increase in the number of green zones (no fishing areas) | 2 | 2.6 | Not sure | 1 | 1.3 |

| | | | | | |
|---|---|---|---|---|---|
| Update information books (i.e. 100 Magic Miles) | 1 | 1.3 | **Total** | **77** | **100** |

*1 response eliminated as an outlier

**Question 30: Do You Believe the Existing Safety Messages Should Be More Widely Publicised?**

Of 193 respondents 105 (54.4%) believe that existing safety messages should be more widely publicised (Figure 27). This particularly related to the suggested requirement for 'compulsory briefings for all charter boat/tourist operators (25.25%); an 'increased media presence' (TV, radio, newspapers); an 'improved awareness campaign' (12.12%) and 'improved signage' (10.10%) (Table 32).

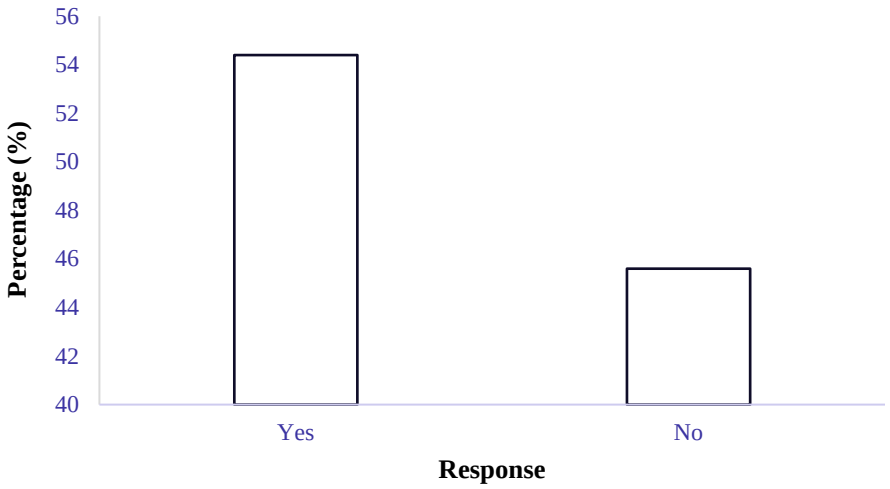


Figure 27: The percentage of respondents that believe existing messages should be more widely publicised (n=193).

**If yes, describe how.**

Table 32: Suggested measures (by respondents) to increase the publicity of existing safety messages (n=68).

| Measure | Frequency | Percentage | Measure | Frequency | Percentage |
|---|---|---|---|---|---|
| Compulsory briefing for charter boat/tourist operators | 25 | 25.25 | Reduction of waste being disposed of from boats | 2 | 2.02 |
| Increased media presence (TV, radio, newspapers, online) | 13 | 13.13 | Inclusion of better information in 100 magic miles | 2 | 2.02 |
| Improved awareness campaign | 12 | 12.12 | Provision of marine radio messages concerning sightings | 2 | 2.02 |

| | | | | | |
|---|---|---|---|---|---|
| Improved signage | 10 | 10.10 | Provision of in school education | 2 | 2.02 |
| Increase in printed literature (e.g. posters/pamphlets) in the local area | 7 | 7.07 | Provision of inflight information | 2 | 2.02 |
| Information provided to all arriving tourists | 6 | 6.06 | Provision of messages similar to crocs/marine stingers | 1 | 1.01 |
| Information provided in all languages | 6 | 6.06 | Improved mooring advice on buoys | 1 | 1.01 |
| Increased social media presence | 3 | 3.03 | Monitoring of boat users at boat ramps/marinas | 1 | 1.01 |
| Increase in personal responsibility | 3 | 3.03 | Placement of buoys in areas where swimming isn't advised | 1 | 1.01 |
| | | | **Total** | **99** | **100.00** |

*n=88 comprising 99 responses.

**Question 31: How Important Do You Think Personal Responsibility is in Reducing the Risk of Unwanted Shark Encounter?**

Most respondents (56.02%) believe personal responsibility is 'absolutely crucial' in reducing the risk of unwanted shark encounters. This was closely followed by those who believed personal responsibility to be 'very important' (25.65%) and important (10.47%). Contrastingly, only 1.58% of respondents believe personal responsibility to be completely irrelevant (Table 33; Figure 28).

Table 33: The importance given by respondents in relation to **personal responsibility** in reducing the risk of unwanted shark encounters ranging from (1) completely irrelevant to (8) absolutely crucial (n=191).

| | Completely Irrelevant | Not Really Relevant | Unimportant | Somewhat unimportant | Somewhat important | Important | Very Important | Absolutely Crucial | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Frequency** | 3 | 1 | 0 | 2 | 9 | 20 | 49 | 107 | 191 |
| **Percentage** | 1.58 | 0.52 | 0.00 | 1.05 | 4.71 | 10.47 | 25.65 | 56.02 | 100.00 |

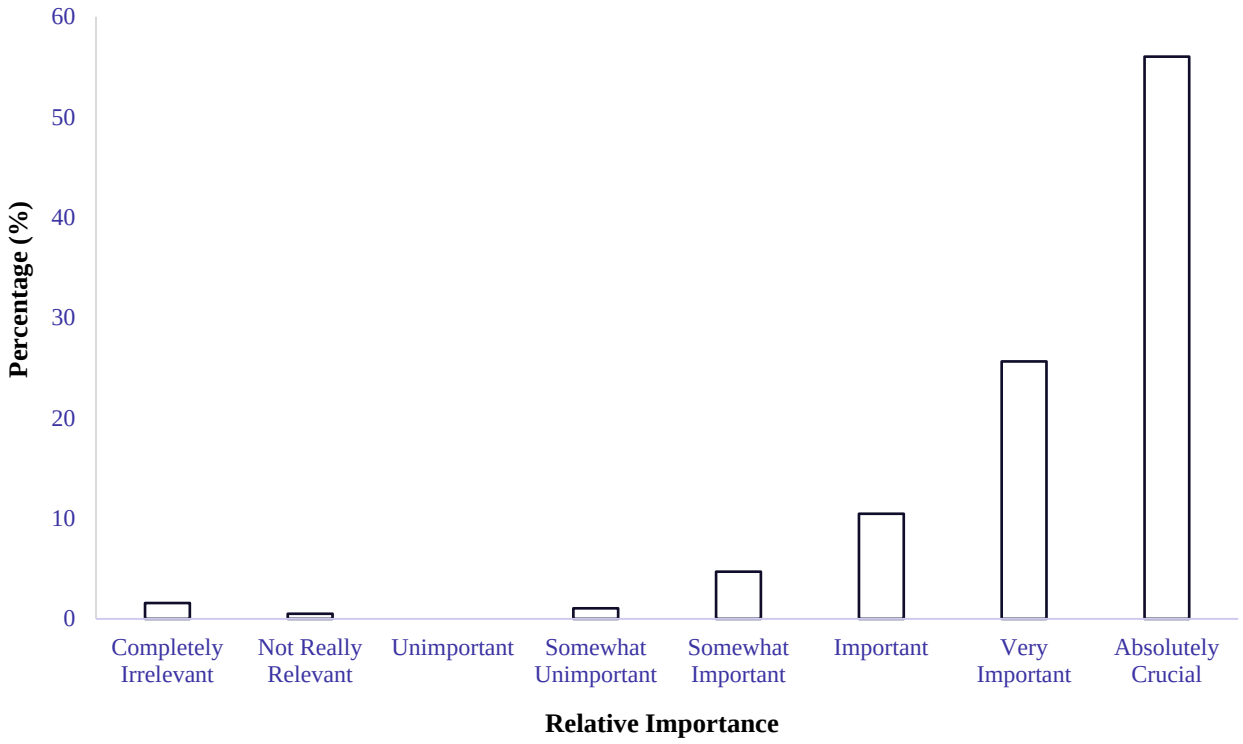


Figure 28: The importance given by respondents in relation to personal responsibility in reducing the risk of unwanted shark encounters (n=191).

**Question 32: What If Anything, Do You Think Could Cause an Increase in Unwanted Shark Encounters?**

Numerous suggestions were made by respondents regarding an explanation for the increase in unwanted shark encounters in the Whitsundays. This primarily related to a lack of awareness/ignoring shark safe practices (20.90%). This was followed by the continued practice of discarding food waste/fish remains off boats (14.43%), and an increase in tourism/charter boat operations in the area (7.96%). Other human interactions with the environment that were believed by respondents to influence unwanted shark encounters included changes in food supply as a result of overfishing (10.95%); environmental change (e.g. reef decline) (4.95%); extreme weather events (e.g. cyclones) (4.95%) and an increase in terrestrial runoff (0.99%) (Table 34).

Table 34: Suggested explanations for the increase in unwanted shark encounters in the Whitsundays (n=138).

| Response Category | Frequency | Percentage | Response Category | Frequency | Percentage |
|---|---|---|---|---|---|
| Lack of awareness/ignoring shark safe practices | 42 | 20.90 | Use of lights in the water after dark | 3 | 1.49 |
| Discarding food/fish waste off boats | 29 | 14.43 | Increase in the number of Green zones | 2 | 0.99 |
| Overfishing | 22 | 10.95 | Lack of response by authorities | 2 | 0.99 |
| Increase in tourism/charter boat operations | 16 | 7.96 | Increase in whale migration | 2 | 0.99 |
| Increase in shark populations | 13 | 6.47 | Increase in recreational fishing | 2 | 0.99 |
| Lack of awareness of safe swimming areas/practices | 12 | 5.97 | Increase in the number of sick/injured sharks | 2 | 0.99 |
| Environmental change (e.g. reef deterioration) | 9 | 4.48 | Lack of education in schools | 1 | 0.99 |
| Extreme weather events (e.g. cyclones) | 9 | 4.48 | Removal of apex shark species | 1 | 0.99 |
| No shark culling | 8 | 3.98 | Tourist usage of waters in breeding season | 1 | 0.99 |
| Reductions in shark fishing | 8 | 3.98 | Cessation of electronic protective device development | 1 | 0.99 |
| Don't know | 6 | 2.99 | Mixed use zoning in marine park | 1 | 0.99 |
| Discarding holding (sewage) tanks from boats | 4 | 1.99 | Increase in terrestrial runoff | 1 | 0.99 |
| Increase in whale carcasses | 4 | 1.99 | **Total** | **201** | **100.00** |

*n=138 comprising 201 responses

**Question 33: For Each of These Existing or Potential Measures, Please Answer How Effective You Believe the Measure Is/Would Be for Reducing the Risk of Unwanted Shark Encounters for Swimmers in the Whitsundays.**

Respondents believed the most effective measure to reducing the risk of unwanted shark encounters to be education of 'shark smart' behaviours, with 40.74% of responses ranking this technique 'very effective'. Contrastingly, drumlines were considered the least effective measure, with 27.81% of

respondents considering them 'completely ineffective'. This was closely followed by shark nets, with a 27.27% response of 'completely ineffective'. The majority of respondents believe a regular rubbish pick up from anchored vessels would be 'effective' (35.45%); whilst 37.89% believed shark deterrent technology would be 'somewhat effective' (Table 35; Figure 29).

Table 35: The effectiveness of contemporary measures in reducing the risk of unwanted shark encounters within the Whitsundays, ranked on a scale from 1 (completely ineffective) to 5 (very effective).

| Safety Measure | Completely Ineffective | Not Effective | Somewhat Effective | Effective | Very Effective | Total |
|---|---|---|---|---|---|---|
| **Educating people about 'shark smart' behaviours** | | | | | | |
| Frequency | 3 | 8 | 34 | 67 | 77 | **189** |
| Percentage | 1.59 | 4.23 | 17.99 | 35.45 | 40.74 | **100.00** |
| **A regular rubbish pick-up from anchored vessels** | | | | | | |
| Frequency | 21 | 35 | 47 | 46 | 39 | **188** |
| Percentage | 11.17 | 18.62 | 25.00 | 24.47 | 20.74 | **100.00** |
| **Shark deterrent technology (e.g. shark shield)** | | | | | | |
| Frequency | 15 | 34 | 72 | 52 | 17 | **190** |
| Percentage | 7.89 | 17.89 | 37.89 | 27.37 | 8.95 | **100.00** |
| **Drumlines** | | | | | | |
| Frequency | 52 | 47 | 50 | 24 | 14 | **187** |
| Percentage | 27.81 | 25.13 | 26.74 | 12.83 | 7.49 | **100.00** |
| **Shark nets** | | | | | | |
| Frequency | 51 | 44 | 50 | 28 | 14 | **187** |
| Percentage | 27.27 | 23.53 | 26.74 | 14.97 | 7.49 | **100.00** |
| **Warning signs and markers** | | | | | | |
| Frequency | 8 | 12 | 68 | 58 | 44 | **190** |
| Percentage | 4.21 | 6.32 | 35.79 | 30.53 | 23.16 | **100.00** |

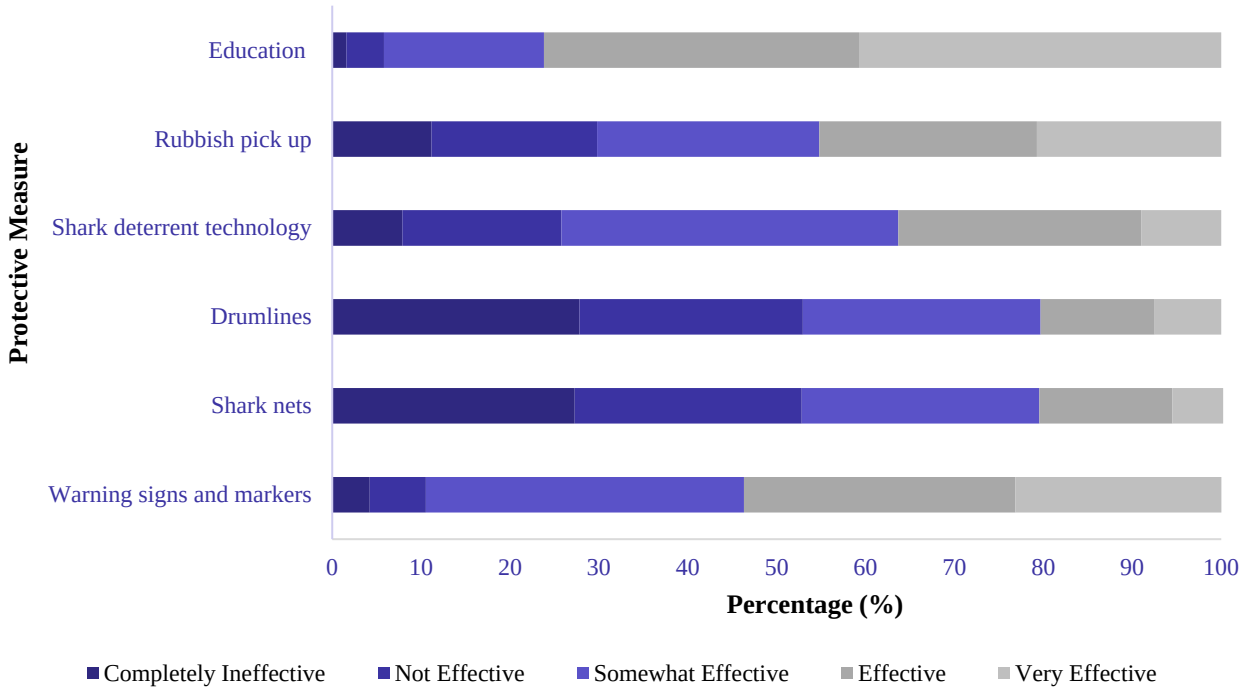


Figure 29: The percentage of respondents that believe protective measures are effective, ranging on a scale from 1 (completely ineffective) to 5 (very effective).

**Question 34: Are There Any Other Management Measures You Believe Should Be Implemented in Order to Decrease the Risk of Shark Incidences for Swimmers?**

Of 174 respondents, 41.40% (n=72) believed that there are additional management measures that should be implemented to decrease the risk of shark incidences for swimmers (Figure 30). Primary suggestions included increasing the availability of shark smart practices (19.35%); emphasising the importance of personal responsibility (9.68%); introducing monitoring of shark populations (9.68%) and making tourism operator briefings mandatory (7.53%) (Table 36). The remaining respondents (n=102 (58.6%)) did not believe any additional measures are required.

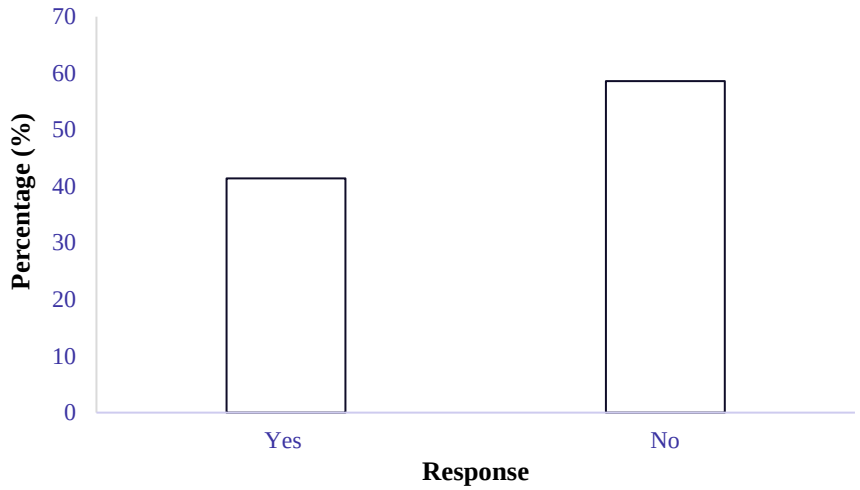


Figure 30: The percentage of respondents that believe additional management measures should be implemented to decrease the risk of shark incidents in the Whitsundays (n=174).

