



Fiordland (Te Moana o Atawhenua) Marine Area User Study 2007

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Prepared by
Dr Kay Booth, Dr Stephen Espiner and Prof James Higham
Kay Booth and Associates

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Key words

User survey, user monitor, user characteristics, values, motivations, management, Fiordland Marine Area, Fiordland Marine Guardians

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INTRODUCTION

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Executive Summary

The Fiordland Marine Guardians (FMG) and agencies¹ associated with managing the Fiordland (Te Moana o Atawhenua) Marine Area (FMA) requested a user monitor for the FMA to measure users' activities and perceptions. This report presents the design and results of the user monitor, implemented during February-June 2007. This report is organised into two volumes. Volume 1 presents and discusses study results, while Volume 2 contains detailed material on methods and provides all data.

The monitor was implemented to establish reference or baseline data coinciding with the introduction of the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 and associated management regulations, and to inform a review of the Act, to be initiated in 2010.

A two-phase approach was developed, comprising: (1) a questionnaire survey of commercial and recreational FMA users, and (2) key informant interviews. The user survey was developed as the monitoring tool and to establish baseline data, whereas the interview programme is an interpretive method used to supplement and validate the survey data. The user survey was conducted via a postal survey (February-May 2007); and on-site administration at Milford Sound/Piopiotaahi and Doubtful Sound/Patea, the two main visitor access points to the FMA (March-April 2007). Two forms of questionnaire were used to collect information: a full-length 'user' questionnaire, as well as an abbreviated questionnaire suitable for commercial boat passengers (the 'visitor' questionnaire). Interviews (n=39) were conducted in May 2007, with one North Island interview in early June. All data were analysed by user sub-group: commercial fishers, recreational fishers/boaties, tourism operators/employees, commercial boat passengers (termed 'visitors' in this report) and 'other' users, a category which includes researchers, and non-commercial divers and kayakers.

Use and users

Users of the FMA are divided into two types of people: the 'visitors' (who are overwhelmingly international tourists, but include some North Islanders and a few locals), and the New Zealanders (who are primarily Southlanders) who use the FMA for work and/or recreation.

Recreational fishing is a common activity in the FMA. However, the Fiordland recreational fishing experience is more than just catching fish. The commercial industries of fishing and tourism represent important 'layers' of FMA use. Some users have changed occupation but have remained working in the FMA (e.g. ex-commercial fishers who now operate charter vessels).

Use of the FMA varies considerably, geographically and by user group. This has an impact on people's perceptions of the FMA, its values and use. The most frequent users of the FMA are the people who work there (i.e. commercial fishers and tourism operators/employees). Many people have a long-term association with the area,

¹ Biosecurity New Zealand, Department of Conservation, Environment Southland, Ministry for the Environment, Ministry of Fisheries.

especially commercial fishers. The transitory nature of the tourism industry is evident – this group exhibits a shorter period of association. The ‘visitor’ group is dominated by one-off visitors – a visit to Fiordland is a once in a lifetime experience for most ‘visitors’ (related to the international character of this user group). Most ‘visitors’ stay for less than one day. Many other user groups stay within the FMA for multiple days.

Tourism in the FMA is principally focussed on Milford Sound/Piopiotaahi, with a secondary node within Doubtful Sound/Patea. Tourism also occurs within the southern fiords. Commercial fishing is widespread throughout the FMA. Commercial fishers spend varying amounts of the year within the FMA – 5-6 months being a ‘common’ period of time. Commercial fishers primarily access the FMA by boat from outside Fiordland, while all other users are dependent upon the road access points at Milford Sound/Piopiotaahi and Doubtful Sound/Patea.

Values and motivations

Individual users display a wide array of motivations for visiting the FMA, with commercial fishers being the only group with a narrow focus (catching fish). The second ‘worker’ category (tourism operators/employees) exhibited various reasons (beyond work rationale) for being in the FMA. The other user groups also exhibited a multiple set of motives, including recreational fishers/boaties, who made it plain that catching fish was only part of their reason for visiting the FMA.

The dominant motivations highlighted by all sub-groups, with the exception of commercial fishers, were nature-based:

- To experience nature
- To see wildlife
- To view scenery
- To experience wilderness
- To experience the special character of Fiordland

Almost all user groups rated the FMA’s ‘beautiful scenery and views’ as the highest value. Other values that were very important to all user groups were the presence of unique wildlife, a wide variety of marine species, an absence of marine pests and weeds, and high water quality. Consistent with responses about motivations for visiting, respondents said Maori cultural values and spiritual values were less important to them.

Interviewees valued the naturalness of Fiordland, as well as its economic and recreational uses. They took pride in the natural grandeur of Fiordland and the recreational/tourist experience (which included fishing for many). Recreational use of the FMA was perceived as part of the Kiwi identity – the ability to ‘experience’ Fiordland, and to fish there.

Trends

Perceptions of changes in the quality of the FMA varied by user group. Commercial and recreational fishers/boaties were the most likely to believe that the quality had improved and a large proportion of both sub-groups believed it had stayed the same. Tourism industry workers and ‘other’ users were the most pessimistic. Similar

percentages of tourism industry workers and ‘other’ users reported that the quality of the FMA had got worse compared with improved. ‘Visitors’ were not asked their views owing to the high proportion with no prior experience of the FMA.

Interviewees had no commonly-held opinion on trends in boat numbers, however the general view was that tourism has increased. Recreational use appears to be spreading geographically in response to improvements in technology. Some identified increasing numbers of visitors south of Milford Sound/Piopiotaahi (especially in Doubtful Sound/Patea). FMA user behaviour was felt to have improved, but this may be influenced by the users’ own personal experience (which they reported had improved with age).

Perceived threats

Few activities were perceived to represent major threats to the values of the FMA. Marine pests and pollution were perceived as the greatest threats by almost all user groups. Tourism was also seen as a potential threat to the FMA by most groups – particularly ‘others’ and ‘visitors’. ‘Visitors’ believed the area to be threatened by more activities than any other sub-group. Their top five concerns (in order of importance) were pollution, commercial fishing, marine pests, climate change and recreational power craft. Recreational and commercial fishers were the least likely to perceive the area to be under threat from activities. Overall, the lowest perceived threats were associated with non-motorised recreational craft.

Interviewees perceived the depletion of fish stocks to be the primary threat to the values they held for the FMA, with concerns often expressed about over-fishing, pollution and adverse environmental change. Interviewees commonly spoke of the threats to the recreational experience from the increasing number of tourists. The increased presence of tourists was perceived differently from the increased presence of ‘those who belong’ (New Zealanders who have a personal attachment to the FMA and have earned the right to be there through the effort of accessing the FMA).

Most people reported that they had seen/read information about marine pests (with the exception of ‘visitors’). Fewer than half of all respondents could name any marine pests. Of the pests identified, didymo, undaria and sea squirt were most frequently mentioned.

Owners/operators of marine vessels indicated that they were very willing to take action against marine pests, particularly: maintaining an active anti-fouling coating on the vessel, carrying out regular inspections of the vessel and equipment for the presence of fouling, and out-of-water cleaning and drying of the vessel’s hull. The action that respondents were least willing to carry out was in-water cleaning of the vessel’s hull. A minority of respondents were currently taking preventive actions against marine pest introductions.

Marine reserves

The current level of marine reserve protection, as perceived by participants, is considered to be adequate. Respondents tended to under-estimate the number of marine reserves but over-estimate the proportion of the FMA that is protected by

marine reserves. There are ten reserves encompassing 1.1% of the FMA. Marine reserves have a positive influence upon enjoyment and use. The indicators used to gauge awareness (knowledge of numbers of reserves and areal extent) suggest many people lack knowledge of marine reserves. However, most people appear to understand the rules surrounding marine reserves, with the exception of confusion around feeding fish and, to a lesser extent, about anchoring.

FMA management

Most research participants had seen/heard information about the management of the FMA, mainly from information brochures, as well as articles in magazines, newspapers, signs at the water's edge, and 'word of mouth'. Most people did not feel very well informed about management of the FMA. Interviewees provided some ideas about means to disseminate information to FMA users.

Most respondents do not want to change any aspect of current FMA management. Interviewees noted the complexity and confusing nature of the regulations. The current management regime does not appear to be having any significant positive or negative effect on people's use or experience of Fiordland. Respondents indicated that current fishing regulations are having a slightly positive effect on recreational and commercial fishing activity in Fiordland and similarly upon enjoyment of recreational fishing.

Over half of respondents (in all user groups) claimed to have heard of the Fiordland Marine Guardians prior to participating in the survey – commercial fishers reported the greatest awareness. Most respondents seemed reasonably knowledgeable about the role of the Guardians.