**If yes, what other management measures do you think should be introduced?**

Table 36: Additional management measures proposed by respondents to decrease the risk of shark incidences in the Whitsundays (n=72).

| Measure | Frequency | Percentage | Measure | Frequency | Percentage |
|---|---|---|---|---|---|
| Increase availability of information | 18 | 19.35 | Implement updates on VHF | 2 | 2.15 |
| None, it's about personal responsibility | 9 | 9.68 | Develop tech to keep sharks away | 2 | 2.15 |
| Introduce monitoring of populations | 9 | 9.68 | Don't know | 1 | 1.08 |
| Make tourism operator briefings mandatory | 7 | 7.53 | Introduce rubbish collections | 1 | 1.08 |
| Re-introduce shark fishing | 6 | 6.45 | Re-introduce drum lines | 1 | 1.08 |
| Re-introduce culling | 6 | 6.45 | Integrate local expertise into management | 1 | 1.08 |
| Research changing environment conditions | 4 | 4.30 | Build more sea baths | 1 | 1.08 |
| Make it illegal to throw food scraps/fish waste in swimming areas | 3 | 3.23 | Fine swimmers in unsafe locations | 1 | 1.08 |
| More effective signage | 3 | 3.23 | Implement swimming times | 1 | 1.08 |
| Place shark enclosures at popular beaches | 3 | 3.23 | Educate in schools | 1 | 1.08 |
| Limit tourism numbers | 3 | 3.23 | Reduce fishing | 1 | 1.08 |
| Introduce personal shark protectors | 2 | 2.15 | Ban fish attracting lights in swimming areas | 1 | 1.08 |

| | | | | | |
|---|---|---|---|---|---|
| Patrol shark hotspots | 2 | 2.15 | Ban fishing in anchorages | 1 | 108 |
| Educate fishers about fish waste | 2 | 2.15 | **Total** | **93** | **100.00** |

n=72 comprising 93 responses

# 4.8 | Boat usage patterns - Nara Inlet

**Summary:** The majority of respondents have visited Nara Inlet more than 20 times (38.29%). Many respondents would not swim here (19.01%), mentioning that Nara Inlet was perceived to be a shark breeding ground (10.74%). Most respondents first visited Nara Inlet in 2016 (10.53%), and last visited in 2018 (45.40%). On average, day-trip visitors stayed at Nara Inlet for 11 hours while those staying overnight stayed an average of 3 days. The main activities conducted here were going ashore to explore (29.09%) and relaxing on vessels (29.85%). Other activities included visiting the aboriginal cave paintings (18.52%) and exploring in a sailing dinghy (14.81%). The majority of respondents believe that there has an increase in boat number over time (47.37%). Reasons for this included the good anchorage of the location (24.37%) given Nara Inlet's protection from bad weather conditions.

**Question 35: How Many Times Have You Been to Nara Inlet?**

The majority of respondents have visit Nara Inlet more than 20 times (n=72 (38.92%)); with only 8 respondents (4.32%) never visiting this location (Table 37; Figure 31). Respondents other knowledge (n=90) of this area primarily related to the fact that they 'wouldn't/don't swim here' (19.01%); recognising Nara Inlet as a 'shark breeding ground' (10.74%); or that they swim/have swum here in the past (11.57%) (Table 38).

Table 37: The number of time respondents have visited Nara Inlet (n=185).

| Number of Visits | Never Visited | Once | 2-5 Visits | 6-10 Visits | 11-20 Visits | More than 20 | Total |
|---|---|---|---|---|---|---|---|
| **Frequency** | 8 | 9 | 32 | 36 | 28 | 72 | 185 |
| **Percentage** | 4.32 | 4.86 | 17.30 | 19.46 | 15.14 | 38.92 | 100.00 |

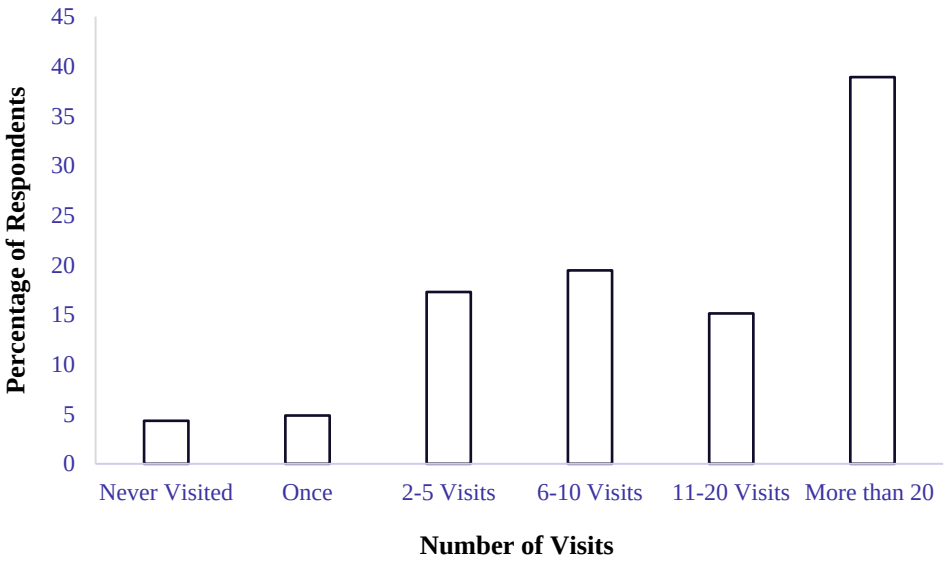


Figure 31: The percentage of respondents (n=185) that have visited Nara Inlet based on number of visits.

**Is there anything else you'd like to add about your knowledge and experience with this location?**

Table 38: Respondents other knowledge of Nara Inlet (n=90).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| I wouldn't/don't swim here | 23 | 19.01 | Good anchorage | 3 | 2.48 |
| I have swum/swim here | 14 | 11.57 | I have seen shark here | 3 | 2.48 |
| A known shark breeding ground | 13 | 10.74 | I have fished here | 1 | 0.83 |
| Beautiful & historic location | 9 | 7.44 | There is a high concentration of rays here | 1 | 0.83 |
| High concentrations/breeding ground for hammerheads | 8 | 6.61 | I wouldn't encourage tourists to swim here | 1 | 0.83 |
| Poor visibility | 8 | 6.61 | National Park Advice should be followed here | 1 | 0.83 |
| I have never seen sharks here | 8 | 6.61 | 'Do not swim' signs are needed | 1 | 0.83 |
| I will no longer swim here | 6 | 4.96 | A safe spot to swim | 1 | 0.83 |
| A lot of boats anchor here | 5 | 4.13 | Surprised no attacks have happened here | 1 | 0.83 |
| Holding tanks shouldn't be pumped out here | 4 | 3.31 | Tour operators use this area to snorkel | 1 | 0.83 |

| | | | | | |
|---|---|---|---|---|---|
| There is a high concentration of sharks here | 4 | 3.31 | A potato cod can be found here | 1 | 0.83 |
| A lot of food waste/fish scraps are discarded here | 3 | 2.48 | **Total** | **121** | **100.00** |

*n=90 comprising 121 responses

**Question 36: What is the Approximate Date of Your First Visit to Nara Inlet?**

First visit dates to Nara Inlet ranged from 1960-2019, with the most common year 2016 (10.53%) (Table 39).

Table 39: Respondents approximate first visit to Nara Inlet by year (n=152).

| Year | Frequency | Percentage | Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|---|---|---|
| 1960 | 1 | 0.66 | 1988 | 5 | 3.29 | 2009 | 4 | 2.63 |
| 1972 | 1 | 0.66 | 1998 | 7 | 4.61 | 2010 | 8 | 5.26 |
| 1975 | 1 | 0.66 | 1990 | 1 | 0.66 | 2011 | 3 | 1.97 |
| 1978 | 1 | 0.66 | 2000 | 7 | 4.61 | 2012 | 5 | 3.29 |
| 1979 | 1 | 0.66 | 2001 | 7 | 4.61 | 2013 | 3 | 1.97 |
| 1980 | 5 | 3.29 | 2002 | 1 | 0.66 | 2014 | 4 | 2.63 |
| 1981 | 1 | 0.66 | 2003 | 4 | 2.63 | 2015 | 4 | 2.63 |
| 1982 | 1 | 0.66 | 2004 | 5 | 3.29 | 2016 | 16 | 10.53 |
| 1983 | 2 | 1.32 | 2005 | 3 | 1.97 | 2017 | 5 | 3.29 |
| 1984 | 1 | 0.66 | 2006 | 4 | 2.63 | 2018 | 14 | 9.21 |
| 1985 | 4 | 2.63 | 2008 | 4 | 2.63 | 2019 | 2 | 1.32 |
| 1987 | 1 | 0.66 | | | | **Total** | **152** | **100** |

**Question 37: What is the Approximate Last Date of Your Visit to Nara Inlet?**

Last visits to Nara Inlet ranged from 2003-2019, with 2018 being the most common (45.40%) (Table 40).

Table 40: Respondents last visit to Nara Inlet by year (n=163).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 2003 | 1 | 0.61 | 2015 | 3 | 1.84 |
| 2010 | 1 | 0.61 | 2016 | 3 | 1.84 |
| 2011 | 2 | 1.23 | 2017 | 18 | 11.04 |
| 2013 | 2 | 1.23 | 2018 | 74 | 45.40 |
| 2014 | 1 | 0.61 | 2019 | 58 | 35.58 |
| | | | **Total** | **163** | **100.00** |

**Question 38: How Long Did You Stay at Nara Inlet (Hours & Days)?**

On average, respondents stayed in Nara Inlet for 10.78 hours (+/-11.64); with the most common length of time spent at this location 3 hours (13.79%) (Table 41; Figure 32).

Table 41: The number of hours respondents have stayed in Nara Inlet (n=58).

| Hours | Frequency | Percentage | Hours | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 7 | 12.07 | 12 | 5 | 8.62 |
| 2 | 5 | 8.62 | 14 | 2 | 3.45 |
| 3 | 8 | 13.79 | 15 | 1 | 1.72 |
| 4 | 4 | 6.90 | 16 | 1 | 1.72 |
| 5 | 7 | 12.07 | 18 | 2 | 3.45 |
| 6 | 1 | 1.72 | 24 | 8 | 13.79 |
| 8 | 2 | 3.45 | 48 | 3 | 5.17 |
| 10 | 2 | 3.45 | **Total** | **58** | **100.00** |

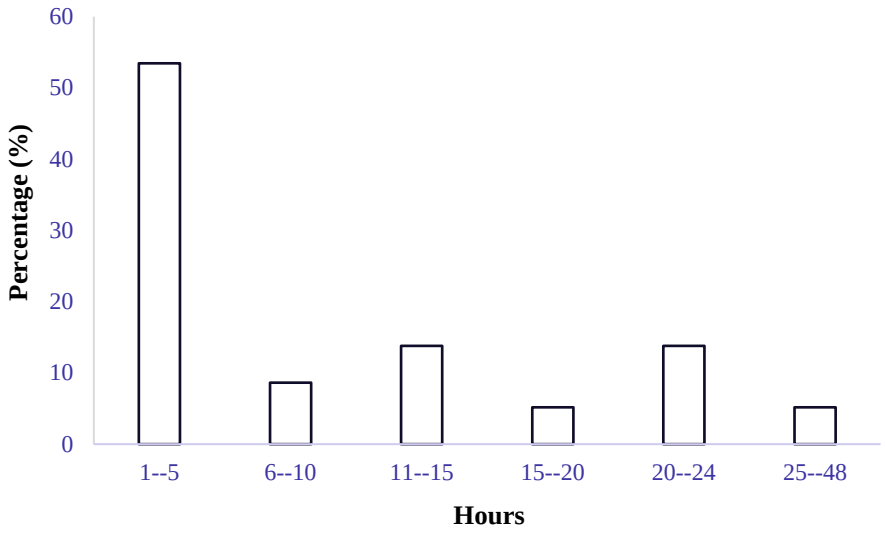


Figure 32: The amount of time spent by respondents (%) in Nara Inlet (n=58).

The most common number of days spent at this location is 1 day (46.62%) to 2 days (34.46) (Table 42). Only a few respondents stayed for more than 10 days.

Table 42: The number of days respondents spend in Nara Inlet (n=148).

| Days stayed | Frequency | Percentage | Days stayed | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 69 | 46.62 | 10 | 3 | 2.03 |
| 2 | 51 | 34.46 | 12 | 1 | 0.68 |
| 3 | 17 | 11.49 | 18 | 1 | 0.68 |
| 4 | 3 | 2.03 | 48 | 1 | 0.68 |
| 7 | 1 | 0.68 | 100 | 1 | 0.68 |
| | | | **Total** | **148** | **100.00** |

**Question 39: What Activities Did You Do in Nara Inlet?**

The main activity conducted in Nara Inlet included visitors going ashore to visit the beach/island (n=153 (29.09%)) and relaxing on the vessel (n=157 (29.85%)). The least popular activities in this area were swimming (n=26 (4.94%)) and paddle boarding (n=30 (5.70)) (Table 43; Figure 33). The most popular other activity (n=27) named by respondents involved visiting the aboriginal cave paintings at Nara Inlet (18.52%), using a sailing dinghy (14.81%) and diving (11.11%) (Table 44).

Table 43: The number of respondents that undertake leisure activities in Nara Inlet (n=176).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Swimming | 47 | 8.94 | Paddle boarding | 30 | 5.70 |
| Snorkelling | 26 | 4.94 | Going ashore (visiting beach/island) | 153 | 29.09 |
| Fishing | 55 | 10.46 | Relaxed on vessel | 157 | 29.85 |
| Kayaking | 32 | 6.08 | Other activity | 26 | 4.94 |
| | | | **Total** | **526** | **100.00** |

*n=176 corresponding to 526 responses

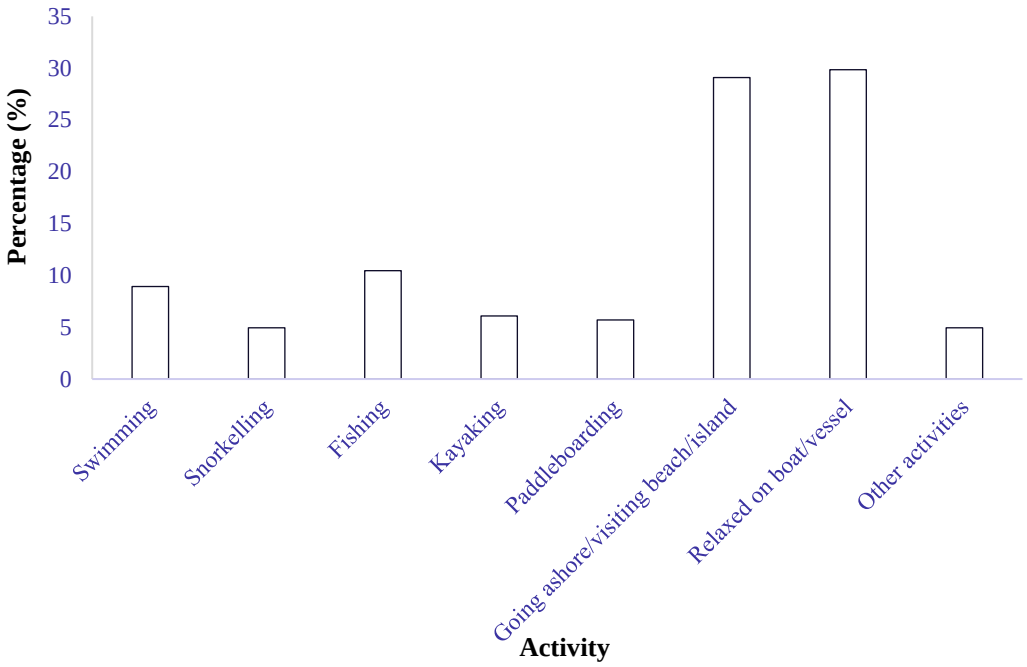


Figure 33: The percentage of respondents partaking in different leisure activities at Nara Inlet (n=176).

Table 44: Other activities conducted by respondents at Nara Inlet (n=27).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Visited cave paintings | 5 | 18.52 | Crabbing | 1 | 3.70 |
| Sailing dinghy | 4 | 14.81 | Bushwalk | 1 | 3.70 |
| Diving | 3 | 11.11 | Paddled in shallows | 1 | 3.70 |
| Watched marine wildlife | 2 | 7.41 | Slept | 1 | 3.70 |
| Visited waterfalls | 2 | 7.41 | Ate | 1 | 3.70 |
| Sheltered from weather | 2 | 7.41 | Water sports | 1 | 3.70 |
| Relaxed | 2 | 7.41 | Visited friend | 1 | 3.70 |
| | | | **Total** | **27** | **100.00** |

**Question 40: If You Have Been to Nara Inlet on Multiple Trips, Have You Noticed a Change in the Number of Boats in the Bay/Inlet Over Time?**

User perceptions of changes in use varied widely. Many respondents (n=49 (28.65%)) believe that there has been no change in the number of boats in Nara Inlet over time. However, this is closely followed by those that believe there has been a 'lot more' (n=44 (25.73%)) or a 'few more' (n=37 (21.64%)) boats, making an increase in boats the most common response. A small number of respondents believe there has been a decrease in the number of boats, either by a 'few' (n=7 (4.09%)) or a 'lot' (n=4 (2.34%)) (Table 45; Figure 34).