1.0 Introduction

The Fiordland Marine Guardians (FMG) and agencies² associated with managing the Fiordland (Te Moana o Atawhenua) Marine Area (FMA) requested a user monitor for the FMA to measure users' activities and perceptions. This report presents the design and results of the user monitor, implemented during February-June 2007 and comprising a survey of all identified users (commercial and recreational) and an interview programme. This study represents the first user monitor developed for the FMA. A lack of previous data on FMA users, their perceptions and activities means that this study establishes baseline data about FMA users.

The study was undertaken by Kay Booth and Associates for the FMG and associated agencies. The study team comprised Kay Booth and Stephen Espiner (Kay Booth and Associates) and James Higham (University of Otago), assisted by Jude Wilson (Milford Sound/Piopiotaahi on-site survey, interviews), Nick Sutcliffe (Doubtful Sound/Patea on-site survey), Jane Logan (postal survey) and Kerry Wray (survey analysis). The draft report was peer reviewed by Rob Greenaway (Rob Greenaway & Associates) and Anna Carr (University of Otago).

1.1 Purpose

The purpose of the study was to design and implement a user monitor for the FMA: a social survey tool allowing the quantification of trends in use and user characteristics. This tool will be applied over time to monitor use patterns and user perceptions, including:

- Description of use and users
- Satisfaction measures
- Perception of FMA values and threats
- Knowledge of the marine environment and management measures
- Effectiveness of awareness campaigns

The monitor was implemented to establish baseline data coinciding with the introduction of the Fiordland (Te Moana o Atawhenua) Marine Management Act 2005 and associated management regulations, and to inform a review of these management measures.

1.2 Study approach

A two-phase approach was developed, comprising: (1) a user questionnaire survey; and (2) key informant interviews. The user survey was developed as the monitoring tool and to establish baseline data, whereas the interview programme was an additional method used to interpret and validate the data collected.

The user survey was conducted via a postal survey (February-May 2007) and on-site administration at Milford Sound/Piopiotaahi and Doubtful Sound/Patea, the two main visitor access points to the FMA (March-April 2007). Interviews (n=39) were

² Biosecurity New Zealand, Department of Conservation, Environment Southland, Ministry for the Environment, Ministry of Fisheries.

conducted with informants, selected for their knowledge of FMA use, in May 2007 with one North Island interview in early June. Details of methods are presented in Sections 2 and 3.

The study design was premised on the following principles and assumptions:

- *Two-phase study*: The research design incorporates a quantitative user survey (Phase 1: the primary monitoring tool) and qualitative interviews with key informants (Phase 2: an interpretive method)
- *Integrative*: Data obtained using the two distinct methods can be integrated to more fully inform managers about the views and experiences of FMA users
- *Replicable*: The quantitative survey tool can be replicated at future intervals, allowing the identification of trends in user profiles, knowledge and attitudes
- *Monitoring*: The quantitative survey represents the development and implementation of a social monitoring tool. The monitoring of identified issues and indicators should be as uncomplicated as possible, and involve social research methods that allow user responses to be quantified and compared – both within the sample, and over time
- *Comprehensive*: The monitoring method aims to encompass all types of users of all areas of the FMA

1.3 Scope and definitions

The study area is defined as the FMA (Figure 1.1).



Figure 1.1: Map of the Fiordland Marine Area

Use of the FMA includes all current use for the purpose of business or recreation, including residential, day and overnight use.

Users of the FMA encompass a range of user types or sub-groups. These may be categorised as:

- Commercial fishers
- Recreational fishers/boaties (i.e. boaties who may or may not fish)
- Divers
- Kayakers
- Charter vessel operators
- Charter vessel passengers
- Commercial tourism operators and their employees
- Commercial tourism passengers
- Researchers
- Other users of the FMA

Membership of these groups is not mutually exclusive (people may belong to several sub-groups at one time or move between groups over time), and each sub-group represents a spectrum of use and user characteristics (individuals do not form a homogeneous collective with respect to their use of the FMA). Therefore, the classification of user sub-groups applied in this study should be considered a *guide*, used for survey design and discussion purposes.

1.4 Outline of report

The study report comprises two volumes. Volume 1 (main report) outlines the monitoring method in detail (to enable replication), and presents and discusses study results. Volume 2 (supplementary report) presents material pertaining to the monitoring method and all survey data for easy reference and completeness.

Sections 2 and 3 of this volume outline the two study methods, the user survey and interviews, respectively. Sections 4-11 present and discuss the survey and interview results, while Section 12 outlines study conclusions. Appendices to Volume 1 present survey questionnaires and the interview questions schedule.

2.0 FMA user monitor: The method

The user survey comprised two types of survey administration: A postal questionnaire survey, and an on-site, surveyor-distributed, self-completion questionnaire survey. Two forms of questionnaire were used to collect information. A full-length ‘user’ questionnaire, as well as an abbreviated questionnaire suitable for commercial boat passengers (the ‘visitor’ questionnaire). The key informant interview programme is discussed in Section 3, as it does not represent a formal part of the *monitoring* method. Figure 2.1 provides an overview of the study methods.

P H A S E 1	<table border="1" style="width: 100%; text-align: center;"> <tr> <td data-bbox="395 622 711 936"> Postal survey (n=293) Feb/May 2007 Distributed ‘user’ questionnaire </td> <td data-bbox="735 622 1051 936"> On-site survey (n=509) Mar/April 2007 Distributed ‘user’ and ‘visitor’ questionnaires </td> </tr> </table>	Postal survey (n=293) Feb/May 2007 Distributed ‘user’ questionnaire	On-site survey (n=509) Mar/April 2007 Distributed ‘user’ and ‘visitor’ questionnaires	Monitoring Method
Postal survey (n=293) Feb/May 2007 Distributed ‘user’ questionnaire	On-site survey (n=509) Mar/April 2007 Distributed ‘user’ and ‘visitor’ questionnaires			
P H A S E 2	<table border="1" style="width: 100%; text-align: center;"> <tr> <td data-bbox="443 1039 975 1234"> Key informant interviews (n=39) May/June 2007 </td> </tr> </table>	Key informant interviews (n=39) May/June 2007	Interpretive Method	
Key informant interviews (n=39) May/June 2007				

Figure 2.1: Study methods

2.1 The monitoring method in a nutshell

A quantitative user survey represents the monitoring method. The user survey was structured as a postal questionnaire survey and an on-site surveyor-distributed questionnaire survey at Milford Sound/Piopiotahi and Doubtful Sound/Patea. The monitor was implemented for the first time during February-May 2007. It collected information about use and user characteristics, satisfaction, perception of FMA values, knowledge of the marine environment and management protection measures, and helps to gauge the effectiveness of awareness campaigns.

The postal survey targeted FMA users known to the FMG/agencies. The postal style of the survey allows for a longer questionnaire than is possible via on-site distribution and collection. Lists of FMA users were provided by the FMG/agencies, all of whom were mailed a questionnaire and sent a series of up to three reminders at pre-determined intervals (as required), an approach consistent with best practice in social survey work (Aldridge & Levine, 2001; Dillman, 2007; Frazer & Lawley, 2000).

The on-site survey was a necessary component of the method as not all users of the FMA were known (for instance, casual users and commercial boat passengers). A surveyor-distributed, self-completion questionnaire was used to collect an abbreviated set of data from commercial boat passengers (in recognition of their tight timeframe on site). These shortened ‘visitor’ questionnaires were collected by the surveyors (or tourism operators on their behalf). In addition, the postal ‘user’ questionnaire was distributed to ‘casual’ users on site, accompanied by a free-post return envelope. These questionnaires were treated as part of the postal survey, since they were also posted back.

The on-site survey period was the fortnight encompassing Easter, which includes both school holidays and school term time, and represents a use period that has a variety of fiord visitors, a consistent mix of visitors from year to year and a higher proportion of New Zealand visitors than is representative of the visitor mix on an annual basis (R. Jebson, pers. comm. 2006).

The data collected via these methods are intended to represent users from each of the identified sub-groups (described in Section 2.3). Given the necessity to apply different sampling frames to the data collection for each sub-group, the data cannot be analysed as a single sample representing *all* FMA users.

A programme of interviews with 39 key informants provided information to help interpret the survey data and add depth to the understanding of FMA use. The interview programme does not form part of the monitor, but may be run in conjunction with the user survey in future years.

2.2 Questionnaire

Two questionnaires were developed to accommodate anticipated user sub-group differences: notably, that first-time visitors would lack knowledge about some factors under study (such as awareness of FMA regulations). The ‘user’ questionnaire comprised the full set of questions relating to FMG/agency needs, and this was administered to all users except for commercial boat passengers, via postal distribution and by way of the on-site survey with postal return. The ‘visitor’ questionnaire was designed to suit commercial boat passengers, including scenic cruise passengers and commercially-guided kayak and dive trip clients, and was distributed and collected via the surveyors at Milford Sound/Piopiotahi and Doubtful Sound/Patea. Some questions were removed and other questions slightly modified to suit the target respondents. The two questionnaires are presented as Appendices 1 and 2.

Key principles in the questionnaire design were:

- Maximise monitoring information, aiming for a high proportion of fully-completed survey responses and minimum respondent burden
- Three-fold structure to facilitate longitudinal monitoring:
 - Demographics and use characteristics
 - Items identified as universally important to monitor over time

- Topical or temporary issues - a set of questions that can be lifted out and replaced for each survey replication
- Structuring specific questions to allow for precise replication over time
- Matching question designs with other relevant surveys where appropriate (e.g. DOC's *Social Monitoring Standard Operating Procedure*, and national recreation surveys) and the New Zealand Census
- Using screening questions for sections targeting defined user groups, in order to reduce respondent burden
- Use of 'closed choice' questions (lists of boxed response items) wherever possible
- Limiting the questionnaire to approximately 6-8 pages in length, and not exceeding a self-completion time of 10-15 minutes, and less than 10 minutes for commercial boat passengers
- English language questionnaire only. Non-English speaking visitors are excluded from the monitor

The 'user' and 'visitor' questionnaires comprised several parts:

- *Your connection with Fiordland*: Description of FMA use and reasons for visiting
- *What you think about this place*: Perceptions of values, threats and trends
- *Managing Fiordland's marine environment*: Knowledge of marine reserves, marine pests and FMA management (this section was excluded from the 'visitor' questionnaire)
- *Your activities in the FMA*: Questions for commercial and recreational fishers about their fishing activities and the effect of FMA regulations on this activity (this section was excluded from the 'visitor' questionnaire)
- *Personal profile information*: Home location, gender, age

Drafts of the questionnaires were circulated amongst members of the FMG and associated agencies for comment. The tools were pre-tested prior to the start of the survey to check question comprehensibility and the appropriateness of the sampling approach.

2.3 Survey population

The target population was current users of the FMA. This population comprised multiple sub-groups including commercial fishers, recreational fishers, charter vessel operators and passengers, divers, kayakers, commercial tourism operators and passengers, researchers, and other users of the FMA.

2.4 Survey period

2.4.1 Postal survey

Questionnaires were posted to respondents on 26 February 2007. Surveys continued to be returned over several months. To facilitate analysis, questionnaires returned after 25 May were not included in the dataset (three questionnaires).

2.4.2 On-site survey

The survey period is the fortnight encompassing Easter; defined as the week prior to Easter, Easter weekend and the week after Easter. This period encapsulates the Autumn school holidays, Easter and non-school holidays' times. For 2007, this meant that the survey was conducted from 31 March to 15 April at Milford Sound/Piopiotahi and 5-15 April at Doubtful Sound/Patea (Good Friday was 6 April). A shorter survey period was used at Doubtful Sound/Patea owing to lower use levels (see Section 2.5.2). This period was selected in order to:

- Ensure a stable user profile across monitoring years (i.e. a variety of fiord visitors and a consistent mix of visitors from year to year)
- Ensure a good mix of users, both international visitors and New Zealanders
- Avoid known tourism companies' client survey periods (so visitors did not encounter more than one survey)
- Avoid the extremes associated with peak or low tourism seasons which might result in a particular set of perceptions amongst FMA users or visitors
- Minimise potential interruptions to survey implementation owing to weather fluctuations - Easter/Autumn is a relatively settled season in terms of the weather experienced in the Fiordland region.

It is possible that bias is introduced if the survey period chosen is unusual in use terms from one monitoring period to the next. For this reason, care was taken to choose a 'stable' period with respect to the visitor profile and it is intended that each iteration of the user monitor will be administered at the same time of year. Good weather was experienced during Easter 2007. If a different time period had been chosen, the ratio of domestic to international respondents within the 'visitor' sub-group may have been different. Given that most of the other FMA user respondents were selected from mailing lists, the survey timeframe is thought to be less critical for these sub-groups. Seasonal availability of fishers may also influence response rates (and thereby alter the results) if a different survey period is chosen from one monitoring year to the next.

2.5 Sample design

All FMA users known to the FMG/agencies were approached for inclusion in the study by way of a postal questionnaire. However, this approach excluded casual visitors whose names/addresses were unknown. Therefore, the postal survey was supplemented by an on-site user survey. Coverage of the user sub-groups by each method (postal/on-site surveys) is shown in Table 2.1. Note that some user sub-groups were contacted via the postal survey as well as the on-site survey.

A single FMA user sample was not possible, as weighting ratios for the various sub-groups were not available (i.e. their proportional contribution to total user numbers). Data are therefore analysed by sub-group (see Section 2.7).

Table 2.1: Data collection method by sub-group

Sub-group	Survey method	Questionnaire	Comments
Commercial fishers	Postal	User	List provided
Recreational fishers / boaties	Postal	User	Lists of syndicate boaties and Wilmot Pass permit holders
	On-site	User	Milford/Deep Cove: Boat ramp users
Charter vessel operators	Postal	User	List provided
Charter vessel passengers	On-site	User	Milford/Deep Cove: Boat ramp users
Commercial tourism operators / employees	Postal, on-site	User	List of concessionaires, direct contact with employees by surveyors
Commercial tourism passengers	On-site	Visitor	Via operators
Kayakers and divers (commercial / guided)	On-site	Visitor	Via operators
Kayakers (non-commercial)	On-site	User	Milford/Deep Cove: Boat ramp users
Divers (non-commercial)	On-site	User	Milford/Deep Cove: Boat ramp users
Researchers	Postal	User	List provided
Other recreational users	On-site	User	Milford/Deep Cove: Boat ramp users

2.5.1 Postal survey

Lists of FMA users were supplied (names/addresses), in confidence, by the FMG/agencies. These contacts totalled 432 individuals. All were sent a questionnaire. As the contact list for syndicate boaties provided one contact for each syndicate, only one person per syndicate was surveyed. A 'syndicate' is a group of people who share boat ownership and use.

Each contact on the list was sent the following information (until a questionnaire was returned, at which point they were removed from the reminder mailing list):

- Cover letter, questionnaire and free-post return envelope (26 February 2007)
- Reminder letter 1 (8 March 2007)
- Reminder letter 2, replacement questionnaire and free-post return envelope (19 March 2007)
- Reminder letter 3, replacement questionnaire and free-post return envelope (29 March 2007)

Owing to incorrect names/addresses in the contacts list, some questionnaires were 'returned to sender'. Correct names/addresses were sourced for four of the 11 'return to sender' surveys. The 'corrected' mail-out occurred on 27 April 2007 with an

abbreviated follow-up routine (owing to time constraints). Implications of the quality of the contact lists are discussed in Section 2.6. See Volume 2 for copies of all letters.

Respondents were asked to return completed questionnaires as soon as possible. A cash prize incentive was used to encourage response. This appeared to be effective, as some people included notes to the survey administrator, suggesting the prize had motivated them to reply. The cash prize was awarded in early May. Questionnaires were collected until 25 May, when data collection ceased, to facilitate survey analysis.

2.5.2 On-site survey

The on-site survey had two purposes: (1) administration of the ‘visitor’ questionnaire survey, and (2) distribution of the ‘user’ questionnaire to casual recreational FMA users (who were given free-post envelopes for questionnaire return). Thus the on-site survey supplemented the set of ‘user’ questionnaires obtained via the postal survey.

2.5.2.1 Questionnaire

The survey tool was a surveyor-distributed, self-completion questionnaire. Respondents either completed the questionnaires on-site and returned completed surveys to the surveyor immediately or via the tourism operator (for commercial boat passengers), or posted them back (for non-commercial users). Despite this approach, many questionnaires were not returned or were incomplete. However, the method ensured that the researchers maintained control over the distribution of the surveys (thus increasing the likelihood of an accurate representation of users).

One surveyor was based at Milford Sound/Piopirotahi and one at Doubtful Sound/Patea. Interviewers were trained to minimise interviewer bias. Interviewer instructions are provided in Volume 2.

2.5.2.2 Survey sites

A systematic sampling approach was used to approximate a random sample of users at each of the three sampling points (FMA entry/exit sites):

- Milford Sound/Piopirotahi: Freshwater Basin tourist wharf/terminal
- Milford Sound/Piopirotahi: Deepwater Basin boat ramp and wharves
- Doubtful Sound/Patea: Deep Cove wharves, beach and hostel

For commercial boat passengers, quota sampling was used, with target sample sizes for fully-completed questionnaires at Doubtful Sound/Patea (n=95) and Milford Sound/Piopirotahi (n=305). The final numbers of questionnaires exceeded the targets, because some questionnaires were only partially completed. Data from these questionnaires were also analysed. The final survey figures were Doubtful Sound/Patea (n=120) and Milford Sound/Piopirotahi (n=389). Although Bluff, Riverton and Stewart Island were identified as a source of ‘visitors’ and ‘users’, these sites were not included in the on-site survey owing to logistical constraints and the small number of respondents likely to be sourced from these places.