Table 45: The amount that respondents have noticed a change in the number of boats in Nara Inlet over time (n=171).

| Boat Number | Frequency | Percentage | Boat Number | Frequency | Percentage |
|---|---|---|---|---|---|
| Can't tell | 30 | 17.54 | Lot less | 4 | 2.34 |
| Few less | 7 | 4.09 | Lot more | 44 | 25.73 |
| Few more | 37 | 21.64 | No change | 49 | 28.65 |
| | | | **Total** | | |

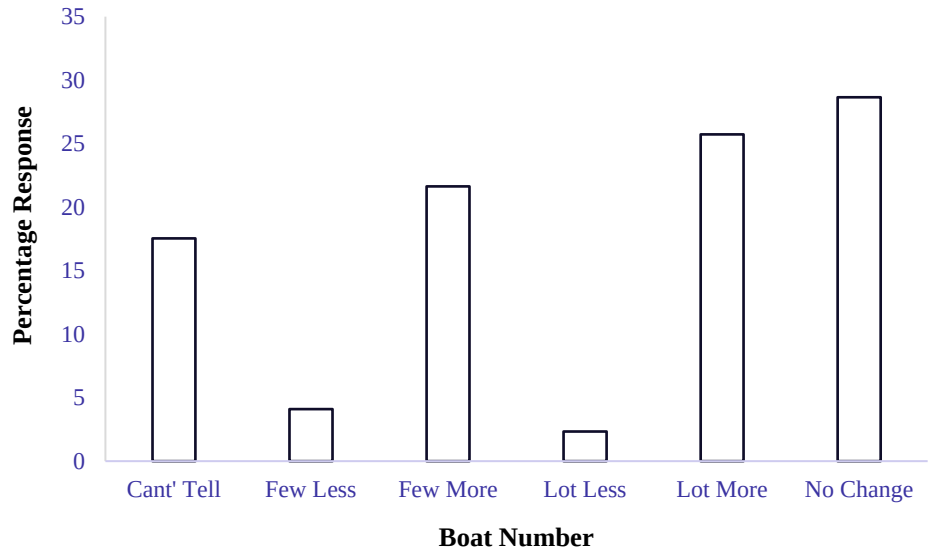


Figure 34: The percentage of respondents that have noticed a change in boat number at Nara Inlet over time ranging from 'no change' to a 'lot more' (n=171).

**Question 41: If You Have Noticed a Change in the Number of Boats in Nara Inlet, What Do You Think Caused it?**

The majority of respondents (24.37%) believe the change in boat number at Nara Inlet is related to the location as a good anchorage, with its protected and sheltered position making it appropriate for bad weather conditions and novice boaties. This is followed by the belief that there has been an increase in the number of charter vessels (16.81%); boats in general (14.29%) and tourists (13.45%). Some respondents also believe that a fear of sharks in other locations such as Cid Harbour has pushed boats to use Nara Inlet as an alternate location (7.56%) (Table 46).

Table 46: Respondents explanations for the change in boat number in Nara Inlet over time (n=88).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Good anchorage (protected and sheltered) | 29 | 24.37 | Reef in good condition (post Cyclone Debbie) | 5 | 4.20 |
| Increase in charter vessels | 20 | 16.81 | Increased regional population | 4 | 3.36 |
| Increased number of boats | 17 | 14.29 | Less tourists | 4 | 3.36 |
| Increase in tourists | 16 | 13.45 | Reduction in charter boats | 3 | 2.52 |
| Fear of sharks in other locations | 9 | 7.56 | Not sure | 3 | 2.52 |
| High season popularity | 7 | 5.88 | Word of mouth | 2 | 1.68 |
| | | | **Total** | **119** | **100.00** |

*n=88 corresponding to 119 responses

# 4.9 | Boat usage patterns – Macona Inlet

**Summary:** Most respondents have visited Macona Inlet either 2-5 times (24.59%) or never (23.50%). Those that have not visited this inlet relate it to difficulty in access (10.26%). Most respondents first visited (and last visited) Macona Inlet in 2018 (9.32%; 47.67%). On average, day visitors stay at Macona Inlet for 9.88 hours (+/-14.91) while those staying overnight stayed for 2.19 days (+/-4.59). The most popular activities here were relaxing on vessels (35.04%) and visiting the beach/island (23.08%). Most respondents have noticed an increase in boat number at Macona Inlet (47.37%). This is believed to relate to an increase in tourism (15.22%) and boat number (13.04%).

**Question 42: How Many Times Have You Been to Macona Inlet?**

The majority of respondents have visited Macona Inlet 2-5 times (24.59%); however, this is closely followed by 23.50% of respondents that have never visited this area (Table 47; Figure 35). Of the respondents that have visited the area and chose to provide additional information (n=28), many focused on the lack of accessibility to the Inlet. Here, 15.38% of respondents mentioned its shallow nature and 10.26% its difficult entry point. This likely explains the fact that Macona Inlet was considered quieter than other areas (12.82%) (Table 48).

Table 47: The number of times respondents have been to Macona Inlet (n=183).

| Number of Visits | Never Visited | Once | 2-5 Visits | 6-10 Visits | 11-20 Visits | More than 20 | Total |
|---|---|---|---|---|---|---|---|
| **Frequency** | 43 | 13 | 45 | 29 | 19 | 34 | 183 |
| **Percentage** | 23.50 | 7.10 | 24.59 | 15.85 | 10.38 | 18.58 | 100.00 |

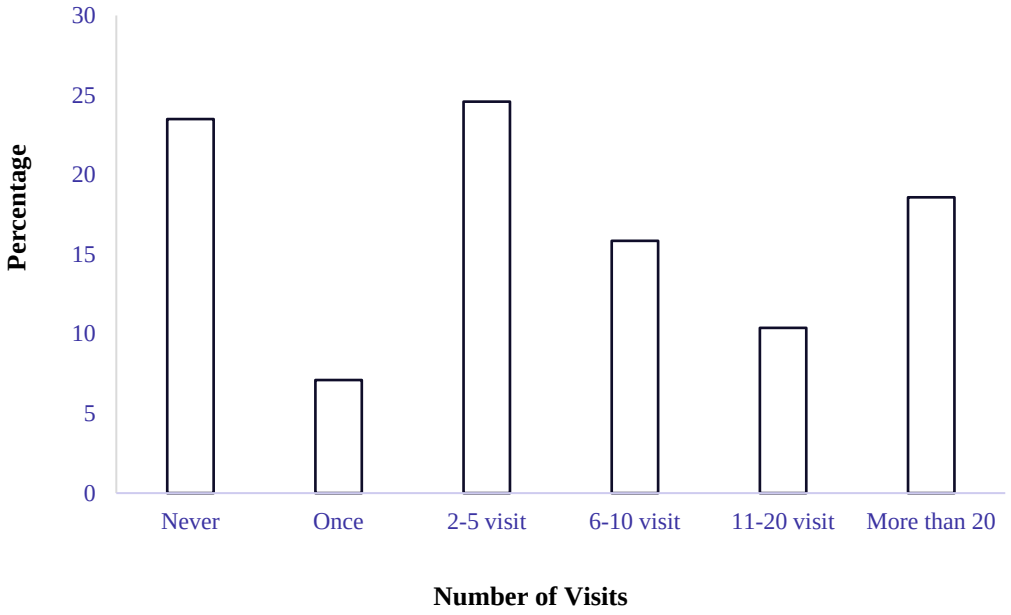


Figure 35: The number of times respondents have been to Macona Inlet; displayed as a percentage (n=183).

**Is there anything else you'd like to add about your knowledge and experience with this location?**

Table 48: Respondents other comments/knowledge of Macona Inlet (n=28).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Shallow inlet | 6 | 15.38 | I would only swim from the shore | 1 | 2.56 |
| I wouldn't/don't swim here | 5 | 12.82 | Pristine fringing reef on neap tide | 1 | 2.56 |
| Quieter than other areas | 5 | 12.82 | Lots of sand flies | 1 | 2.56 |
| Difficult entrance | 4 | 10.26 | I don't go ashore here | 1 | 2.56 |
| Chosen to visit other preferred areas | 4 | 10.26 | Many dogs brought ashore | 1 | 2.56 |
| I have seen sharks here | 3 | 7.69 | Goats on the island are an attraction | 1 | 2.56 |
| Lots of marine activity here (e.g. dolphins) | 2 | 5.13 | A permanent mooring buoy is required | 1 | 2.56 |
| I have never seen sharks here | 1 | 2.56 | No comment | 1 | 2.56 |
| Poor visibility | 1 | 2.56 | **Total** | **39** | **100.00** |

*n=28 corresponding to 39 responses

### Question 43: What is the Approximate Date of Your First Visit to Macona Inlet?

Respondents first visited Macona Inlet between 1960 and 2019; with the most common first visit year 2018 (9.32%) (Table 49).

Table 49: Respondents first visit to Macona Inlet by year (n=118).

| Year | Frequency | Percentage | Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|---|---|---|
| 1960 | 1 | 0.85 | 1990 | 1 | 0.85 | 2005 | 5 | 4.24 |
| 1970 | 1 | 0.85 | 1992 | 1 | 0.85 | 2006 | 1 | 0.85 |
| 1974 | 1 | 0.85 | 1994 | 1 | 0.85 | 2007 | 2 | 1.69 |
| 1978 | 1 | 0.85 | 1995 | 2 | 1.69 | 2009 | 4 | 3.39 |
| 1979 | 1 | 0.85 | 1996 | 1 | 0.85 | 2010 | 7 | 5.93 |
| 1980 | 4 | 3.39 | 1997 | 1 | 0.85 | 2011 | 1 | 0.85 |
| 1982 | 1 | 0.85 | 1998 | 3 | 2.54 | 2012 | 5 | 4.24 |
| 1983 | 1 | 0.85 | 1999 | 4 | 3.39 | 2013 | 3 | 2.54 |
| 1985 | 2 | 1.69 | 2000 | 5 | 4.24 | 2015 | 3 | 2.54 |
| 1986 | 1 | 0.85 | 2001 | 5 | 4.24 | 2016 | 10 | 8.47 |
| 1987 | 1 | 0.85 | 2002 | 2 | 1.69 | 2018 | 11 | 9.32 |
| 1988 | 6 | 5.08 | 2003 | 1 | 0.85 | 2019 | 4 | 3.39 |
| 1989 | 3 | 2.54 | 2004 | 2 | 1.69 | **Total** | **118** | **100.00** |

### Question 44: What is the Approximate Last Date of Your Visit to Macona Inlet?

Respondents last visited Macona Inlet between 1997-2019; with the most common last visit in 2018 (47.46%) (Table 50).

Table 50: Respondents last visit to Macona Inlet by year (n-118).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 1997 | 1 | 0.85 | 2013 | 2 | 1.69 |
| 2000 | 1 | 0.85 | 2015 | 4 | 3.39 |
| 2005 | 2 | 1.69 | 2016 | 7 | 5.93 |
| 2006 | 1 | 0.85 | 2017 | 15 | 12.71 |
| 2007 | 1 | 0.85 | 2018 | 56 | 47.46 |
| 2009 | 2 | 1.69 | 2019 | 25 | 21.19 |
| 2011 | 1 | 0.85 | **Total** | **118** | **100.00** |

### Question 45: How Long Did You Stay at Macona Inlet?

On average, respondents stayed at Macona Inlet for 9.88 hours (+/-14.91). Most respondents spent either 1 hour (17.50%) or 2 hours (15.00%) here (Table 51).

Table 51: The number of hours respondents stayed at Macona Inlet (n=40).

| Hours | Frequency | Percentage | Hours | Frequency | Percentage |
|---|---|---|---|---|---|
| 0 | 1 | 2.50 | 12 | 3 | 7.50 |
| 1 | 7 | 17.50 | 14 | 1 | 2.50 |
| 2 | 6 | 15.00 | 15 | 1 | 2.50 |
| 3 | 3 | 7.50 | 16 | 1 | 2.50 |
| 4 | 4 | 10.00 | 24 | 2 | 5.00 |
| 5 | 4 | 10.00 | 48 | 2 | 5.00 |
| 8 | 3 | 7.50 | 72 | 1 | 2.50 |
| 10 | 1 | 2.50 | **Total** | **40** | **100.00** |

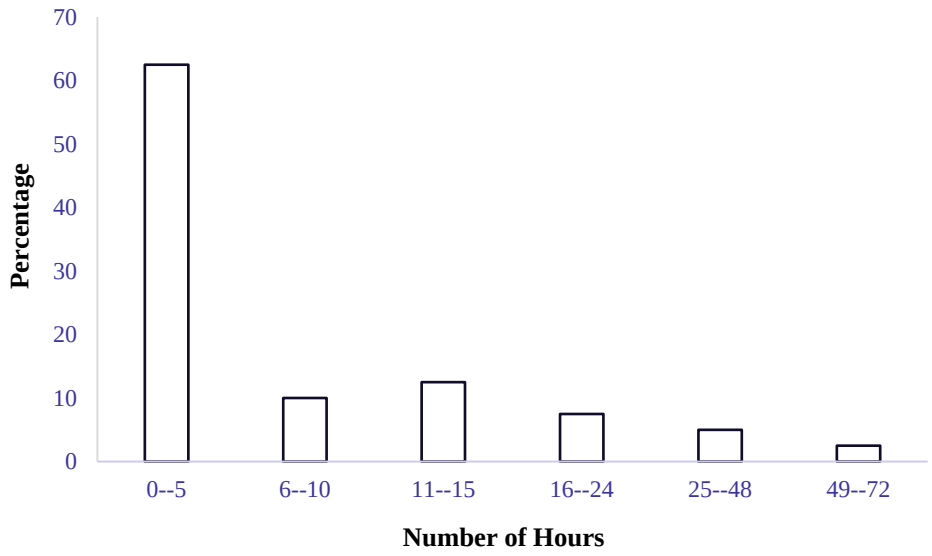


Figure 36: The percentage of respondents that spend time in Macona Inlet (by hour) (n=40).

Respondents spent an average of 2.19 days (+/-4.59) in Macona Inlet. Most respondents stayed for a single day (54.31%) (Table 52).

Table 52: The amount of days respondents spent in Macona Inlet (n=115).

| Days | Frequency | Percentage | Days | Frequency | Percentage |
|---|---|---|---|---|---|
| 0 | 2 | 1.72 | 5 | 1 | 0.86 |
| 1 | 63 | 54.31 | 7 | 2 | 1.72 |
| 2 | 36 | 31.03 | 10 | 1 | 0.86 |
| 3 | 6 | 5.17 | 12 | 1 | 0.86 |
| 4 | 3 | 2.59 | 48 | 1 | 0.86 |
| | | | **Total** | **116** | **100.00** |

**Question 46: What Activities Did You Do in Macona Inlet**

The most popular activity in Macona Inlet involved relaxing on vessels (35.04%) followed by visiting the beach island (23.08%). The least popular activity was paddleboarding (3.99%) (Table 53; Figure 37). Other activities conducted by respondents (n=12) included sailing in dinghy's (25.00%) and social events such as Christmas parties and social cruises (25.00%) (Table 54).

Table 53: The activities carried out by respondents in Macona Inlet (n=140).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Swimming | 35 | 9.97 | Paddleboarding | 14 | 3.99 |
| Snorkelling | 21 | 5.98 | Going ashore (visiting beach/island) | 81 | 23.08 |
| Fishing | 42 | 11.97 | Relaxed on vessel | 123 | 35.04 |
| Kayaking | 23 | 6.55 | Other activity | 12 | 3.42 |
| | | | **Total** | **351** | **100.00** |

*n=140 corresponding to 351 responses

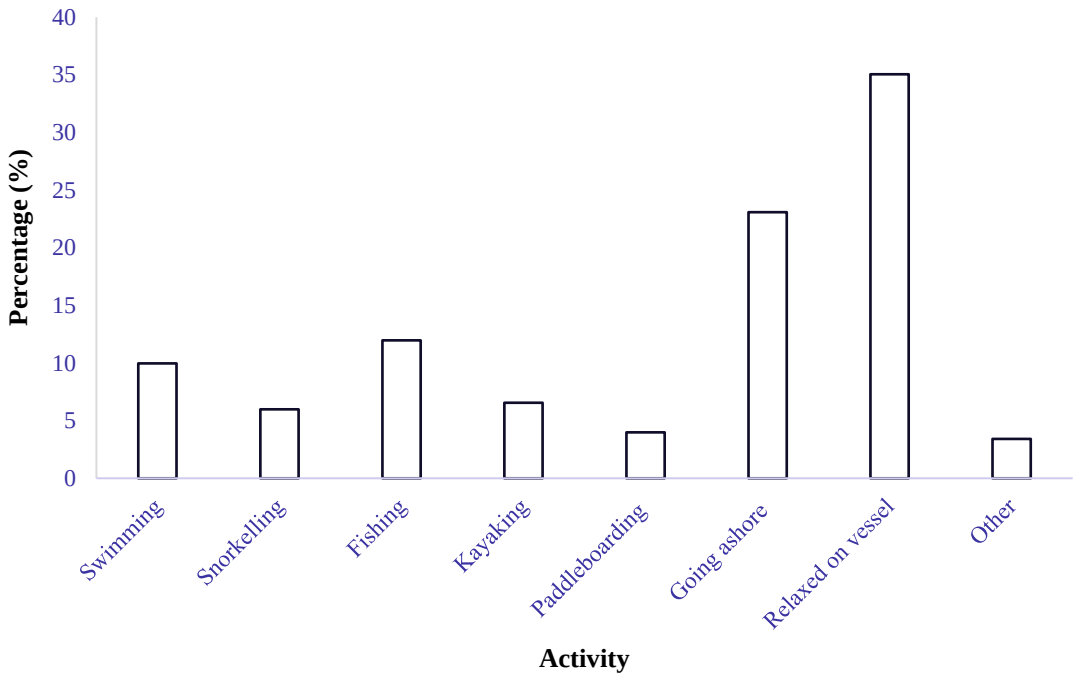


Figure 37: The percentage of respondents that undertake leisure activities in Macona Inlet (n=140).

Table 54: Other activities conducted by respondents in Macona Inlet (n=12).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Sailing dinghy | 3 | 25.00 | Visited friends | 1 | 8.33 |
| Social events | 3 | 25.00 | Diving | 1 | 8.33 |
| Explore beach | 2 | 16.67 | Search and rescue | 1 | 8.33 |
| Water sports | 1 | 8.33 | **Total** | **25** | **100.00** |

**Question 47: If You Have Been to Macona Inlet on Multiple Trips, Have You Noticed a Change in the Number of Boats in the Bay/Inlet Over Time?**

Most respondents (28.65%) have not noticed or could not tell (17.54%) if a change in boat number in Macona Inlet has occurred over time. However, more respondents agreed that there had been an increase by a few (21.64%) or a lot (25.73%) compared to a decrease (Table 55; Figure 38).

Table 55: The number of respondents that have noticed a change in boat number in Macona Inlet over time (n=94).

| Boat Number | Frequency | Percentage | Boat Number | Frequency | Percentage |
|---|---|---|---|---|---|
| Can't tell | 30 | 17.54 | Lot less | 4 | 2.34 |
| Few less | 7 | 4.09 | Lot more | 44 | 25.73 |
| Few more | 37 | 21.64 | No change | 49 | 28.65 |
| | | | **Total** | **94** | **100.00** |

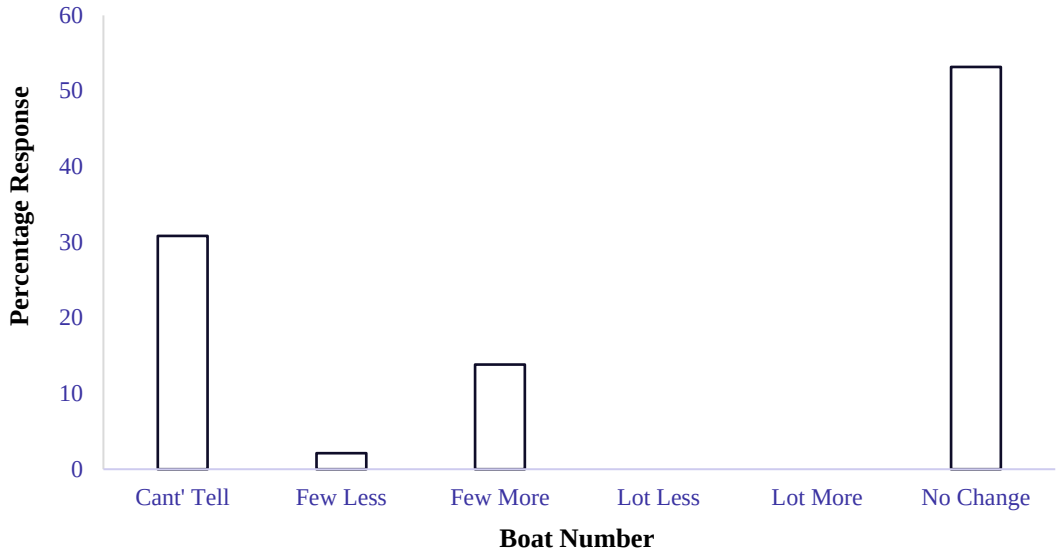


Figure 38: The percentage of respondents that have noticed a change in boat number in Macona Inlet over time (n=94).

**Question 48: If You Have Noticed a Change in the Number of Boats in Macona Inlet, What Do You Think Caused it?**

The majority of respondents attributed changes to the number of boats in Macona Inlet to increased tourism (15.22%) and boat numbers (13.04%). Additionally, 13.04% of respondents believe Macona Inlet to be a good anchorage, yet less popular (10.87%) than other areas in the region (Table 56).

Table 56: Respondents explanations for recent changes in the number of boats in Macona Inlet (n=39).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Increased tourist numbers | 7 | 15.22 | Grounding hazard | 3 | 6.52 |
| Increased boat number | 6 | 13.04 | Word of mouth | 2 | 4.35 |
| Good anchorage | 6 | 13.04 | Increased charter boats | 2 | 4.35 |
| Not sure | 6 | 13.04 | Less tourists | 1 | 2.17 |
| Less popular | 5 | 10.87 | Lack of island resorts | 1 | 2.17 |
| Increased regional population | 3 | 6.52 | Fear of sharks in other areas | 1 | 2.17 |
| Don't swim | 3 | 6.52 | **Total** | **46** | **100.00** |

# 4.10 | Boat usage patterns - Tongue Bay

**Summary:** Most respondents have visited Tongue Bay more than 20 times (27.12%). Additional comments regarding this bay related to the fact that there were too many tourists (17.31%) and it is overcrowded (13.46%); this may be related to the abundance of marine life that was cited here (13.46%) by respondents. Most respondents first (and last) visited Tongue Bay in 2018 (9.40%; 29.17%). On average, day visitors stayed at Tongue Bay for 6.19 hours (+/-8.12) while overnight visitors stayed for 2 days (+/-5.10). The most popular activities here included going ashore to explore (34.89%) and relaxing on vessels (28.02%). Most respondents have noticed a lot more boats in recent years at this location (25.73%). This was believed to be associated with an increase in tourist boats (28.74%) and tourism in general (16.09%).

**Question 49: How Many Times Have You Been to Tongue Bay?**

The majority of respondents have visited Tongue Bay more than 20 times (27.12%). However, 17.51% of participants have never visited (Table 57; Figure 39). Respondents additionally noted the high number of tourists at this location (17.31%) making the area overcrowded (13.46%). This may be related to the high abundance of marine life that respondents cited here (13.46%) (Table 58).

Table 57: The number of times respondents have been to Tongue Bay (n=177).

| Number of Visits | Never Visited | Once | 2-5 Visits | 6-10 Visits | 11-20 Visits | More than 20 | Total |
|---|---|---|---|---|---|---|---|
| **Frequency** | 31 | 15 | 42 | 30 | 11 | 48 | 177 |
| **Percentage** | 17.51 | 8.47 | 23.73 | 16.95 | 6.21 | 27.12 | 100.00 |

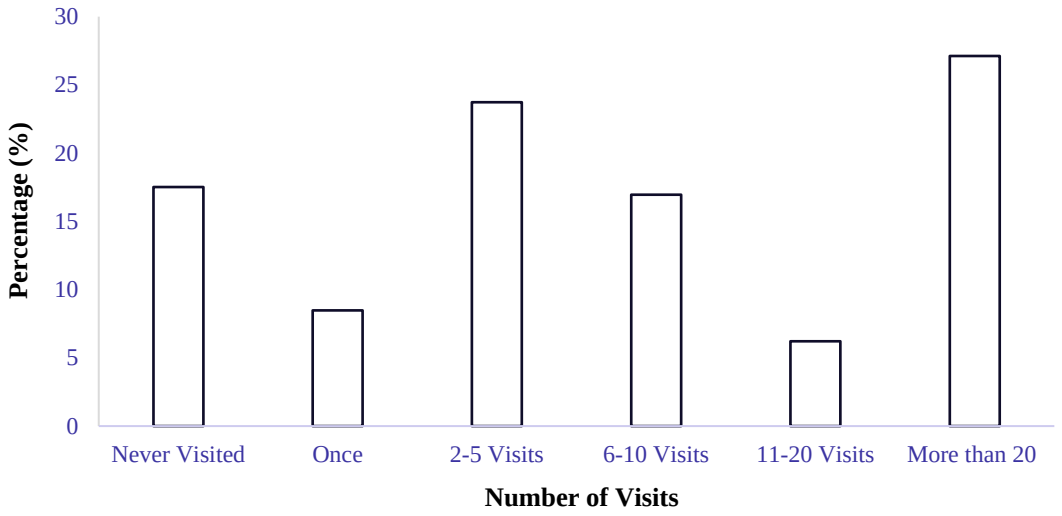


Figure 39: The number of times respondents have visited Tongue Bay (n=177).

**Is there anything else you'd like to add about your knowledge and experience with this location?**

Table 58: Additional knowledge and experience respondents provided regarding Tongue Bay (n=31).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Too many tourists | 9 | 17.31 | Good access | 1 | 1.92 |
| Overcrowded | 7 | 13.46 | Damaged signs | 1 | 1.92 |
| Abundance of marine life | 7 | 13.46 | Too many moorings | 1 | 1.92 |
| Too many tourist operators | 4 | 7.69 | Good anchorage | 1 | 1.92 |
| Too many charter boats | 4 | 7.69 | Good base for exploration | 1 | 1.92 |
| I have seen sharks here | 3 | 5.77 | Not good for swimming | 1 | 1.92 |
| More moorings required | 3 | 5.77 | Requires a jetty | 1 | 1.92 |
| Beautiful location | 2 | 3.85 | I have never seen a shark here | 1 | 1.92 |
| Good viewing platform | 2 | 3.85 | Marine life depleting here (i.e. turtles) | 1 | 1.92 |
| Bad anchorage | 2 | 3.85 | **Total** | **52** | **100.00** |

*n=31 corresponding to 52 responses

**Question 50: What is the Approximate Date of Your First Visit to Tongue Bay?**

Respondents first visited Tongue Bay between 1970 and 2019, the most common first visit year was 2018 (9.40%) (Table 59).

Table 59: Respondents first visit to Tongue Bay by year (n=117).

| Year | Frequency | Percentage | Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|---|---|---|
| 1970 | 1 | 0.85 | 1996 | 1 | 0.85 | 2009 | 5 | 4.27 |
| 1974 | 1 | 0.85 | 1997 | 1 | 0.85 | 2010 | 6 | 5.13 |
| 1978 | 1 | 0.85 | 1999 | 6 | 5.13 | 2011 | 2 | 1.71 |
| 1980 | 2 | 1.71 | 2000 | 5 | 4.27 | 2012 | 5 | 4.27 |
| 1983 | 1 | 0.85 | 2001 | 9 | 7.69 | 2013 | 3 | 2.56 |
| 1985 | 2 | 1.71 | 2002 | 1 | 0.85 | 2014 | 7 | 5.98 |
| 1987 | 2 | 1.71 | 2003 | 1 | 0.85 | 2015 | 8 | 6.84 |
| 1988 | 4 | 3.42 | 2004 | 3 | 2.56 | 2016 | 8 | 6.84 |
| 1989 | 1 | 0.85 | 2005 | 2 | 1.71 | 2017 | 4 | 3.42 |
| 1990 | 2 | 1.71 | 2006 | 2 | 1.71 | 2018 | 11 | 9.40 |
| 1994 | 1 | 0.85 | 2007 | 1 | 0.85 | 2019 | 4 | 3.42 |
| 1995 | 2 | 1.71 | 2008 | 2 | 1.71 | **Total** | **117** | **100.00** |

**Question 51: What is the Approximate Last Date of Your Visit to Tongue Bay?**

Respondents last visited between 1988 and 2019; with 2018 the most common (29.17%) (Table 60).

Table 60: Respondents last visit to Tongue Bay by year (n=120).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 1988 | 1 | 0.83 | 2015 | 3 | 2.50 |
| 1997 | 1 | 0.83 | 2016 | 4 | 3.33 |
| 2003 | 1 | 0.83 | 2017 | 15 | 12.50 |
| 2013 | 1 | 0.83 | 2018 | 47 | 39.17 |
| 2014 | 3 | 2.50 | 2019 | 44 | 36.67 |
| | | | **Total** | **120** | **100.00** |

**Question 52: How Long Did You Stay at Tongue Bay?**

The average respondent stayed at Tongue Bay for 6.19 hours (+/-8.12). Most respondents stayed between 2-4 hours (62.16%); with 3 hours the most common length of time for a visit (27.03%) (Table 61).

Table 61: The number of hours respondents spend in Tongue Bay (n=74).

| Hours | Frequency | Percentage | Hours | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 6 | 8.11 | 12 | 1 | 1.35 |
| 2 | 14 | 18.92 | 14 | 1 | 1.35 |
| 3 | 12 | 16.22 | 15 | 1 | 1.35 |
| 4 | 20 | 27.03 | 16 | 1 | 1.35 |
| 5 | 6 | 8.11 | 24 | 4 | 5.41 |
| 6 | 3 | 4.05 | 36 | 1 | 1.35 |
| 7 | 1 | 1.35 | 48 | 1 | 1.35 |
| 8 | 2 | 2.70 | **Total** | **74** | **100.00** |

Most overnight visitors spent 2 days (+/-5.10) in Tongue Bay, but most visitors stayed for one day (70.33%) (Table 62).

Table 62: The number of days respondents spend in Tongue Bay (n=91).

| Days | Frequency | Percentage | Days | Frequency | Percentage |
|---|---|---|---|---|---|
| 0 | 2 | 2.20 | 7 | 1 | 1.10 |
| 1 | 64 | 70.33 | 10 | 2 | 2.20 |
| 2 | 20 | 21.98 | 48 | 1 | 1.10 |
| 3 | 1 | 1.10 | **Total** | **91** | **100.00** |

**Question 53: What Activities Did You Do in Tongue Bay?**

The most popular activities in Tongue Bay included going ashore (34.89%); relaxing on vessels (28.02%) and swimming (10.99%) (Table 63; Figure 40).

Table 63: The activities conducted by respondents in Tongue Bay (n=142).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Swimming | 40 | 10.99 | Paddle boarding | 18 | 4.95 |
| Snorkelling | 25 | 6.87 | Going ashore (visiting beach/island) | 127 | 34.89 |
| Fishing | 19 | 5.22 | Relaxed on vessel | 102 | 28.02 |
| Kayaking | 19 | 5.22 | Other activity | 14 | 3.85 |
| | | | **Total** | **526** | **100.00** |

Other activities conducted by respondents (n=14) included diving (21.43%); turtle watching (21.43%) and visiting the Whitsundays viewpoint (21.43%) (Table 64).

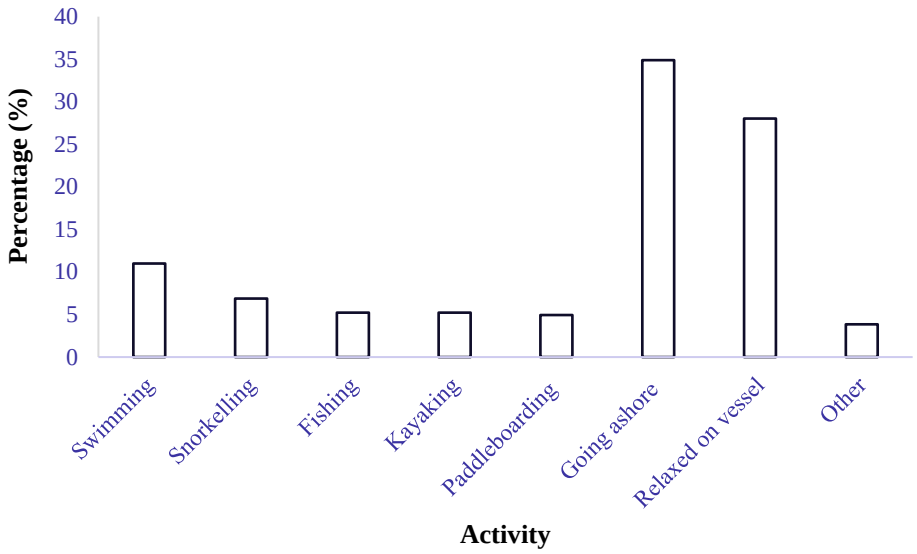


Figure 40: The activities carried out by respondents in Tongue Bay (n=142).

Table 64: Other activities conducted by respondents in Tongue Bay (n=14).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Diving | 3 | 21.43 | Vessel repair | 1 | 7.14 |
| Visit viewpoint | 3 | 21.43 | Overnight stay | 1 | 7.14 |
| Turtle watching | 3 | 21.43 | Explore in dinghy | 1 | 7.14 |
| Vessel rescue | 2 | 14.29 | **Total** | **14** | **100.00** |

**Question 54: If You Have Been to Tongue Bay on Multiple Trips, Have You Noticed a Change in the Number of Boats in the Bay/Inlet Over Time?**

Most respondents have noticed that a lot more boats (25.73%) are now seen in Tongue Bay; however, 28.65% report no change (Table 65; Figure 42).

Table 65: The change in boat number over time in Tongue Bay (n=137).

| Boat Number | Frequency | Percentage | Boat Number | Frequency | Percentage |
|---|---|---|---|---|---|
| Can't tell | 24 | 17.54 | Lot less | 0 | 2.34 |
| Few less | 4 | 4.09 | Lot more | 46 | 25.73 |
| Few more | 31 | 21.64 | No change | 32 | 28.65 |
| | | | **Total** | **137** | **100.00** |

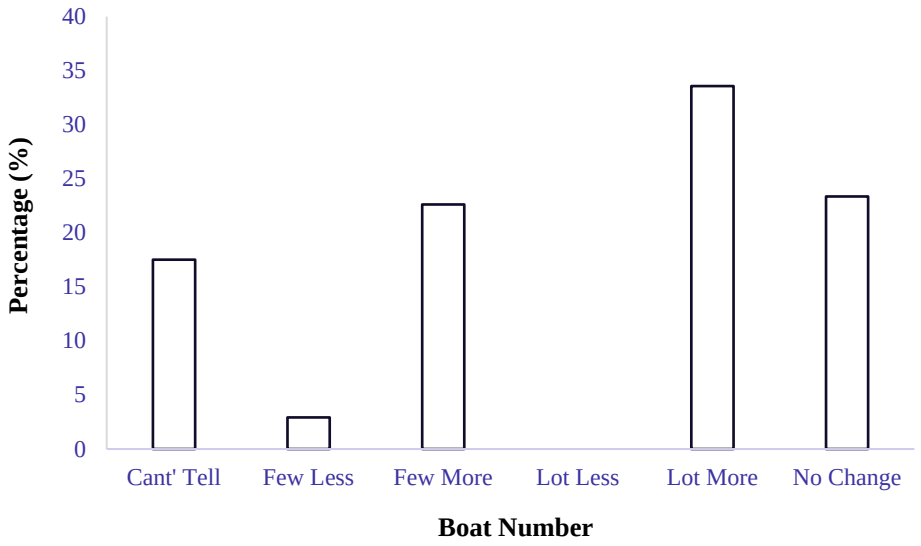


Figure 41: The percentage of respondents that have noticed a change in boat number over time in Tongue Bay; ranging from 'no change' to 'lot more' (n=137).