2.5.2.3 Sample design for ‘users’

The sampling unit was the user (rather than the visit) and, therefore, each user was surveyed only once during the study. Participation was voluntary. Only people 15 years of age or older were sampled, the age of participants chosen as a cut-off level for question comprehension.

Surveyors contacted ‘casual’ FMA users at the boat ramps/beach in Milford Sound/Piopirotahi and Doubtful Sound/Patea, targeting times when locals advised that people would be coming on and off the water. All groups of users were approached and every member of the group was given a copy of the full-length ‘user’ questionnaire, together with a free-post return envelope, irrespective of whether they were entering or exiting the FMA. Owing to the nature of the activity at boat ramps (people coming/going) and the length of the questionnaire, it was not practical for users to complete the questionnaire on site.

The on-site survey phase was also used to maximise representation of tourism employees who were not on the initial mailing list for the postal survey. Users who had already completed a survey (postal) were ineligible for the on-site survey. No incentives for questionnaire completion were used in the on-site survey.

2.5.2.4 Sample design for ‘visitors’ (commercial boat passengers)

Tourism operators were approached and their co-operation sought. All were very helpful and supportive. The survey could not have been conducted without their assistance.

Sampling was designed to correspond proportionately to the estimated use patterns at each of the identified survey sites. Available information from the FMG/agencies indicated that the ratio of commercial tourism passengers at Milford Sound/Piopirotahi in comparison Doubtful Sound/Patea was approximately 90:10. Hence, 90 percent of survey time was targeted at Milford Sound/Piopirotahi. A higher number of Doubtful Sound/Patea respondents (i.e. more than 10 percent of the sample) was pursued, to ensure a statistically robust Doubtful Sound/Patea sub-sample for analytical purposes. Every day of the sampling period was treated as equivalent.

A stratified sample was designed with knowledge of the approximate market share of passengers at each survey site, with the passenger sample from small operators increased to 30 (completed surveys) to ensure a robust range of users in the sample. The target sample size for commercial cruise boat passengers was not increased in proportion to the smaller operators, since the sample size was already large enough for analytical purposes (n=250). See Table 2.2.

In consultation with tourism operators, researchers identified individual sailings/trips on which to distribute questionnaires. Consideration was given to the type and number of users on the various sailings/trips to ensure representation from the different types of users. The result was a schedule of sailings/trips by date, and number of questionnaires targeted for completion. More questionnaires were distributed, owing to non- and partial-completion. When numbers of completed questionnaires collected were fewer than intended, another sailing of that type was

targeted on another day. Occasionally a higher completion rate than expected was gained. The distribution design was a guide only, but surveyors carefully followed it and final figures were very close to the original distribution plan.

While this approach was time-consuming to implement, it acknowledges that visitor types vary by sailing and ensures a good distribution across types of users. Milford Sound/Piopiotaahi cruises were complex to schedule (many sailings, many types of users, variable passenger numbers ‘on the day’). Detailed notes on implementing this approach can be found in the ‘Surveyor Instructions’ document provided in Volume 2 of this report.

Table 2.2: ‘Visitor’ sample design

Tourism operator	Estimated market share	Target number of completed questionnaires
<i>Milford Sound/Piopiotaahi: Freshwater Basin</i>		
Cruise boat operator 1	55%	110
Cruise boat operator 2	35%	70
Cruise boat operator 3	5%	10
Cruise boat operator 4	5%	10
Milford Track boat transport		30
<i>Milford Sound/Piopiotaahi: Deepwater Basin</i>		
Kayak operator 1		30
Kayak operator 2		15 (plus 15 at Doubtful)
Dive operator		30
<i>Doubtful Sound/Patea: Deep Cove</i>		
Cruise boat operator 1		40 (30 day cruise, 10 overnight cruise)
Cruise boat operator 2		10
Kayak operator 1		30
Kayak operator 2		15 (plus 15 at Milford)

Contact with passengers varied a little by operator. One method was to distribute questionnaires as tourists walked up the ramp on to the boat, using a systematic approach (i.e. every Kth passenger). ‘K’ was determined by the number of surveys targeted for that type of cruise and the number of passengers on board. Questionnaires were then completed on board and returned at the end of the boat journey to either the surveyor (who met the boat) or the tourism employee (for later collection by the surveyor). Alternatively, surveyors went onboard the cruise and talked to passengers directly, asking them to complete the questionnaire. Groups of passengers were approached on a ‘next to pass’ basis and individuals chosen within the group by using the birthday rule (the person with the next birthday, 15 years or older, completed the survey).

Both approaches have the disadvantage that passengers filled in the survey at different times on the boat journey – some before interpretive information was provided on board, and some afterwards. The provision of this information may affect awareness questions. This problem could have been addressed by surveying passengers after their return from their fiord journey, but this was impractical given the physical and time constraints faced by operators and passengers. The significance of this disadvantage is considered to be minor given that the purpose of the survey is longitudinal data analysis. Any effect would remain constant from one survey period to the next, unless the interpretation services on board vessels varies significantly across monitoring periods.

Large cruise ships did not disembark passengers during the survey period at either site, so no surveys were completed by their passengers.

Survey distribution to commercial kayak and dive clients was discussed with the operators. Surveyors approached groups at the end of their trips and distributed questionnaires. Most operators acted as a collection point – giving them to the surveyors on the next trip. Quota sampling ensured adequate numbers of kayak and dive commercial passengers.

2.6 Sample size and response rates

Sample size was self-determining owing to the nature of the sample design. A total of 802 completed questionnaires was collected, distributed across sub-groups as shown in Table 2.4. To obtain this number of completed questionnaires, 432 ‘user’ questionnaires were posted, 328 ‘user’ questionnaires were distributed on-site by surveyors, and 607 ‘visitor’ questionnaires were distributed on-site by surveyors (463 distributed at Milford Sound/Piopiotahi and 144 at Doubtful Sound/Patea).

The mailing lists supplied by the FMG/agencies were found to include incorrect names/addresses as well as ineligible contacts (i.e. people who do not use the FMA). The latter problem was identified because 48 people followed the instruction on the cover page which asked people to indicate that they did not use the FMA and return the questionnaire. It is likely that many other people will have simply ‘binned’ the questionnaire and, therefore, the proportion of ineligible contacts is not known. Table 2.3 presents response rate statistics for the ‘user’ survey. These statistics are for the final account – after following up incorrect names/addresses, which reduced the number of ‘gone, no address’ contacts.

A response rate was achieved for the ‘user’ survey of 42%³ (43% for the post-distributed questionnaires and 40% for the surveyor-distributed questionnaires). The on-site ‘visitor’ survey response rate was 84% (84% for Milford Sound/Piopiotahi and 83% for Doubtful Sound/Patea).

³ Calculated as $[293 / (328 + 432 - 7 - 48)] \times 100 / 1$

Table 2.3: Response rate statistics for the ‘user’ survey

Questionnaires posted	432
Questionnaires distributed on-site	328
Returned completed questionnaires <ul style="list-style-type: none"> • From mail-out (n=161) • From on-site distribution (n=132) 	293
Gone, no address	7
Known ineligible contacts (returned surveys - ticked ‘do not use FMA’)	48

It is not possible to calculate a sampling fraction (i.e. the proportion of survey respondents relative to the total user(r) population) as the user population for the FMA is unknown.

One person refused to take part in the on-site survey (at Doubtful Sound/Patea – no reason given). Some people returned the questionnaire without completing it. No assumptions can be made about the nature of non-respondents (whether they are significantly different from the people who did take part in the survey) because no information is available about their characteristics or use patterns.

2.7 Analysis

Monitoring data can answer questions *only* in relation to individual user sub-groups. The quota sampling approach does not generate a *representative* user sample across the total user population. Therefore, it does not allow the ability to interpret data across the total sample and statements cannot be made about all users, e.g. That ‘40% of FMA users were aware of new regulations’. This approach was chosen in consultation with the FMG/agencies, owing to the very high proportion of commercial tourism passengers that would comprise a representative user sample.

The data collected are a sound representation of the various sub-groups using the FMA. While representation within each user group can be considered accurate, the figures should not be aggregated to create an amalgamated ‘all FMA users’ dataset because user sub-group sampling was not proportional to the total use of the area (which is unknown). Weighting data for user sub-groups was considered but dismissed on the basis of the lack of rigour in any estimated ratios of sub-group representation within the ‘population’.