**Question 55: If You Have Noticed a Change in the Number of Boats in Tongue Bay, What Do You Think Caused it?**

The majority of respondents believe the change in boat number at Tongue Bay is related to an increase in tourist boats (28.74%) and a general increase in tourism (16.09%); this is likely related to the popularity of the Whitsundays beach lookout point (14.94%) (Table 66).

Table 66: Respondents explanations for changes in boat number over time in Tongue Bay (n=59).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Increase in tourist boats | 25 | 28.74 | Increase in regional population | 1 | 1.15 |
| Increase in tourism | 14 | 16.09 | Reduction in private vessels | 1 | 1.15 |
| Popularity of lookout point | 13 | 14.94 | Good anchorage | 1 | 1.15 |
| Increase in moorings | 9 | 10.34 | Less tourists | 1 | 1.15 |
| Increase in charter boats | 7 | 8.05 | More sharks | 1 | 1.15 |
| Improved infrastructure | 3 | 3.45 | Lack of island resorts | 1 | 1.15 |
| Not sure | 2 | 2.30 | Declining fish and turtle numbers | 1 | 1.15 |
| Introduction of anchor points | 2 | 2.30 | Noticeable reef trampling | 1 | 1.15 |
| Safe harbour | 2 | 2.30 | **Total** | **87** | **100.00** |

*n=59 corresponding to 87 responses

# 4.11 | Boat usage patterns – Cid Harbour

**Summary:** Most respondents have visited Cid Harbour more than 20 times (35.96%). Additional knowledge relating to the harbour included a general recognition that you should not swim here (27.03%) and that it is a good location to anchor in inclement weather conditions (16.22%). Most respondents first visited in 2016 (11.19%) and last visited in 2018 (48.48%). On average, day visitors spend 10.14 hours (+/-12.31) while overnight visitors spend on average 2.73 days (+/-6.33) at Cid Harbour. The most popular activities at this location include relaxing on the vessel (32.18%) and visiting the beach (30.11%). Most respondents have noticed an increase in boat number over time at this location (40.26). This is believed to be due to Cid Harbour being considered as a safe anchorage in many weather conditions (22.34%).

**Question 56: How Many Times Have You Been to Cid Harbour?**

The majority of respondents have visited Cid Harbour more than 20 times (35.96%). This was followed by those who had undertaken 2-5 visits (18.54%). Only 7.30% of respondents had never visited this location (Table 67; Figure 43). The majority of respondents would not swim at this location (27.03%) but acknowledge that is a good anchorage in inclement weather conditions (16.22%) (Table 67).

Table 67: The number of times respondents have visited Cid Harbour (n=178).

| Number of Visits | Never Visited | Once | 2-5 Visits | 6-10 Visits | 11-20 Visits | More than 20 | Total |
|---|---|---|---|---|---|---|---|
| **Frequency** | 13 | 13 | 33 | 26 | 29 | 64 | 178 |
| **Percentage** | 7.30 | 7.30 | 18.54 | 14.61 | 16.29 | 35.96 | 100.00 |

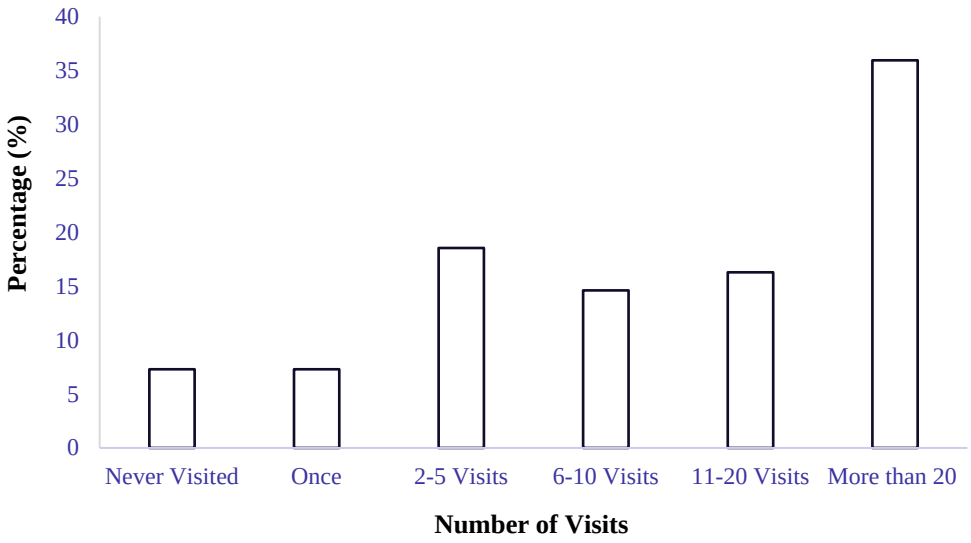


Figure 42: The number of times respondents have been to Cid Harbour (n=178).

**Is there anything else you'd like to add about your knowledge and experience with this location?**

Table 68: Respondents other knowledge and experience of Cid Harbour (n=54).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| I wouldn't/ don't swim here | 20 | 27.03 | Good fishing location | 2 | 2.70 |
| Good anchorage in high winds | 12 | 16.22 | Reef degradation has occurred | 1 | 1.35 |
| High number of boats | 6 | 8.11 | High biodiversity | 1 | 1.35 |
| Beautiful location | 5 | 6.76 | Not sure | 1 | 1.35 |
| Good bush walks | 4 | 5.41 | Good for mangrove exploration | 1 | 1.35 |
| Murky water | 4 | 5.41 | Deep water | 1 | 1.35 |
| Known shark area | 3 | 4.05 | I have caught sharks here | 1 | 1.35 |
| I don't visit here anymore | 3 | 4.05 | Fish waste often thrown overboard | 1 | 1.35 |
| Reduction in turtle numbers | 2 | 2.70 | Rocky bottom | 1 | 1.35 |
| I have seen sharks here | 2 | 2.70 | Good sailing location | 1 | 1.35 |
| Overcrowded | 2 | 2.70 | **Total** | **74** | **100.00** |

*n=54 comprising 74 responses

### Question 57: What is the Approximate Date of Your First Visit to Cid Harbour?

Respondents first visited between 1960-2019; 2016 was most common (11.19%) (Table 69).

Table 69: Respondents first visit to Cid Harbour by year (n=134).

| Year | Frequency | Percentage | Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|---|---|---|
| 1960 | 1 | 0.75 | 1993 | 1 | 0.75 | 2006 | 2 | 1.49 |
| 1970 | 1 | 0.75 | 1994 | 1 | 0.75 | 2007 | 2 | 1.49 |
| 1973 | 1 | 0.75 | 1995 | 2 | 1.49 | 2008 | 3 | 2.24 |
| 1978 | 1 | 0.75 | 1996 | 1 | 0.75 | 2009 | 5 | 3.73 |
| 1979 | 1 | 0.75 | 1997 | 1 | 0.75 | 2010 | 5 | 3.73 |
| 1980 | 6 | 4.48 | 1998 | 3 | 2.24 | 2011 | 4 | 2.99 |
| 1983 | 1 | 0.75 | 1999 | 4 | 2.99 | 2012 | 4 | 2.99 |
| 1984 | 2 | 1.49 | 2000 | 5 | 3.73 | 2013 | 2 | 1.49 |
| 1985 | 3 | 2.24 | 2001 | 5 | 3.73 | 2014 | 3 | 2.24 |
| 1987 | 1 | 0.75 | 2002 | 5 | 3.73 | 2015 | 7 | 5.22 |
| 1988 | 5 | 3.73 | 2003 | 1 | 0.75 | 2016 | 15 | 11.19 |
| 1989 | 1 | 0.75 | 2004 | 4 | 2.99 | 2018 | 9 | 6.72 |
| 1990 | 1 | 0.75 | 2005 | 3 | 2.24 | 2019 | 2 | 1.49 |
| | | | | | | **Total** | **134** | **100.00** |

### Question 58: What is the Approximate Last Date of Your Visit to Cid Harbour?

Respondents last visited between 1990 and 2019, with 2018 most common (48.48%) (Table 70).

Table 70: Respondents last visit to Cid Harbour by year (n=132).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 1990 | 1 | 0.76 | 2015 | 3 | 2.27 |
| 2002 | 1 | 0.76 | 2016 | 1 | 0.76 |
| 2004 | 2 | 1.52 | 2017 | 18 | 13.64 |
| 2012 | 1 | 0.76 | 2018 | 64 | 48.48 |
| 2013 | 1 | 0.76 | 2019 | 39 | 29.55 |
| 2014 | 1 | 0.76 | **Total** | **132** | **100.00** |

### Question 59: How Long Did You Stay at Cid Harbour?

On average, respondents spent 10.14 hours (+/-12.31) at Cid Harbour. Most respondents stayed between 2 hours (16.67%) and 3 or 4 hours (14.29%) respectively (Table 71).

Table 71: The number of hours respondents spent at Cid Harbour (n=42).

| Hours | Frequency | Percentage | Hours | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 4 | 9.52 | 12 | 5 | 11.90 |
| 2 | 7 | 16.67 | 14 | 1 | 2.38 |
| 3 | 6 | 14.29 | 15 | 1 | 2.38 |
| 4 | 6 | 14.29 | 24 | 3 | 7.14 |
| 5 | 1 | 2.38 | 35 | 2 | 4.76 |
| 8 | 4 | 9.52 | 48 | 2 | 4.76 |
| | | | **Total** | **42** | **100.00** |

On average, respondents spent 2.73 days at Cid Harbour. However, the majority of respondents would spend either 1 (43.28%) or 2 (25.37%) days at this location (Table 72).

Table 72: The number of days respondents stay at Cid Harbour (n=134).

| Days | Frequency | Percentage | Days | Frequency | Percent |
|---|---|---|---|---|---|
| 0 | 3 | 2.24 | 6 | 1 | 0.75 |
| 1 | 58 | 43.28 | 7 | 3 | 2.24 |
| 2 | 34 | 25.37 | 9 | 1 | 0.75 |
| 3 | 21 | 15.67 | 10 | 1 | 0.75 |
| 4 | 5 | 3.73 | 14 | 1 | 0.75 |
| 5 | 5 | 3.73 | 72 | 1 | 0.75 |
| | | | **Total** | **134** | **100.00** |

**Question 60: What Activities Did You Do in Cid Harbour?**

The most popular activity in Cid Harbour included relaxing on the vessel (32.18%) and visiting the beach/island (30.11%). The least popular activities were snorkelling (3.29%) and paddle boarding (3.68%) (Table 73; Figure 44). The most frequent 'other activities' (n=19) included bushwalking (33.33%); response and rescue (14.29%); and sheltering from inclement weather (14.29%) (Table 74).

Table 73: The activities conducted by respondents in Cid Harbour (n=160).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Swimming | 35 | 8.05 | Paddle boarding | 16 | 3.68 |
| Snorkelling | 14 | 3.29 | Going ashore (visiting beach/island) | 131 | 30.11 |
| Fishing | 54 | 12.71 | Relaxed on vessel | 140 | 32.18 |
| Kayaking | 26 | 5.98 | Other activity | 19 | 4.37 |
| | | | **Total** | **435** | **100.00** |

*n=160 corresponding to 435 responses.

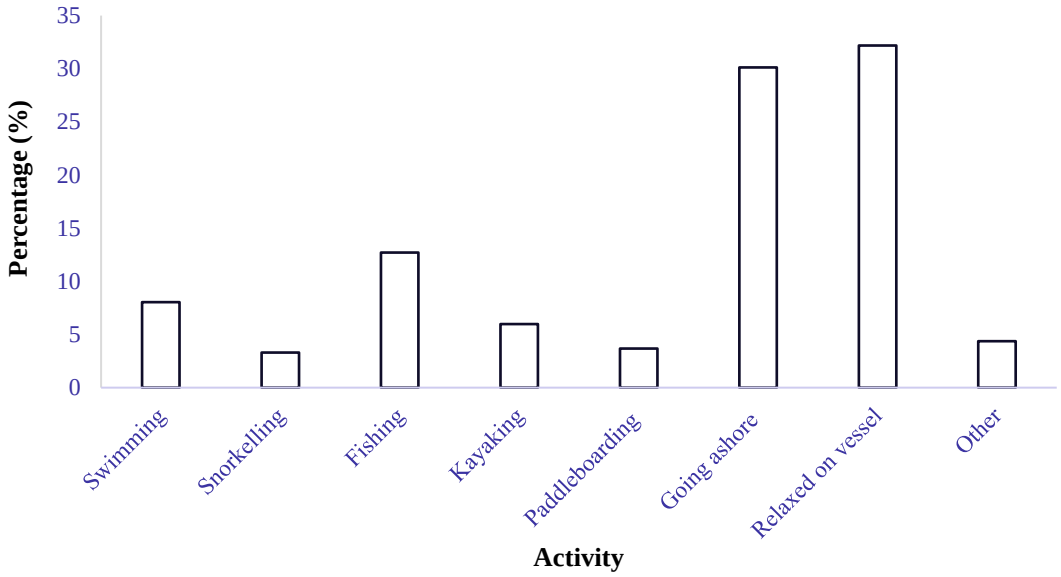


Figure 43: Activities conducted by respondents in Cid Harbour (n=161).

Table 74: Additional activities conducted by respondents in Cid Harbour (n=19).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Bushwalking | 7 | 33.33 | Sailing dinghy | 2 | 9.52 |
| Response & rescue | 3 | 14.92 | Diving | 1 | 4.76 |
| Don't swim there now | 3 | 14.92 | Overnighting | 1 | 4.76 |
| Sheltering | 3 | 14.92 | Mangrove tours | 1 | 4.76 |
| | | | **Total** | **21** | **100.00** |

*n=19 corresponding to 21 responses.

**Question 61: If You Have Been to Cid Harbour on Multiple Trips, Have You Noticed a Change in the Number of Boats in the Bay/Inlet Over Time?**

Most respondents noticed that there have been a lot more or a few more boats in Cid Harbour over time (20.13% respectively); however this was closely followed by the number that believe there has been no change (18.79%) (Table 75; Figure 45).

Table 75: The number of respondents that have noticed a change in boat number over time in Cid Harbour (n=149).

| Boat Number | Frequency | Percentage | Boat Number | Frequency | Percentage |
|---|---|---|---|---|---|
| Can't tell | 25 | 16.78 | Lot less | 21 | 14.09 |
| Few less | 15 | 10.07 | Lot more | 30 | 20.13 |
| Few more | 30 | 20.13 | No change | 28 | 18.79 |
| | | | **Total** | **149** | **100.00** |

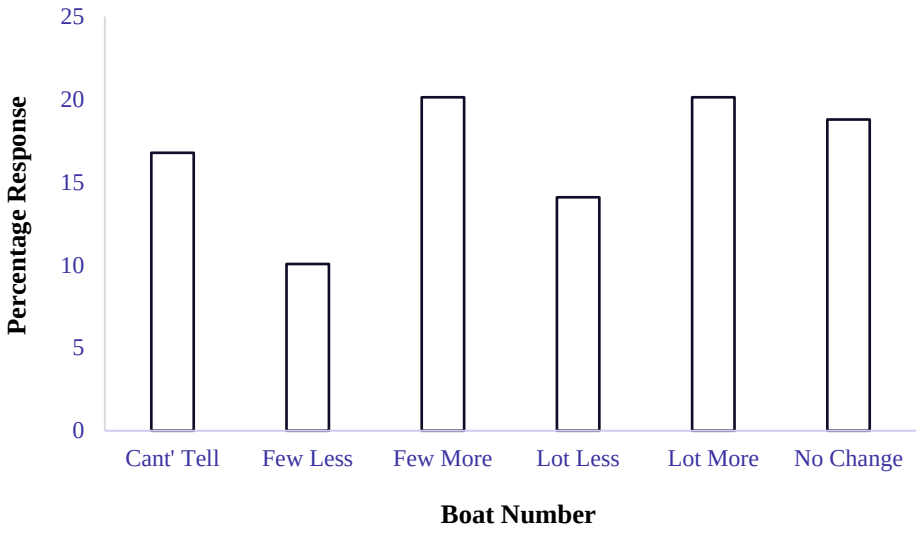


Figure 44: The percentage of respondents that have noticed a change in boat number over time in Cid Harbour (n=149).

**Question 62: If You Have Noticed a Change in the Number of Boats in Cid Harbour, What Do You Think Caused it?**

The most common explanation for a change in boat number related to fear following the shark attacks that occurred in Cid Harbour (32.98%). This was followed by the perception of Cid Harbour as a safe anchorage, especially for charter boats during inclement weather (22.34%) (Table 76).

Table 76: Respondents explanations for the change in boat number at Cid Harbour over time (n=79).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Fear (following shark attacks) | 31 | 32.98 | Shark warning markers | 3 | 3.19 |
| Safe anchorage | 21 | 22.34 | Reduced tourist numbers | 3 | 3.19 |
| Increase in tourists | 10 | 10.64 | Media hype over shark attacks | 3 | 3.19 |
| Increase in charter boats | 8 | 8.51 | Fishing | 2 | 2.13 |
| Increase in boat numbers | 6 | 6.38 | Increase in regional population | 1 | 1.06 |
| Reduction in charter boats | 5 | 5.32 | Popularity | 1 | 1.06 |
| | | | **Total** | **94** | **100.00** |

*n=79 corresponding to 94 responses.

# 4.12 | Boat usage patterns – Stonehaven

**Summary:** Most respondents have visited Stonehaven more than 20 times (30.68%). This primarily relates to the good coral condition seen here compared to other anchorages (17.02%). The most common first visit to this location was 2016 (9.24%), and last visit 2018 (45.53%). On average, day visitors stayed at Stonehaven for 10.27 hours (+/-14.12) while overnight visitors stayed for 2.28 days (+/-3.42). The most popular activities here are relaxing on vessels (25.74%) followed by snorkelling (19.21%). Most respondents have not noticed a change in boat number over time at Stonehaven (34.78%); where an increase was seen, this was believed to be related to an increase in tourism (21.54%) and charter boat numbers (16.92%).

**Question 63: How Many Times Have You Been to Stonehaven?**

Most respondents have visited Stonehaven more than 20 times (30.68%); however, 22 respondents (12.50%) have never visited this area (Table 77; Figure 46). Additional comments primarily related to the good coral condition at Stonehaven compared to other anchorages (17.02%) and the good snorkelling that can correspondingly be had here (17.02%) (Table 78).

Table 77: The number of times respondents have visited Stonehaven (n=176).

| Number of Visits | Never Visited | Once | 2-5 Visits | 6-10 Visits | 11-20 Visits | More than 20 | Total |
|---|---|---|---|---|---|---|---|
| **Frequency** | 22 | 13 | 32 | 30 | 25 | 54 | 176 |
| **Percentage** | 12.50 | 7.39 | 18.18 | 17.05 | 14.20 | 30.68 | 100.00 |

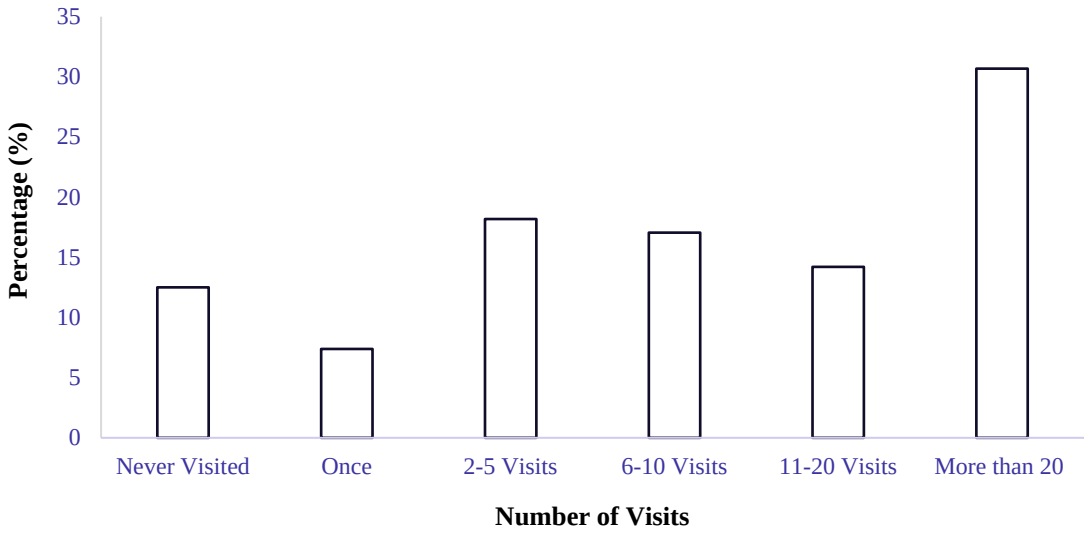


Figure 45: The percentage of times respondents have visited Stonehaven (n=176).

**Is there anything else you'd like to add about your knowledge and experience with this location?**

Table 78: Respondents additional knowledge and experience of Stonehaven (n=35).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Good coral condition | 8 | 17.02 | Very popular | 3 | 6.38 |
| Good snorkelling | 8 | 17.02 | I have seen sharks here | 2 | 4.26 |
| Strong bullets | 5 | 10.64 | Not sure | 1 | 2.13 |
| Reef deteriorated following Debbie | 4 | 8.51 | Need fendering on moorings | 1 | 2.13 |
| Good anchorage | 4 | 8.51 | Not safe to swim here | 1 | 2.13 |
| Good number of moorings | 3 | 6.38 | I have never seen a shark here | 1 | 2.13 |
| Beautiful location | 3 | 6.38 | **Total** | **47** | **100.00** |

*n=35 corresponding to 47 responses.

**Question 64: What is the Approximate Date of Your First Visit to Stonehaven?**

The most common first visit to Stonehaven was 2016 (n=11 (9.24%)). First visits ranged from 1970 to 2019 (Table 79).

Table 79: Respondents approximate first visit to Stonehaven (n=119).

| Year | Frequency | Percentage | Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|---|---|---|
| 1970 | 1 | 0.84 | 1997 | 1 | 0.84 | 2009 | 7 | 5.88 |
| 1973 | 1 | 0.84 | 1998 | 3 | 2.52 | 2010 | 5 | 4.20 |
| 1978 | 1 | 0.84 | 1999 | 3 | 2.52 | 2011 | 4 | 3.36 |
| 1980 | 3 | 2.52 | 2000 | 8 | 6.72 | 2012 | 1 | 0.84 |
| 1985 | 3 | 2.52 | 2001 | 4 | 3.36 | 2013 | 4 | 3.36 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1986 | 1 | 0.84 | 2002 | 3 | 2.52 | 2014 | 8 | 6.72 |
| 1988 | 4 | 3.36 | 2003 | 1 | 0.84 | 2015 | 7 | 5.88 |
| 1989 | 1 | 0.84 | 2004 | 4 | 3.36 | 2016 | 11 | 9.24 |
| 1990 | 1 | 0.84 | 2005 | 3 | 2.52 | 2017 | 6 | 5.04 |
| 1994 | 2 | 1.68 | 2006 | 1 | 0.84 | 2018 | 8 | 6.72 |
| 1995 | 2 | 1.68 | 2007 | 1 | 0.84 | 2019 | 2 | 1.68 |
| 1996 | 1 | 0.84 | 2008 | 3 | 2.52 | **Total** | **119** | **100.00** |

**Question 65: What is the Approximate Last Date of Your Visit to Stonehaven?**

Respondents last visited Stonehaven between 2005 and 2019; the most common last visit was in 2018 (45.53%) (Table 80).

Table 80: Respondents last visit to Stonehaven (n=123).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 2005 | 1 | 0.81 | 2015 | 3 | 2.44 |
| 2009 | 1 | 0.81 | 2016 | 4 | 3.25 |
| 2012 | 1 | 0.81 | 2017 | 4 | 3.25 |
| 2013 | 1 | 0.81 | 2018 | 56 | 45.53 |
| 2014 | 2 | 1.63 | 2019 | 50 | 40.65 |
| | | | **Total** | **123** | **100.00** |

**Question 66: How Long Did You Stay at Stonehaven?**

Respondents stayed at Stonehaven for an average of 10.27 (+/-14.12) hours. The most common length of time respondents spent at Stonehaven was 2 hours (20.83%) followed by 3 hours (14.58%) (Table 81).

Table 81: The number of hours respondents have spent at Stonehaven (n=48).

| Hours | Frequency | Percentage | Hours | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 3 | 6.25 | 12 | 4 | 8.33 |
| 2 | 10 | 20.83 | 14 | 1 | 2.08 |
| 3 | 7 | 14.58 | 15 | 1 | 2.08 |
| 4 | 6 | 12.50 | 16 | 1 | 2.08 |
| 5 | 4 | 8.33 | 24 | 5 | 10.42 |
| 6 | 1 | 2.08 | 48 | 2 | 4.17 |
| 8 | 1 | 2.08 | 72 | 1 | 2.08 |
| 10 | 1 | 2.08 | **Total** | **48** | **100.00** |

On average, respondents spend 2.28 days (+/-3.24) at Stonehaven. The most common amount of days spent there is 1 (46.28%) followed by 2 (36.36%) (Table 82).

Table 82: The amount of days respondents have spent at Stonehaven (n=121).

| Days | Frequency | Percentage | Days | Frequency | Percentage |
|---|---|---|---|---|---|
| 0 | 1 | 0.83 | 7 | 1 | 0.83 |
| 1 | 56 | 46.28 | 10 | 1 | 0.83 |
| 2 | 44 | 36.36 | 14 | 1 | 0.83 |
| 3 | 10 | 8.26 | 23 | 1 | 0.83 |
| 4 | 1 | 0.83 | 24 | 1 | 0.83 |
| 5 | 4 | 3.31 | **Total** | **121** | **100.00** |

**Question 67: What Activities Did You Do in Stonehaven?**

The most popular activity at Stonehaven was relaxing on vessels (25.74%) followed by snorkelling (19.21%). The least popular activities were paddle boarding (5.54%) and kayaking (6.34%) (Table 83; Figure 47). Other activities that respondents partake in (n=14) primarily included diving (35.71%) and exploring in sailing dinghies (14.29%) (Table 84).

Table 83: The leisure activities respondents partake in at Stonehaven (n=145).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Swimming | 76 | 15.05 | Paddle boarding | 28 | 5.54 |
| Snorkelling | 97 | 19.21 | Going ashore (visiting beach/island) | 84 | 16.63 |
| Fishing | 44 | 8.71 | Relaxed on vessel | 130 | 25.74 |
| Kayaking | 32 | 6.34 | Other activity | 14 | 2.77 |
| | | | **Total** | **505** | **100.00** |

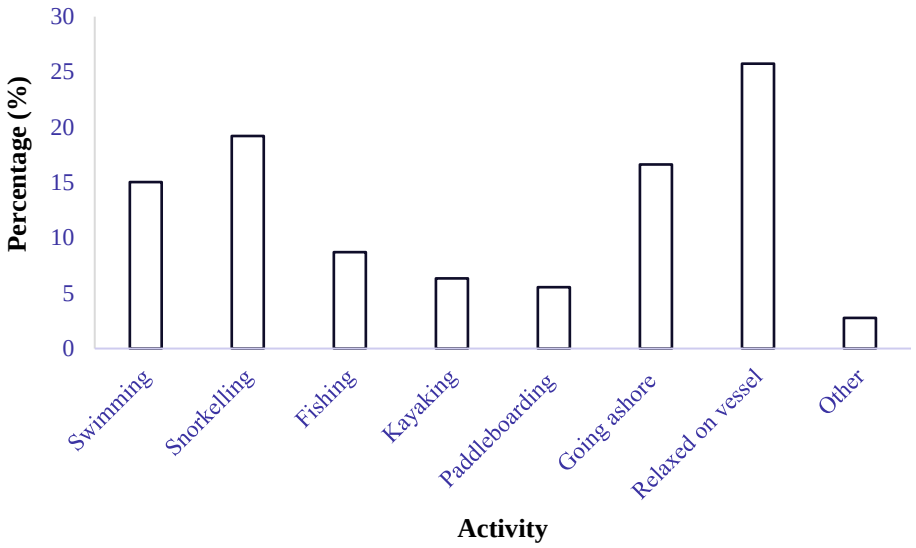


Figure 46: The activities respondents partake in at Stonehaven (n=145).

Table 84: Other activities that respondents partake in at Stonehaven (n=14).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Diving | 5 | 35.71 | Watching the sunset | 1 | 7.14 |
| Sailing | 2 | 14.29 | Photography | 1 | 7.14 |
| Rescue vessel | 1 | 7.14 | Water sports | 1 | 7.14 |
| Overnighting | 1 | 7.14 | Swimming with turtles | 1 | 7.14 |
| | | | **Total** | **14** | **100.00** |

**Question 68: If You Have Been to Stonehaven on Multiple Trips, Have You Noticed a Change in the Number of Boats in the Bay/Inlet Over Time?**

Most respondents did not notice a change in the number of boats at Stonehaven over time (34.78%). However, more recognised an increase (44.20%) in the number of boats than a decrease (1.45%) (Table 85; Figure 48).

Table 85: The number of respondents that have noticed a change in boat number over time in Stonehaven (n=138).

| Boat Number | Frequency | Percentage | Boat Number | Frequency | Percentage |
|---|---|---|---|---|---|
| Can't tell | 27 | 19.57 | Lot less | 0 | 0.00 |
| Few less | 2 | 1.45 | Lot more | 27 | 19.57 |
| Few more | 34 | 26.64 | No change | 48 | 34.78 |
| | | | **Total** | **138** | **100.00** |

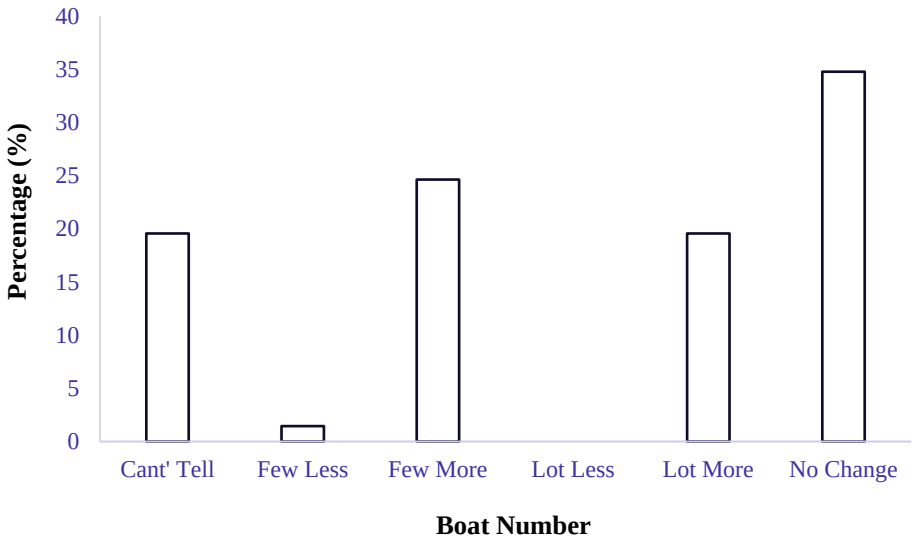


Figure 47: The percentage of respondents that have noticed a change in boat number over time in Stonehaven (n=138).

**Question 69: If You Have Noticed a Change in the Number of Boats in Stonehaven, What Do You Think Caused it?**

The most common explanation for a change in boat number at Stonehaven related to a perceived increase in tourism (21.54%). This was closely followed by an increase in charter boat numbers (16.92%) and the good coral condition seen in Stonehaven following Cyclone Debbie (12.31%) (Table 86).

Table 86: Respondents explanations for the change in boat number at Stonehaven over time (n=43).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Increased tourism | 14 | 21.54 | Good location | 3 | 4.62 |
| Increase in charter boats | 11 | 16.92 | Used as an alternative to Cid Harbour | 3 | 4.62 |
| Good coral condition | 8 | 12.31 | Increased regional population | 2 | 3.08 |
| Safe anchorage | 5 | 7.69 | Increase in tourism operators | 2 | 3.08 |
| Increased boat number | 5 | 7.69 | Good water quality | 1 | 4.62 |
| More moorings available | 5 | 7.69 | Less tourists | 1 | 4.62 |
| Good snorkelling | 5 | 7.69 | **Total** | **65** | **100.00** |

# 4.13 | Boat usage patterns – False Nara

**Summary:** Most respondents have never visited False Nara (57.06%). This may be related to the weather dependent accessibility of this location (27.02%). Most respondents first visited in 2016 (12.24%) and last visited in 2018 (30.00%). On average, day visitors stayed at False Nara for 4.19 hours (+/-4.04) while overnight visitors stayed for 1.59 days (+/-2.04). The most popular activity at this location was relaxing on the vessel (32.85%) followed by snorkelling (28.47%). The majority of respondents have not noticed a change in boat number at False Nara over time (50.00%). Where an increase in boats has been seen, it has been associated to an increase in tourists (23.08).

**Question 70: How Many Times Have You Been to False Nara?**

The majority of respondents have never visited False Nara (57.06%). Of those who have visited, they have most commonly been to the area between 2-5 times (15.88%) (Table 87; Figure 49). Additional comments by respondents about this location focused on the weather dependency of accessibility (27.27%) and the good snorkelling that can be had here (22.73%) (Table 88).