Data were analysed using SPSS (version 15), a statistical package for the social sciences, in conjunction with EXCEL, a spreadsheet programme which facilitated the presentation of graphs and tables. The spreadsheet of all data is provided on CD (Volume 2 of this report), to facilitate data entry and analysis for subsequent iterations of the monitor.

Data were analysed separately for each user sub-group, and for Milford Sound/Piopiotaahi and Doubtful Sound/Patea ‘visitors’ individually. Sub-groups were identified from responses to Q1 (‘which of the following best describes your use of

the FMA?’). Commercial boat passengers completed the ‘visitor’ survey and were thus categorised.

In order for meaningful statistical analyses to be undertaken, it was necessary to amalgamate some sub-group categories which had small numbers of respondents. Table 2.4 describes the analytical categories used in this report.

Table 2.4: Sub-group analytical categories

Analytical user category	Number of respondents	Error Margin (+/-)	Composition of analytical user category	Number of respondents
‘VISITORS’				
‘Visitors’	509	4.4%	Commercial boat passengers (scenic boat cruises, kayak trips, dive trips): Milford (n=389) Doubtful (n=120)	509
‘USERS’				
Commercial fishers	71	11.6%	Commercial fishers	71
Recreational fishers/boaties	93	10.2%	Recreational fishers/boaties	93
Tourism operators/employees	75	11.3%	Tourism operator/employees	64
			Charter vessel operators	11
Other	54	13.3%	Kayakers (not commercial trip)	8
			Divers (not commercial trip)	20
			Researchers	6
			Other FMA users ⁴	20
TOTAL	802			802

All results are presented on the basis of these sub-groups. When comparing results across user sub-groups, comparisons are made in terms of proportions rather than raw figures because of the different sample sizes and sampling fractions for each group.

Error margins for the frequency data for all sub-groups are provided in Table 2.4. As the sample design was more complex than a simple random sample (on which these errors are calculated), these are estimates only. Had total population estimates for each of the sub-groups been available, it would have been possible to adjust the error margins using a finite population correction (FPC). An FPC may be used in situations where the sample is thought to exceed ten percent of the total population (as is likely for all sub-groups with the exception of the ‘visitor’ sub-group). Application of an FPC, had it been possible, would have reduced the error margins reported in Table 2.4.

⁴ Others comprised: Hunters (5), trampers (1), aviators/pilots (2), government employees (2), iwi (1), people sheltering from bad weather (2), student (1), hostel manager (1), Meridian Energy worker (1), no comment (4).

3.0 Key informant interview programme method

3.1 Purpose

The programme of key informant interviews provided a qualitative means to provide interpretative material to supplement the primary monitoring tool. The interview programme served three purposes:

- Assisted researchers to understand and interpret the data collected in the quantitative user survey (especially trends in data over time)
- Collected data on themes that were difficult to incorporate in the quantitative survey design. For example, how management regulations have affected recreational fishing activities
- Provided valuable data on the interactions between user sub-groups that could not be identified from the quantitative survey data

Interview data also has the potential to help refine subsequent iterations of the questionnaire. For example, to identify question designs that need alteration, or to account for values or attitudes not sufficiently apparent in closed choice items in the questionnaire.

Interviews are not a formal part of the monitoring tool. The interview programme could be run alongside the quantitative monitoring programme in future years, if desired, or else discontinued. Its primary contribution is a greater understanding of study objectives (depth of data).

3.2 Approach

Semi-structured interviews were conducted on a face-to-face basis, at a location convenient to the interviewee. Interviewees were interviewed individually (i.e. only one informant interviewed at one time), with one exception where two business partners were interviewed concurrently. A total of 39 people were interviewed during 38 interviews.

3.3 Selection of interviewees

An initial list of potential interviewees was provided by the FMG/agencies group, which took cognisance of the range of known user activities/groups, to ensure a comprehensive representation of informants. This list was very long, with 'key' informants highlighted; these were targeted first. In addition, researchers 'snowballed' off this initial list and included some other informants, who were recommended repeatedly by interviewees. Interviewee names are not disclosed to protect their anonymity.

Key informants represented people from the following user groups:

- Commercial fishers (n=4)
- Recreational fishers/boaties (n=9) of which 4 were syndicate boat fishers

- Commercial tourism operators and their employees (n=11), of which 4 were commercial kayak tourism operators/employees, 1 was a commercial dive tourism operator
- Recreational divers (n=1)
- Charter vessel operators (n=7)
- Charter vessel passengers – it did not prove possible to contact these people, although it is likely that some interviewees were also charter vessel passengers
- Researchers (n=2)
- Iwi (n=2)
- Commercial aircraft operators (n=1)
- Other recreational users of the FMA: radio operators (n=2)

To protect anonymity, the 39 interviewees are referenced in the report by their sub-group:

- Commercial fishers
- Recreational fishers/boaties
- Commercial tourism operators/employees (including charter vessel operators) – referred to as ‘tourism/charter operators’
- Other users: divers, researchers, iwi, commercial aircraft operators, radio operators

3.4 Timing and location of interviews

Thirty-eight interviews were conducted by Kay Booth and Jude Wilson in May/June 2007, after the initial data analysis had been completed for the survey. This allowed survey data to be discussed with informants, to obtain their interpretation of these data. Survey data were discussed last, to avoid influencing interviewees’ responses to interview questions.

Interviewees were asked where they wished to be interviewed – most chose their own home or work place. Thirty-eight interviews were conducted in various locations around Southland (n=34), Otago (n=2), Canterbury (n=1) and Wellington (n=1).

3.5 Conducting the interviews

Prospective interviewees were contacted by telephone and asked to participate. In many instances, repeat telephone calls were required to contact the interviewee. Several prospective interviewees were willing to participate but were not available during the interview period. Two people refused to take part; one because of a strong dislike for the FMG, and the other because of a general dislike of survey research. Reminder telephone calls were often made the night before the interview. All interviewees completed the pre-arranged interview (there were no ‘no shows’).

Interviewees were provided with an ethics form, which identified that their participation was voluntary and that their name would not be associated with notes from the interview, which they would have the opportunity to amend and verify. See Volume 2 for a copy of the Interviewee Information and Ethics Sheet.

A schedule of interview questions was used (Appendix 3), which formed the schematic for the interview. Interviews varied from this schedule in response to the 'flow' of the interview and where new material appeared pertinent. The set of questions about kaitiakitanga proved problematic: interviewees commonly looked blank or said they didn't know anything about it. After repeated attempts to obtain answers to these questions failed, the questions were dropped (except for 'iwi' interviewees who did respond to the questions).

3.6 Notes and analysis

With the permission of interviewees, all interviews were audio-taped for the purposes of later note-taking. Tapes were not transcribed, but rather a set of notes was prepared from each interview and were labelled by type of user sub-group and an identifier number (interview notes are presented in Volume 2). Researchers retain the only list that matches interview numbers to names, to ensure anonymity. At the conclusion of the note-taking stage, all tapes were destroyed.

Interview notes were posted to each interviewee together with a thank-you letter (see Volume 2). Two interviewees stated at the time of interview that they did not want to see the notes, so they were not sent to these individuals. Interviewees were asked to read the notes and respond with any amendments. Seven did so (all amendments were minor). Researchers were concerned that a few interviewees could be identified from their interview notes, owing to their roles. These individuals were asked whether they wanted to protect their anonymity to a greater degree. None required changes in order to do so. The initial ethics sheet, the interviewer's explanation of intentions, the voluntary nature of participation, and the distribution of interview notes to all interviewees, was considered a sufficient ethical basis on which to include summaries of interview notes in the final report.

Analytical notes were prepared during and post-interview. These were developed around the themes that emerged from the interviews (e.g. the role of the FMG). A point of information 'saturation' had been reached by the end of the interview process, with information being raised repeatedly and strong common themes recorded.

4.0 Introduction to the results

Sections 5-10 present the results from the survey and interview programme. Sections are separated thematically. Each section begins with a summary of results for that theme.

Survey data are presented and discussed by user sub-group, as noted in Section 2.7. As previously discussed, a ‘total users’ dataset cannot be derived because the proportionality of sub-group samples cannot be confirmed. Some questions were asked of all sub-groups, while other questions excluded the ‘visitor’ sub-group as the question was not relevant to them (see Section 2.2). The presentation of results identifies the relevant sub-groups and question numbers are provided. Question numbers refer to the ‘user’ questionnaire (the code ‘Q’ plus question number indicates ‘user’ survey questions) unless it is identified as specific to the ‘visitor’ questionnaire (and the code ‘VQ’ plus question number is used).

Interview data are presented following discussion of survey data, wherever relevant. Not all study themes were addressed in the interviews, therefore some sections report on survey and interview data, while others are focused solely on survey data. All data are clearly labelled by origin (survey or interview), to avoid confusion.

To protect anonymity, interviewees are not identified (see Section 3.3), however, the type of interviewee is stated in order to indicate the ‘voice’ for each comment. Many comments have been paraphrased. Direct quotes are indicated by double quote marks.

Volume 2 of this report presents all data from the study. This includes frequency data for all survey questions, transcribed responses to all open-ended survey questions and ‘other’ categories, plus interview notes.

5.0 User characteristics: Who are the users?

5.1 Summary

Users of the FMA are divided into two types of people: the ‘visitors’ (who are overwhelmingly international tourists, but include some North Islanders and a few locals), and the New Zealanders (who are primarily Southlanders) who use the FMA for work and/or recreation.

Recreational fishing is a common activity in the FMA. However, the Fiordland recreational fishing experience is more than just catching fish. The commercial industries of fishing and tourism represent important ‘layers’ of FMA use. Some users have changed occupation but remained working in the FMA (e.g. ex-commercial fishers who now operate charter vessels).

For all graphs and tables, the number of respondents answering the question is given as (n=). Some respondents did not answer all questions; therefore numbers vary slightly by question.

Sources of data:

- ‘User’ survey Qs 1, 27, 30, 34-36
- ‘Visitor’ survey Qs 11-14
- Interviews

5.2 Home location

Respondents were asked where they normally live. As expected, only the ‘visitor’ sub-group incorporated many international visitors. Almost all of the people in the other sub-groups indicated that they lived in New Zealand - 98% of recreational fishers/boaties, 100% of commercial fishers, 97% of tourism operators/employees and 99% of ‘others’. Of the ‘visitors’ sub-group, only 18% of respondents (91 people) said that they normally lived in New Zealand. Figure 5.1 presents results for all respondents who stated they live in New Zealand, (a few international respondents answered this question and are noted in Figure 5.1). Figure 5.2 presents results for ‘visitors’ (only).

Figure 5.1 illustrates that, with the exception of the ‘visitors’, by far the largest proportion of people using the FMA normally live in Southland. Tourism operators/employees and recreational fishers/boaties had the largest proportion of people who normally live in Southland, with 63% and 59% respectively. ‘Visitors’ were the *least* likely to live in Southland, with only 3% (all of whom were visiting Doubtful Sound/Patea). The next most cited home location was Otago, with 34% of ‘others’, 29% of ‘visitors’, 21% of tourism operators, 19% of recreational fishers, and 15% of commercial fishers. Relatively few FMA users normally lived outside of these southern areas, and almost none came from the North Island. An exception to this is the ‘visitor’ category, where 21% of respondents stated that they lived in Auckland.

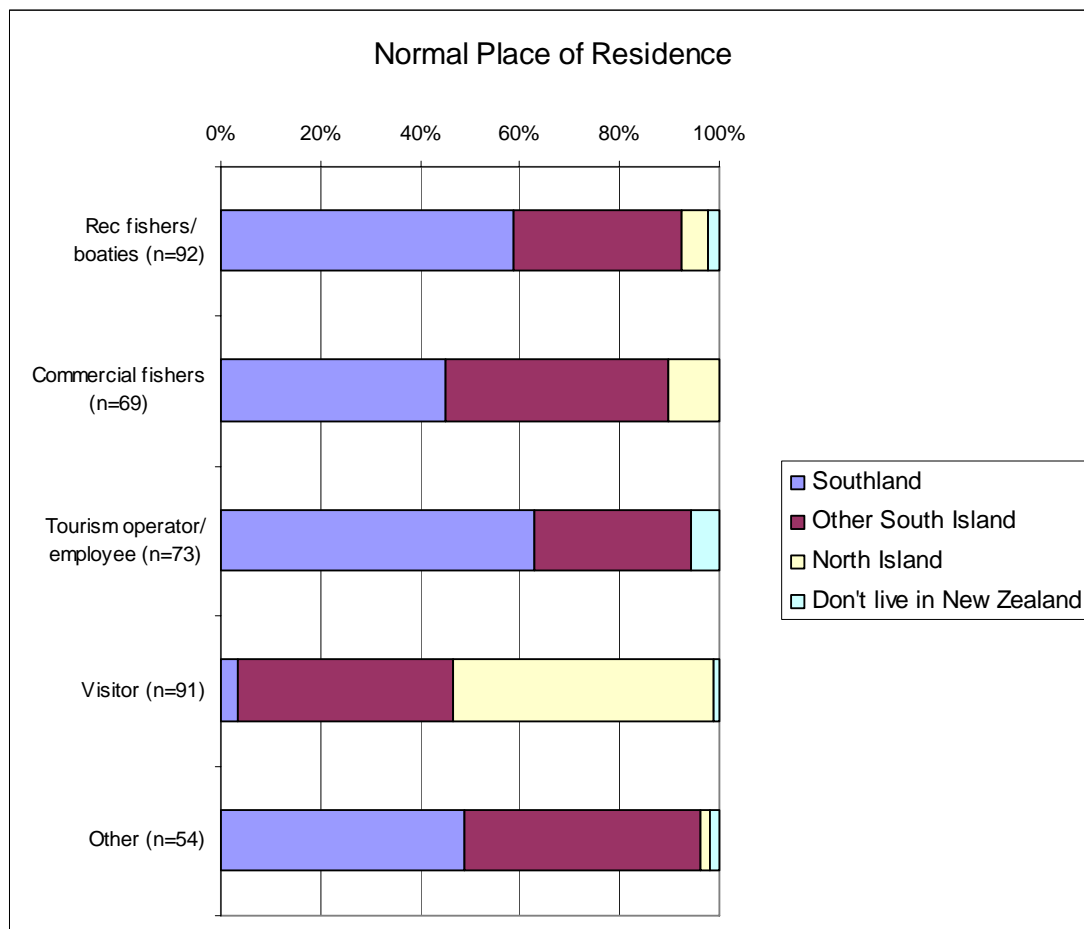


Figure 5.1: FMA users' normal place of residence - Q34/VQ12

'Visitors' to the FMA came from a wide variety of countries - with Australia dominating at 31% of all 'visitors' (Figure 5.2). Almost 20% (18%) of 'visitors' came from the United Kingdom, and a further 18% from New Zealand. The USA was a relatively common country of origin, with 12%, while only 4% of 'visitors' came from Germany. A further 16% came from 'other' countries. These findings broadly reflect those of other visitor studies at iconic attractions in New Zealand (Booth & Peebles, 1995; Kearsley et al., 2001).

When the 'visitor' sub-sample is disaggregated, some important differences are evident. In particular, New Zealanders (34%) make up a much larger proportion of the sample at Doubtful Sound/Patea than they do at Milford Sound/Piopirotahi (13%). The converse is true when visitors from Australia are considered: representing nearly 38% of 'visitors' to Milford Sound/Piopirotahi, and just over 11% of 'visitors' to Doubtful Sound/Patea. Differences between proportions of New Zealanders and international 'visitors' at the two sites were statistically significant.⁵

⁵ Chi square statistics: $\chi^2 = 26.8$, $df=1$, $p < .001$

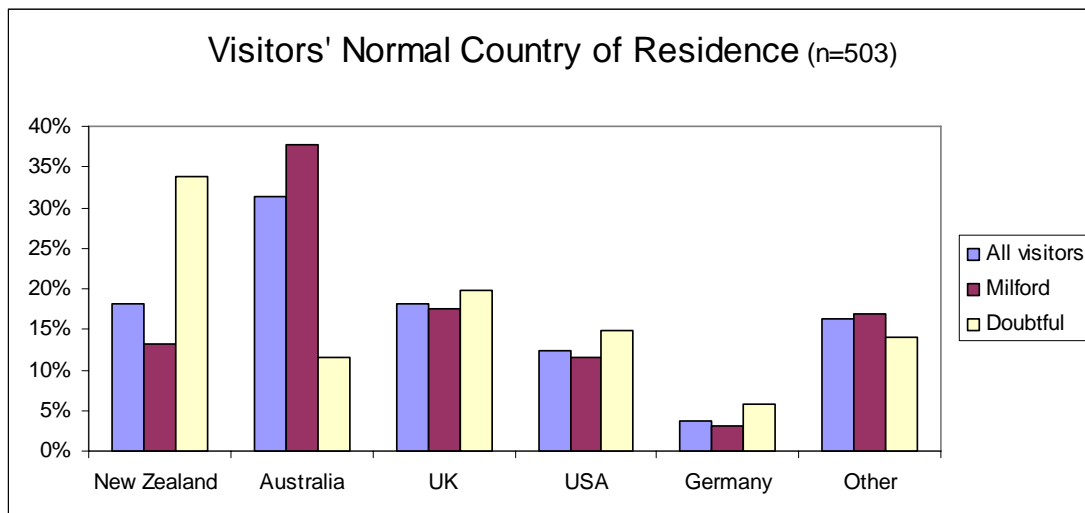


Figure 5.2: Visitors' normal country of residence - VQ11 ('visitor' sub-group only)

5.3 Gender

Most users of the FMA during the survey period were male (Figure 5.3). This was particularly the case for commercial fishers (99%) and recreational fishers/boaties (76%). Over half of tourism operators/employees (60%) and 'others' (70%) were also male. The only user group that contained more females than males was the 'visitor' sub-group, with 45% males, and 55% females.