Table 87: The number of times respondents have visited False Nara (n=170).

| Number of Visits | Never Visited | Once | 2-5 Visits | 6-10 Visits | 11-20 Visits | More than 20 | Total |
|---|---|---|---|---|---|---|---|
| **Frequency** | 97 | 15 | 27 | 9 | 8 | 14 | 170 |
| **Percentage** | 57.06 | 8.82 | 15.88 | 5.29 | 4.71 | 8.24 | 100.00 |

**Is there anything else you'd like to add about your knowledge and experience with this location?**

Table 88: Additional knowledge and experience of respondents of False Nara (n=19).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Weather dependent | 6 | 27.27 | Good diving | 1 | 4.55 |
| Good snorkelling | 5 | 22.73 | Good anchorage | 1 | 4.55 |
| Good reef condition | 3 | 13.64 | No comment | 1 | 4.55 |
| Only experienced snorkellers | 2 | 9.09 | Too exposed for overnight stays | 1 | 4.55 |
| I have seen sharks here | 2 | 9.09 | **Total** | **22** | **100.00** |

*n=19 corresponding to 22 responses

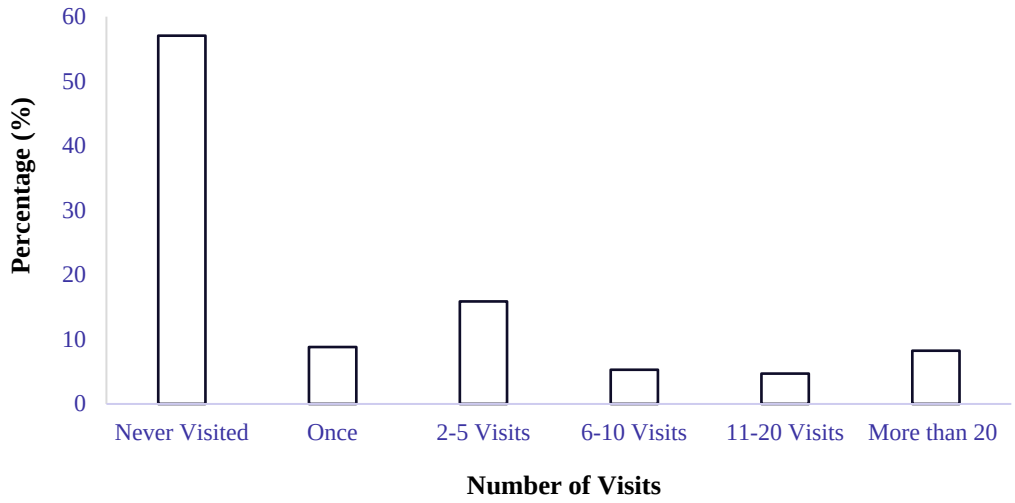


Figure 48: The percentage of times respondents have visited False Nara (n=170).

**Question 71: What is the Approximate Date of Your First Visit to False Nara?**

The majority of respondents first visited False Nara in recent years, primarily including 2016 (12.24%); 2017 (10.20%) and 2018 (8.16%). First visits ranged from 1970 to 2018 (Table 89).

Table 89: Respondents first visit to False Nara (by year) (n=49).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 1970 | 1 | 2.04 | 2003 | 1 | 2.04 |
| 1978 | 1 | 2.04 | 2005 | 2 | 4.08 |
| 1980 | 1 | 2.04 | 2006 | 2 | 4.08 |
| 1988 | 1 | 2.04 | 2009 | 1 | 2.04 |
| 1989 | 1 | 2.04 | 2010 | 2 | 4.08 |
| 1990 | 1 | 2.04 | 2011 | 1 | 2.04 |
| 1994 | 1 | 2.04 | 2012 | 1 | 2.04 |
| 1996 | 1 | 2.04 | 2013 | 1 | 2.04 |
| 1997 | 2 | 4.08 | 2014 | 1 | 2.04 |
| 1999 | 1 | 2.04 | 2015 | 2 | 4.08 |
| 2000 | 3 | 6.12 | 2016 | 6 | 12.24 |
| 2001 | 2 | 4.08 | 2017 | 5 | 10.20 |
| 2002 | 2 | 4.08 | 2018 | 4 | 8.16 |
| | | | **Total** | **49** | **100.00** |

**Question 72: What is the Approximate Last Date of Your Visit to False Nara?**

The majority of respondents (n=50) last visited False Nara in recent years (70%); corresponding to 2017 (20%); 2018 (30%) and 2019 (20%) (Table 90).

Table 90: The approximate last date of respondents visits to False Nara (categorised by year) (n=50).

| Year | Frequency | Percentage | Year | Frequency | Percentage |
|---|---|---|---|---|---|
| 1994 | 1 | 2.00 | 2014 | 1 | 2.00 |
| 2004 | 1 | 2.00 | 2015 | 2 | 4.00 |
| 2005 | 1 | 2.00 | 2016 | 5 | 10.00 |
| 2006 | 1 | 2.00 | 2017 | 10 | 20.00 |
| 2008 | 1 | 2.00 | 2018 | 15 | 30.00 |
| 2012 | 1 | 2.00 | 2019 | 10 | 20.00 |
| 2013 | 1 | 2.00 | **Total** | **50** | **100.00** |

**Question 73: How Long Did You Stay at False Nara?**

On average, respondents spend 4.19 (+/-4.04) hours at False Nara. Most respondents spend 2 hours at this location (38.30%) (Table 91).

Table 91: The number of hours respondents spend at False Nara (n=47).

| Hours | Frequency | Percentage | Hours | Frequency | Percentage |
|---|---|---|---|---|---|
| 1 | 2 | 4.26 | 6 | 1 | 2.13 |
| 2 | 18 | 38.30 | 8 | 1 | 2.13 |
| 3 | 8 | 17.02 | 12 | 2 | 4.26 |
| 4 | 6 | 12.77 | 14 | 1 | 2.13 |
| 5 | 7 | 14.89 | 24 | 1 | 2.13 |
| | | | **Total** | **47** | **100.00** |

On average, respondents spend 1.59 days (+/-2.04) at False Nara. The most common number of days spent at this location is 1 (68.18%) (Table 92).

Table 92: The number of days respondents spend at False Nara (n=22).

| Days | Frequency | Percentage | Days | Frequency | Percent |
|---|---|---|---|---|---|
| 0 | 2 | 9.09 | 4 | 1 | 4.55 |
| 1 | 15 | 68.18 | 10 | 1 | 4.55 |
| 2 | 3 | 13.64 | **Total** | **22** | **100.00** |

**Question 74: What Activities Did You Do in False Nara?**

The most popular leisure activity in False Nara was relaxing on the vessel (32.85%), closely followed by snorkelling (28.47%). The least popular activities were kayaking (2.19%) and paddle boarding (3.65%)

(Table 93; Figure 50). Other activities (n=3) included exploring (33.33%); camping (33.33%) and sailing (33.33%).

Table 93: The leisure activities respondents have partaken in at False Nara (n=67).

| Activity | Frequency | Percentage | Activity | Frequency | Percentage |
|---|---|---|---|---|---|
| Swimming | 19 | 13.87 | Paddle boarding | 5 | 3.65 |
| Snorkelling | 39 | 28.47 | Going ashore (visiting beach/island) | 13 | 9.49 |
| Fishing | 10 | 7.30 | Relaxed on vessel | 45 | 32.85 |
| Kayaking | 3 | 2.19 | Other activity | 3 | 2.19 |
| | | | **Total** | **137** | **100.00** |

*n=67 corresponding to 137 responses

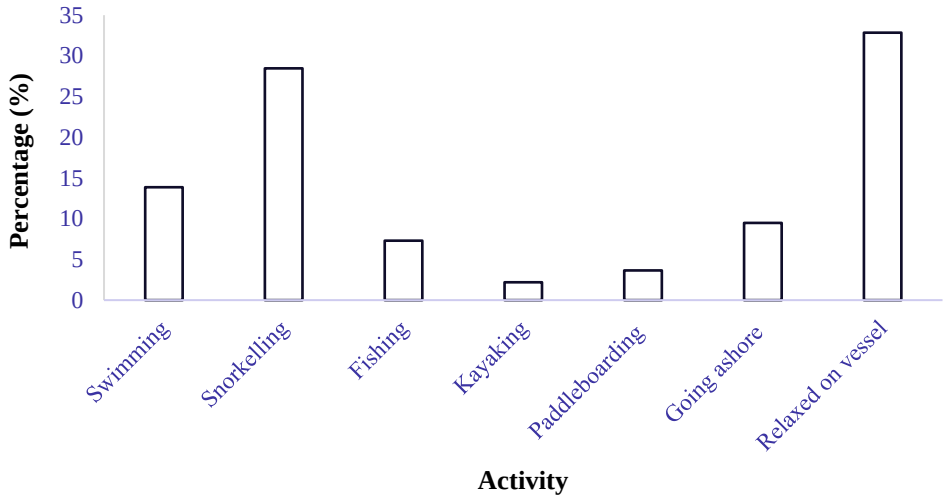


Figure 49: The activities partaken in by respondents at False Nara (n=137).

**Question 75: If You Have Been to False Nara on Multiple Trips, Have You Noticed a Change in the Number of Boats in the Bay/Inlet Over Time?**

The majority of respondents (50.00%) have not noticed a change in the number of boats in Falsa Nara over time. However, more respondents have noticed a slight (16.13%) or great (6.45%) increase compared to a slight (3.23%) decrease (Table 94; Figure 51).

Table 94: The number of respondents that have noticed a change in boat number over time in False Nara (n=62).

| Boat Number | Frequency | Percentage | Boat Number | Frequency | Percentage |
|---|---|---|---|---|---|
| Can't tell | 15 | 24.19 | Lot less | 0 | 0.00 |
| Few less | 2 | 3.23 | Lot more | 4 | 6.45 |
| Few more | 10 | 16.13 | No change | 31 | 50.00 |
| | | | **Total** | **62** | **100.00** |

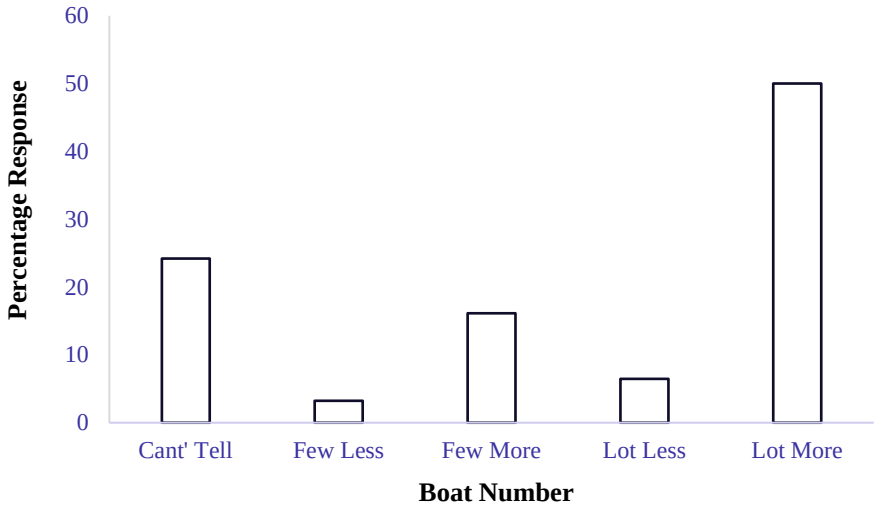


Figure 50: The percentage of respondents that have noticed a change in boat number over time in False Nara (n=62).

**Question 76: If You Have Noticed a Change in the Number of Boats in False Nara, What Do You Think Caused it?**

The majority of respondents believe the change in boat number seen at Falsa Nara is due to an increase in tourists (23.08%) and correspondingly tourist boats (15.38%). However, multiple respondents claim to have seen low boat numbers in False Nara over recent years (15.38%) (Table 95).

Table 95: Respondents explanations for a change in boat number over time at False Nara (n=13).

| Response | Frequency | Percentage | Response | Frequency | Percentage |
|---|---|---|---|---|---|
| Increase in tourists | 3 | 23.08 | Reef damaged by Cyclone Debbie | 1 | 7.69 |
| Low boat numbers | 2 | 15.38 | Less tourists | 1 | 7.69 |
| Increase in tourist boats | 2 | 15.38 | Few other options | 1 | 7.69 |
| Increase in regional population | 1 | 7.69 | Don't know | 1 | 7.69 |
| Good day sail | 1 | 7.69 | **Total** | **13** | **100.00** |

# 4.14 | Boat usage patterns at other bays

**Question 77: Which other bays, harbours, or inlets do you normally use when in the Whitsundays?**

The most popular other anchorages used by respondents were Butterfly Bay (9.55%); Whitehaven Beach (7.03%); Blue Pearl Bay (6.85%) and Chalkies Beach (5.05%). A total of 115 anchorages were mentioned by respondents (Table 96).

Table 96: The other bays, harbours and inlets normally used by respondents when in the Whitsundays (n555).

| Name | Frequency | Percentage | Name | Frequency | Percentage |
|---|---|---|---|---|---|
| Butterfly Bay | 53 | 9.55 | Coral Beach | 1 | 0.18 |
| Whitehaven Beach | 39 | 7.03 | Northern Hook | 1 | 0.18 |
| Blue Pearl Bay | 38 | 6.85 | Solway Bay | 1 | 0.18 |
| Chalkies Beach | 28 | 5.05 | Thora Point | 1 | 0.18 |
| Manta Ray Bay | 24 | 4.32 | Admit Island | 1 | 0.18 |
| Chance Bay | 22 | 3.96 | Southwest Shoreline | 1 | 0.18 |
| Woodwark Bay | 17 | 3.06 | Crayfish Beach | 1 | 0.18 |
| Turtle Bay | 16 | 2.88 | Lupton Island | 1 | 0.18 |
| Luncheon Bay | 16 | 2.88 | Scrub Hen Beach | 1 | 0.18 |
| Cateran Bay | 15 | 2.70 | Nara Inlet | 1 | 0.18 |
| Shaw Island | 14 | 2.52 | Goldsmith's Bay | 1 | 0.18 |
| Border Island | 11 | 1.98 | Ziggy Bay | 1 | 0.18 |
| Hill Inlet | 10 | 1.80 | Shore Island | 1 | 0.18 |
| Double Bay | 9 | 1.62 | Abell Point | 1 | 0.18 |
| Thomas Island | 8 | 1.44 | Catalan Bay | 1 | 0.18 |
| Langford Island | 8 | 1.44 | Reef Bay | 1 | 0.18 |
| Maureen's Cove | 7 | 1.26 | Sunlovers Beach | 1 | 0.18 |
| All (within charter area) | 7 | 1.26 | Dent Island | 1 | 0.18 |
| Saba Bay | 7 | 1.26 | Dalrymple Bay | 1 | 0.18 |
| Windy Bay | 7 | 1.26 | Doublecone Bay | 1 | 0.18 |
| Mackerel Bay | 7 | 1.26 | Hayman Island | 1 | 0.18 |
| Happy Bay | 7 | 1.26 | Pig Bay | 1 | 0.18 |
| Gulnare Inlet | 6 | 1.08 | Armit Island | 1 | 0.18 |
| Lindeman Island | 6 | 1.08 | Beach 55 | 1 | 0.18 |
| Gulnare Bay | 6 | 1.08 | Scawfell | 1 | 0.18 |
| Hook Island | 6 | 1.08 | Congo Beach | 1 | 0.18 |
| Plantation Bay | 6 | 1.08 | Delorain Island | 1 | 0.18 |
| May's Bay | 5 | 0.90 | Dingo Beach | 1 | 0.18 |
| Shute Harbour | 5 | 0.90 | Silica Bay | 1 | 0.18 |
| Langford Reef | 5 | 0.90 | Pidgeon Island | 1 | 0.18 |

| | | | | | |
|---|---|---|---|---|---|
| Long Island | 5 | 0.90 | Robert Bay | 1 | 0.18 |
| Burning Point | 5 | 0.90 | Horseshoe Bay | 1 | 0.18 |
| Black Island | 5 | 0.90 | Picnic Bay | 1 | 0.18 |
| Gloucester Passage | 4 | 0.72 | Teague Reef | 1 | 0.18 |
| Bauer Bay | 4 | 0.72 | The Neck | 1 | 0.18 |
| Whitsunday Island | 4 | 0.72 | St. Bees | 1 | 0.18 |
| Goldsmith Island | 4 | 0.72 | Armit Island | 1 | 0.18 |
| South Moulle | 4 | 0.72 | Gloucester Island | 1 | 0.18 |
| Bait Reef | 4 | 0.72 | Shag Inlet | 1 | 0.18 |
| Waite Bay | 4 | 0.72 | Heart Reef | 1 | 0.18 |
| Pioneer Bay | 3 | 0.54 | Macona Bay | 1 | 0.18 |
| Hamilton Island | 3 | 0.54 | Shoal Island | 1 | 0.18 |
| Beach 25 | 3 | 0.54 | Palm Island | 1 | 0.18 |
| Keswick Island | 3 | 0.54 | Bali Hai | 1 | 0.18 |
| Homestead Bay | 2 | 0.36 | Caves Coves | 1 | 0.18 |
| Hook Passage | 2 | 0.36 | Billbob Bay | 1 | 0.18 |
| White Bay | 2 | 0.36 | Saddleback Island | 1 | 0.18 |
| Peter Bay | 2 | 0.36 | Dumbbell Island | 1 | 0.18 |
| Cannonvale Beach | 2 | 0.36 | Refuge Bay | 1 | 0.18 |
| Funnel Bay | 2 | 0.36 | Pinnacle Bay | 1 | 0.18 |
| Lunchbox Bay | 2 | 0.36 | Whisper Bay | 1 | 0.18 |
| Sandy Beach | 2 | 0.36 | Brampton Island | 1 | 0.18 |
| Cairn Beach | 2 | 0.36 | Pitstop Bay | 1 | 0.18 |
| Dugong Inlet | 2 | 0.36 | Wyte Bay | 1 | 0.18 |
| Hazelwood Island | 2 | 0.36 | Woodcutter Bay | 1 | 0.18 |
| Airlie Beach | 2 | 0.36 | Daydream Island | 1 | 0.18 |
| Esk Island | 2 | 0.36 | Bona Bay | 1 | 0.18 |
| Nelly Bay | 2 | 0.36 | **Total** | **555** | **100.00** |

# 4. Results from Key Participant Interviews

Seven key participants were interviewed at length using semi-structured interview techniques between the 25th and 27th September 2019. The key participants represented several stakeholder groups including the tourism industry (4 interviewees), fishers (1 interviewee), and community groups and management agencies (2 interviewees). The tourism interviewees represented different sectors of the industry ranging from boat crews to owners and executives.

There were four themes that were explored or emerged during the interviews.