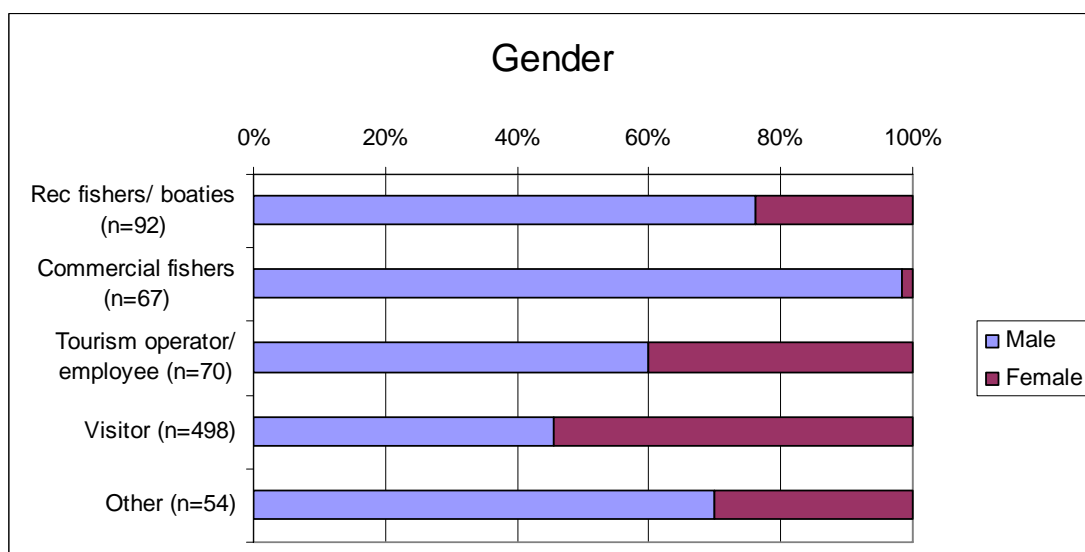


Figure 5.3: FMA users' gender - Q35/VQ13

5.4 Age

The FMA is used by people from across the age range, with variations by user sub-group (Figure 5.4). Respondents in the 'visitors' sub-group had the widest range of ages, with people from 15 years to more than 80 years old in this category, and no age group was dominant. When the 'visitor' sample is further sub-divided by site, a

statistically significant difference was found with respect to age⁶. Among Doubtful Sound/Patea respondents, 41% were aged between 35 and 54 years, compared to 24% of Milford Sound/Piopiotaahi ‘visitors’. Nearly one third of Milford ‘visitors’ were aged 55 years or over, compared with just 19% of those at Doubtful Sound/Patea.

People in the ‘other’ category also had a relatively even spread of ages, but no-one was above 64 years of age. Tourism operators/employees had more people in the younger-middle-aged brackets (20-54 years old), with a peak between 20-24 years, and very few people over the age of 65. In the commercial fishers category, there was no-one under the age of 25, and only 7% (5 people) under 35 years. The majority of commercial fishers (77%) were between 35 and 60 years old. There were also very few recreational fishers under the age of 30 years, and most users in this group (76%) were between 35 and 64 years old.

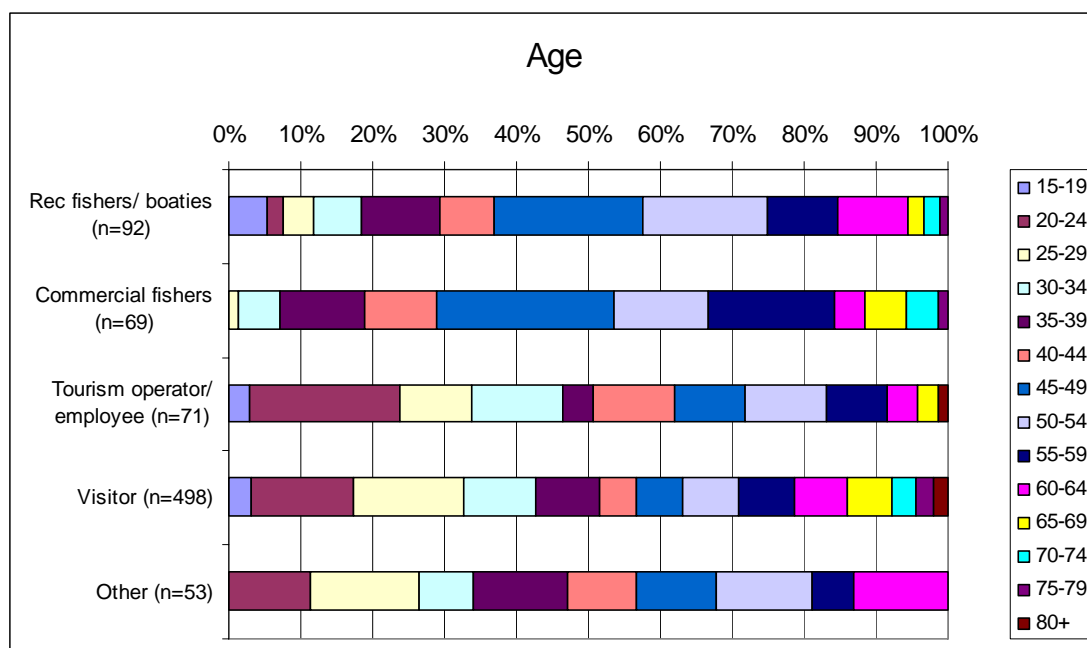


Figure 5.4: FMA users' age - Q36/VQ14

5.5 User sub-groups

This section presents and discusses data pertaining to FMA users and their activities. Survey data on recreational and commercial fishers is presented first. This is followed by information provided by interviewees about user sub-groups, which provides insight into the types of people who use the FMA.

Survey design was predicated on a classification by sub-group. All analyses are based on responses to Q1 of the ‘User’ questionnaire: ‘which of the following best describes your use of the FMA’. In other words, people were categorised based on their *primary* activity. Two survey questions enquired into fishing use and identified that many people also had *secondary* activities. In addition, interviews provided information about the nature of the FMA user sub-groups. Survey data are presented first and then interview data are summarised.

⁶ Chi square statistics: $\chi^2=14.4$, $df=2$, $p<.001$

5.5.1 Survey data

Recreational fishing is a common activity for *all* user sub-groups. Over half of respondents in all user groups said that they fished recreationally in the FMA. Not surprisingly, recreational fishers/boaties (92%) were by far the most likely to answer ‘yes’ to this question (Q30). That 100% of these respondents are not recreational fishers can probably be attributed to the fact that some respondents are ‘boaties’ without participating in the activity of fishing (a small proportion of this user category). Sixty percent of ‘others’, 55% of commercial fishers and 53% of tourism operators/employees stated that they fished recreationally in Fiordland.

A similar question (Q27) asked whether the respondent commercially fished in the FMA. Results indicate that some people undertake commercial fishing as a secondary activity (it is not their main use of the FMA), but these numbers are very small. Not surprisingly, 86% of ‘commercial fishers’ answered ‘yes’ to this question. It could be expected that 100% of the commercial fisher sub-group would state that they commercially fished in the FMA. The 14% difference may be explained by people completing the questionnaire because they own or operate commercial fishing businesses using the FMA, but do not personally fish in the area. Very few people in any of the other user groups indicated that they currently fished commercially in Fiordland – 3% of recreational fishers/boaties, 2% of ‘others’ and 1% of tourism operators/employees.

5.5.2 Interview data

Data from the key informant interviews which contribute to an understanding of the types of FMA users, are now summarised (Sections 5.5.2.1 – 5.5.2.5).

5.5.2.1 General observations

Interview data confirmed that user groups are not distinct or mutually exclusive. In particular, interviewees highlighted that commercial fishers and tourism operators (‘workers’) often use the area for recreational purposes – in particular, many FMA users fish for recreation and many recreational fishers/boaties also dive. Interviewees highlighted that charter vessel passengers are primarily recreational boaties. As well as reinforcing the multiple uses of the FMA made by some users, interviewees also highlighted that individuals may have used the FMA differently in the past. So individuals may have some affiliation with other sub-groups (e.g. a tourism operator who used to commercially fish in the FMA).