1. Changes in the tourism and boating industry
2. The impacts of unwanted shark encounters
3. Perceptions and beliefs about why the encounters had occurred
4. Perceptions and beliefs about minimising future risks of unwanted shark encounters

There was a diversity of opinions and beliefs spread across these themes with many individualistic opinions expressed. In many instances, views were only expressed by one person. This is not unusual given the variety of stakeholders involved.

However, there were some points that were shared by three or more interviewees.

- The Whitsundays tourism market was shifting towards high end and higher quality tourism products.
- There was strong consensus that Whitsundays tourism numbers had recently suffered from a combination of factors including the effects of cyclone Debbie, reef degradation, and impacts from the shark incidents.
- Some participants noted that one sailing company had begun publicly using shark deterrent devices.
- Some participants stated that tourism briefings now had more information about sharks.
- Several participants stated the belief that it was a single shark responsible for the incidents.
- Several participants mentioned that they had heard that it was a dead whale that was attracting sharks into the area.
- Several participants stated that shark safety behaviours needed to be covered in safety briefings, and there was strong consensus that people needed to be educated about shark behaviours.

Table 97: Themes and issues explored and emerging from seven key participant interviews

| Participant | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Length of residency in the Whitsundays | ≥ 10 years | ≤ 10 years | ≥ 30 years | ≥ 30 years | ≥ 20 years | ≥ 10 years | ≥ 10 years |
| **Theme 1: Changes in the Tourism & Boating Industry** | | | | | | | |
| ***Have you noticed any changes in the types of visitors or in the industry itself over the years?*** | | | | | | | |
| No shift in seasonality of clientele pattern (backpackers dominate in summer) | ✓ | | | | | | |
| The overall number of visitors is down | ✓ | | | | | | |
| A shift from backpackers to domestic/high end users | | ✓ | | ✓ | | | ✓ |
| A shift from an overnight market to a day market | | ✓ | | | | | ✓ |
| The quality of the product has increased | | | ✓ | ✓ | | | ✓ |
| Procedural changes (i.e. the content of briefings) | | | ✓ | | | | |
| The number of boats operating has declined | | | | ✓ | | | ✓ |
| The diving industry has declined | | | | ✓ | ✓ | | |
| The number of tourists has increased (domestic users) | | | | | | ✓ | |
| **Theme 2: Impacts of the Unwanted Shark Encounters** | | | | | | | |
| ***Have you noticed any changes in the industry since the encounters that can be attributed to those events?*** | | | | | | | |
| People feel more cautious | ✓ | | | | | | ✓ |
| Comments from customers that:<br>**a) Won't go in the water**<br>**b) Won't go to certain anchorages** | ✓ | | | | | | |
| Guests asked more questions about sharks and safety | | ✓ | | | | | ✓ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Shark deterrent devices added by one company | | ✓ | | | ✓ | | ✓ |
| Bad press means many don't think it's worth visiting anymore | | | ✓ | | | | |
| A soft season (combination of factors; encounters, Cyclone Debbie, reef degradation) (i.e. decline in visitation) | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Introduction of shark buoys & signage at Cid Harbour | | | | | | ✓ | |
| Cancellations within the charter fleet | | | ✓ | | | | ✓ |
| ***Have the encounters changed how YOU do business?*** | | | | | | | |
| We now provide more shark safe messaging (online, pamphlets, posters, welcome packs) | ✓ | | ✓ | | | ✓ | |
| We have developed responses to questions | ✓ | | | | | | |
| No | | ✓ | | | | | |
| Advise people not to swim in Cid Harbour | | | ✓ | ✓ | | | |
| Shark safety is focused on more during briefings | | | ✓ | ✓ | ✓ | | |
| Stopped recommending ALL in water activities (e.g. paddle boarding, kayaking, swimming) | | | | | | | ✓ |
| **Theme 3: the causes behind the recent incidents** | | | | | | | |
| ***Do you have your own theory as to what caused the unwanted shark encounters?*** | | | | | | | |
| A sick or injured shark targeting easy prey | | ✓ | | | | | |
| People throwing fish/food scraps overboard has caused learned associative behaviour | | ✓ | | ✓ | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| An abnormality, driven by an attractant | | | ✓ | | | | ✓ |
| Green zones (& fishing ban) has led to a reduced food source for sharks driving them to attack 'easy prey' | | | | ✓ | | | |
| A response to shark numbers increasing | | | | ✓ | ✓ | | |
| Sharks moving into areas not affected by the cyclone (i.e. Cid Harbour) with a good source of food | | | | | | ✓ | |
| It was one shark | | ✓ | | ✓ | ✓ | | ✓ |
| ***Have you heard any myths regarding the cause of the encounters?*** | | | | | | | |
| Underwater lights on the back of boats attract sharks | ✓ | | | | | | |
| The reef was badly damaged after Cyclone Debbie and there isn't enough food | ✓ | | | | | | |
| People throwing fish/food scraps overboard has caused learned associative behaviour | ✓ | | ✓ | | | | ✓ |
| There was a dead whale carcass in the water attracting sharks | ✓ | | | ✓ | ✓ | | ✓ |
| A sick or wounded shark was targeting easy prey | | ✓ | | | | | ✓ |
| **Theme 4: Minimising Future Risk** | | | | | | | |
| ***What do you think is the best thing visitors/industry can do to minimise the risk of this happening again?*** | | | | | | | |
| Shark safety behaviours need to be covered in briefings | ✓ | ✓ | ✓ | | | | |
| Tackle the language issue barrier in briefings | | ✓ | | | | | ✓ |
| Put signage on charter boats | | ✓ | | | | | |
| Control crew in terms of food waste | | ✓ | | | | | |
| Drumlines need to be implemented | | | | ✓ | ✓ | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| People need to be educated on shark safe behaviours | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wearing certain coloured/high vis clothing | | | | | | ✓ | |
| ***How would you go about getting more information to people given people don't feel they know enough?*** | | | | | | | |
| Develop information in a consumer friendly manner with help/guidance from authorities | ✓ | | ✓ | | | | |
| Place more signage (e.g. on beaches) | | ✓ | | | | | |
| Make sure people have the right information | | ✓ | | | | | |
| Make sure crew are sharing information | | ✓ | | | | | |
| Provide information in a positive manner | | | ✓ | | | | ✓ |
| Provide information before people arrive | | | ✓ | | | | |
| Ensure messages come from industry not the authorities | | | ✓ | | | | |
| Difficult to do, it's more important to remove sharks via drumlining | | | | ✓ | | | |
| Provide information at the right time (i.e. after arrival/start of trips) | ✓ | | | | | ✓ | |

# 5. Discussion and conclusions

A web-based survey was used to identify the main trends and patterns in use, behaviours, perceptions, and beliefs relating to recreational experiences in the Whitsundays. Perceptions of sharks and shark safety were also examined. The high response rate to the survey may have been driven by personal recommendation and social networks. That is, people found out about the survey from trusted figures or sources (including social media) and chose to participate. Achieving over 200 survey responses provides assurance that the survey results accurately reflect the behaviours, perceptions, and beliefs of the groups that responded to the survey. Additionally, the respondents represented a mix of residents and visitors, and genders, and thus the results may reflect broad views.

However, it should be recognised that the respondent sample mainly represents recreational boaters as the sampling design was selected to reach that user group. Many respondents were sailing enthusiasts in the 40-70 years old age range. As such, the views of other users such as casual or day trip tourists, recreational and commercial fishers, spearfishers, and SCUBA divers are less represented in the results. Nevertheless, commercial boat-based tourism and recreation is a major tourism activity and was also the industry involved in most of the incidents, and thus this bias does not affect the application of the study findings about the patterns of use, behaviours, perceptions, and beliefs of this user group. Additionally, residents represented 60% of the sample and were spread across a range of user groups. As such, the results are representative of a diversity of behaviours, uses, perceptions and values amongst residents.

Overall, several strong themes emerged from surveys, with some expanded upon and verified by the key participant interviews.

## 6.1 Knowledge and behaviours

- Most respondents knew about safe swimming behaviours and shark smart messages. This information was gleaned mostly from online sources and the media, but respondents also received this knowledge from friends, from posters and pamphlets, and through their work.
- Many respondents also reported that they knew where not to swim in the Whitsundays, and that this knowledge was gained from media reporting. However, respondents also highlighted that local knowledge was important.
- Respondents, especially visitors, noted that the sailing guide *100 Magic Miles* was a very important information source for trip planning and information.
- Respondents had a mix of knowledge levels about Shark Smart behaviours. Respondents were roughly equally split between ‘knowing a little’ and knowing a ‘great deal’ about these behaviours. This indicates that there is a clear lack of knowledge and understanding amongst

some respondents. Interestingly, many residents indicated that they only knew ‘a little’, which suggests that there is an opportunity for local education and awareness raising. Interestingly, many visitors indicated that they knew between a moderate amount and a great deal about shark smart practices, with 75% indicating they gained this knowledge outside of the Whitsundays.

- Respondents indicated that they believed most strongly that the generic advice of ‘Don’t swim at dusk or dawn’ and ‘Don’t swim in murky water’ would reduce their risk of an unwanted encounter. This advice is commonly given around the world. However, it should be noted that some of the incidents in the Whitsundays are unusual in that the bites happened during daylight hours, and happened almost immediately after the person jumped into or entered the water. Thus, these incidents contradict these pieces of advice, which may undermine public confidence in the advice. Indeed, this seems to be occurring in some other Australian communities on other states of Queensland (*Chin, pers obs*).

## 6.2 Use patterns

The survey respondents were predominantly boat users, and up to 80% owned a vessel, most of which were sailing vessels. Respondents provided detailed accounts of how they used different areas in the Whitsundays. This information was collected to see which anchorages were the most heavily used, and also to see if boaters had observed a change in usage patterns following the very public incidents in Cid Harbour. In general, usage patterns differ between bays, but most visits lasted between 1 and 5 hours, or between 1 and 3 days.

There were varying perceptions about whether boat use had increased at different bays, but interestingly this discrepancy was between ‘no change’ and indications of more use. Very few respondents indicated that they thought boat numbers had decreased. Furthermore, many respondents indicated their perception of increased numbers of charter operations and/or tourism in general. Overall, there is no clear signal that boat usage has decreased at any of the six bays mentioned (including Cid Harbour), and in some areas has increased. Respondents also raised interesting insights about their perceptions and local knowledge of the bays.

- Nara Inlet was heavily used, but many respondents said they would not swim here. Some respondents also mentioned that Nara Inlet was a shark ‘breeding ground’.
- Macona Inlet was less visited, with some respondents mentioning that it was difficult to access.
- Tongue Bay was heavily used. Respondents mentioned that this site had high tourist numbers, and some thought it was overcrowded. Respondents noted that there was lots of marine life in the bay. While respondents mentioned a general increase in tourism and more charter

boats as a reason for the high numbers, and some thought that additional moorings were needed.

- Cid Harbour was heavily used and there was general recognition that people shouldn't swim at this site. Respondents mentioned that it was a good anchorage in high winds. There were conflicting perceptions about use patterns with many responses ranging from a 'lot less' boat usage to 'a lot more' boat usage. For those that thought boat usage had decreased, the most common explanation was related to fear following the shark bites.
- Stonehaven was a heavily used site. Respondents indicated that the bay had good coral cover for snorkeling, and some noted perceived increasing use potentially due to damage from Cyclone Debbie at other locations.
- False Nara was seldom used with most respondents having never visited this site. Respondents perceived that usage was increasing, associated with a perceived general rise in tourism in the region.
- Respondents indicated that they used many other bays while in the Whitsundays, the most popular bays being Butterfly Bay, Whitehaven Beach, Blue Pearl Bay, Chalkies Beach, Manta Ray Bay and Chance Bay.

## 6.3 Perceptions, values, and beliefs

Survey respondents provided interesting insights about their views of, and experiences with sharks and other marine life in the Whitsundays. Few people had seen sharks in the Whitsundays, with people encountering turtles, cetaceans, and fishes much more frequently. However, the majority of respondents indicated that they valued sharks and respected their ecological role in the ocean, and were not supportive of lethal control measures in the Whitsundays. Interesting, these values and perceptions had not changed following the incidents at Cid Harbour. These trends are consistent with wider observations of changing attitudes towards sharks in some sectors of the community (Whatmough et al. 2011, Pepin-Neff & Wynter 2018). Nevertheless, almost half of respondents still perceived sharks as dangerous and should be avoided. While the great majority of responses to an open-ended question about their attitudes towards sharks were aligned with values of respect and non-intervention, some respondents 8.9% stated that they though removing sharks was necessary.

Respondents generally believed that shark incidents were driven by ignorance. In particular, respondents perceived that both intentional (e.g. baiting, attracting sharks) and unintentional (e.g. dumping of food scraps and waste) provision of food was a contributing factor to the recent incidents. Respondents felt that this was largely a result of ignorance by the people baiting or discarding waste. Sharks and rays are widely known to respond quickly to provisioning and can change their behaviour to artificial food sources. These effects are seen across many species from many locations (Gaspar et al. 2008, Clua et al. 2011, Fitzpatrick et al. 2011, Brunnschweiler et al.

2014, Ziegler et al. 2018). Respondents have suggested that provisioning of sharks, either intentional or unintentional is occurring at anchorages in the Whitsundays, and this practice may be affecting shark behaviours, with sharks learning to associate vessels with food. Some respondents also believed that overfishing could have depleted natural food sources, creating an additional driver that brought sharks into closer proximity to boats and people. While there is insufficient data to suggest that the reefs around the Whitsundays are being overfished, habitats such as coral reefs and seagrass beds in the region were significantly impacted by Cyclone Debbie in 2017 which could have affected prey availability. However, this link is speculative, and sharks such as bull sharks have very wide ranging movements (Heupel et al. 2015) and feed on a wide variety of prey (Simpfendorfer et al. 2001) and as such, may be less affected by localised impacts.

Respondents also placed very high value on the importance of personal responsibility in staying safe, and perceived this as being critical to reducing the risk of unwanted shark encounters. Education and awareness raising were seen as the best ways to reduce the likelihood of further incidents, and more than half of respondents believed more messaging was needed. Triangulation between several questions which were framed in different ways suggests a widely held belief that ignorance, personal responsibility, and education are key issues in reducing the risk of unwanted shark encounters, and highlights an appetite for more factual and trusted information.

While generally respondents favoured education over lethal control measures, lethal response measures were a polarising issue for respondents. There was a widely held perception that drumlines and nets were ineffective measures in reducing risk of unwanted shark encounters in the Whitsundays, with over 50% of respondents rating these as ‘completely ineffective’ or ‘not effective’. In contrast, some 80% of respondents felt that education would be ‘effective’ or ‘very effective’ as a protective measure to reduce the risk of unwanted shark encounters. When asked an open question about other issues or comments they would like to make about sharks, about 50% of respondents chose to make additional comments. Of these, the most common view expressed was opposition to lethal shark control measures in the Whitsundays. However, some (8.9%) of respondents called for shark culling or shark fishing to be re-introduced.

## 6.4 Conclusions

This project delivered valuable insights into the patterns of use, values, perceptions and beliefs of recreational users in the Whitsundays. While there were a wide range of perceptions, values, and opinions expressed, some clear trends emerged.

It was clear that most respondents believed that ignorance was a key issue in increasing risk, and similarly, that education and awareness raising was needed and would be the most effective means of reducing future risks. There was also the widespread view that personal responsibility was critical

in reducing the risk of an unwanted shark encounter. It was also clear that most respondents respected and valued sharks, and that these values had not changed since the Cid Harbour incidents. These may also explain the limited support for lethal shark measures in the Whitsundays.

One immediate avenue to enhance education and raise awareness is through the 100 Magic Miles publication. This book is a comprehensive guide to sailing in the Whitsundays region and is well known and respected. Providing useful advice on shark smart behaviours through this publication would reach a wide audience. There are also opportunities to provide training to tourism crews and those responsible for briefing guests on bare-boat charters about shark smart behaviours. These crew members are in direct contact with guests, and there is abundant research that demonstrates the power tourism staff have to influence behaviour (Camp & Fraser 2012).

Given the well-documented evidence that provisioning can change shark movements and behaviour, and respondent views that provisioning is occurring at some level, the extent of potential provisioning should be further investigated. Given that the disposal of food waste overboard at anchorages is already prohibited, further research could identify user awareness of responsible waste handling practices and requirements, barriers to compliance, and opportunities to prevent further provisioning from occurring.

Meanwhile, there is strong support to enhance and optimize shark smart messaging as a key action to reduce risk, which could include the development of targeted messages and programs tailored to specific audiences, as well as dissemination of information through key communications avenues.

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Appendix 1: Flyer to elicit survey responses

# The Whitsundays, Wildlife, & You

JAMES COOK UNIVERSITY AUSTRALIA

## *What is this about?*

- James Cook University is working with local groups and tourism operators to better understand how locals and visitors are enjoying the Whitsundays' spectacular marine environments.

## *The survey seeks information on people's:*

- activities and wildlife encounters in the Whitsundays
- views about marine wildlife safety such as 'shark smart' behaviours.

## *Why this is important*

- The survey will help us understand how people are using the Whitsundays and interacting with marine creatures.
- This will help industry and wildlife managers ensure that everyone can continue to safely enjoy this very special place.

## Are you willing to help?
## Complete the 10-15 min online survey!

**SCAN**

SCAN THE QR CODE TO GO TO THE SURVEY

**VISIT**

WWW.SURVEYMONKEY.COM/R/WHITSUNDAYS-MARINE-USERS-SURVEY-2019

**SEARCH**

FOR THE PHRASE "SURVEYMONKEY WHITSUNDAY MARINE USER SURVEY"

*Need more info?*
*Contact Andrew Chin at*
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