It is apparent that a place-based ‘career’ pathway exists for the FMA, whereby some people remain closely involved with the FMA but change occupations (as opposed to remain with an occupation and change locations). Similarly, boats may change their application (e.g. a commercial fishing boat becomes a charter boat) but remain in the FMA. This ‘career’ appears to be linked to strong personal attachments to the FMA (see Section 7: Values and motivations).

5.5.2.2 Commercial fishers

An inter-generational family tradition of commercial fishing in the FMA was evident from the four interviews with commercial fishers (e.g. one interviewee was a third-generation FMA commercial fisherman).

Changes in commercial fishing have resulted largely from the introduction of the quota system; considered to be responsible for reducing the number of commercial fishers and fishing boats. Linked to these changes, the 'FMA career pathway' was particularly evident for commercial fishers. Ten other interviewees previously had been commercial fishers in FMA (seven are now tourism/charter operators; three from the 'others' group). Some fishing boats have been converted into charter boats. Other people report that they miss having the commercial fishers around (see discussion of this value in Section 7: Values and motivations).

Interviewees collectively fished all areas of the FMA. A strong sense of territory or place attachment came through the interviews – fishers may have their 'own patch(es)'. The implications of this are that (1) fishing regulations may have an effect on practices where 'their patch' is affected; and (2) a sense of exclusive ownership may exist: "Fishermen can be territorial – they think they own fishing grounds" ('other' user).

5.5.2.3 Recreational fishers/boaties

The nine recreational fishers/boaties interviewed used different parts of the FMA. Many had favoured areas. Those using Milford Sound/Piopiotaahi as an access point commented on the importance of the ease of road access into Milford.

The interviewees were regular users – the most common pattern was to visit 3-4 times in a year for between five and ten days each trip (the highest use level was a person who had been to the FMA 14 times in a year). Some comments were made about the difficulties and costs of getting there, making it better to go for longer periods. For recreational boaties the roar (hunting) is a busy time, as well as holiday periods, and breaks in farming cycles.

This sub-group represents a spectrum of users, determined by how often they go, their motivation, specialisation in the activity (fishing), experience level, and equipment use. Owing to the nature of key informant selection, interviews were focused upon frequent, specialised and experienced users.

At the other end of the spectrum are family trips. There is an age gap in users within this sub-group, as children under about 12 years are considered by some to be too young because the environment is very challenging and the responsibility in having children on board is too risky. "It is not just a place for playing" (recreational fisher/boatie).

'Public holiday users' were identified as those with less experience/less serious boaties, who were more likely to break the rules through ignorance, compared with club members. The latter group were considered to be receptive to information and, through club membership, were already seeking information from their peers.

Motivations were spoken of in terms of the ‘hard core’ (people who fill up the freezer with fish) compared with experience-based fishers (those who go to enjoy ‘being there’).

The remote and challenging nature of the place, the weather and the size of the boat controls how far from Doubtful Sound/Patea or Milford Sound/Piopirotahi boats can venture. There are limited accommodation options in the FMA (especially if in a small boat). Some stay in the hostel at Deep Cove or at Milford Lodge. Use in Doubtful Sound/Patea appears to have changed over time because of hut removal. Some interviewees believed this had led to increased use of syndicate boats.

The nature of the FMA experience is multi-purpose for this sub-group, epitomised by the following comments:

- “do everything in there – hunt, dive, fish”
- “mostly fish and dive, sightsee, a bit of hunting – don’t go mad-out fishing”
- “there for the R & R – to have fun with a group of friends”

Fishing is very important: “whilst it is nice to go and do a few ‘ooh aah’ dives you do want to pick up a few crays”. Some commented that if they wanted merely to catch fish, they would go elsewhere – reinforcing that multiple motivations occur with respect to FMA use (it’s not just about catching fish).

5.5.2.4 Tourist boats and charter vessels – passengers and operators

There is a blurred boundary between tourist and charter boats but typically tourist boats take international visitors, while charter boats take New Zealanders. Charter boats take people who know each other, and fewer passengers (average is around eight, some take only six per trip). Many of the charter operators taking international tourists have previously worked on tourist boats, and many fishing charter operators have been commercial fishermen (career pathway effect). Even within charter boat operators, there is a spectrum from an operator with a ‘no fishing’ policy to one who advertises how many fish passengers will catch.

Tourism cruises and charter boats operate in three areas (see Section 6.6):

- Milford Sound/Piopirotahi: mostly short scenic cruises, some overnight trips (predominantly international tourists), kayak and dive trips (again, predominantly international)
- Doubtful Sound/Patea: short day cruises, overnight trips (predominantly international), day and overnight kayak trip (day trips mainly international visitors, overnight trips more New Zealanders but still predominantly international), departure point for many charter boats going further south (mostly New Zealanders)
- Southern fiords: limited to multi-day tourist cruises (predominantly New Zealanders) and charter boats (some accessed by helicopter)

Charter boat passengers are commonly recreational fishers/boaties, but are often more persistent in their fishing activity and may behave like commercial fishers. The view was expressed that charter boat passengers take more fish since they are on an expensive boat trip (to get their money’s worth) while other fishers/boaties habitually

visit – they go more often for shorter periods and therefore they do not take as many fish per trip. Some quotes illustrate these points:

- “Some charters, you get 20 cockies [farmers] on, and they want as much fish as what it has cost them for the charter” (tourism/charter operator)
- “Some of the charter boats cater to a different market – they are boys out for a good time – everyone you speak to has been on one of those boats. On one website it says you will catch enough fish to pay for your trip” (tourism/charter operator)

One interviewee (a tourism/charter operator) expressed the opinion that charter boat passengers are responsible for over-fishing and that charter boat operators need to control passengers’ behaviour. In effect, some skippers take on this responsibility, exerting control over their passengers via limiting take-home catch and/or the numbers of people diving and their required diving experience (to protect the marine environment).

As noted for recreational fishers/boaties, charter passengers are multi-activity; the scenic flight is a big part of the trip, as well as emphasising the remoteness of the area. Helicopter access to charter boats was commented upon: “that is all part of the product – the helicopter ride into the remote place – you are ‘pinging’ before you even set foot on the boat” (tourism/charter operator).

The international nature of tourism in Milford Sound/Piopiotahi has implications for reported visitor satisfaction, owing to the high proportion of first-time visitors (whose expectations are not influenced by previous visits and, therefore, are less likely to feel dissatisfied with their visitor experience when ‘development’ has occurred or visitor numbers have increased). Some (paraphrased) comments about this:

- One tourism operator emphasised the high quality of the visitor experience
- The fact that New Zealand people have perceptions of crowding at Milford is because they don’t understand the (international) tourism industry (i.e. February is the busy time, Milford systems suit international behaviour patterns) (tourism/charter operator)
- More boats will detract from the experience, especially if they have repeat clients (tourism/charter operator)

Just as there are differences in the types of charter boat passengers – notably in the expectation of take-home catch, there is also a range of tourist types (e.g. it was noted that kayaker tourists are probably ‘greener’ than cruise boat tourists).

Large ocean-going cruise liners were mentioned, with varied opinions expressed. Some people like to see them as they reinforce perceptions of scale/size of the Fiordland environment (the liners are dwarfed), while others think they ruin the place or that the diesel exhaust discharges from their funnels is a visual detraction.

5.5.2.5 Other users

Various people offer support services to users in the FMA – e.g. radio services and helicopter services (fly live catch out for commercial fishermen, scenic flights, provide access for charter boat passengers, fly hunters in). Many of these people have a long involvement with the area and therefore were interviewed (8 people).

As for all other groups, a range of opinions was expressed by iwi. Their concerns covered ownership of pounamu, customary rights and protection/recognition of archaeological sites. Concerns were more with the principle of customary rights (in a broad sense) than with actual instances of anyone being prevented from participating in customary use activities. Few non-iwi interviewees commented on Maori matters associated with the FMA (direct questions of interviewees about iwi representation on the FMG are discussed in Section 11). One (non-iwi) interviewee noted the following: “Think the iwi have compromised [given up] a lot of their rights” [in order to have the same bag limits as everyone else] (tourism/charter operator).

Researchers form part of the ‘other’ sub-group. Interviewees often commented negatively on researchers’ behaviour and research outcomes. In particular, strong opinions were voiced about the Doubtful Sound/Patea dolphin research/ers, with suspicions voiced about the credibility of the research. Questions were wide-ranging but included concerns about their methods (e.g. why focused solely on tourist boats) and possible outcomes from their work (e.g. marine mammal sanctuary). This suspicion suggests that any management measures to support the dolphin population based on the science may be viewed disparagingly.

Concern was expressed about diver damage being a problem, and scientific and photographic divers were labelled by a few as the worst. With recreational divers, it was noted that it depends how responsible the trip leaders are – lots of divers are just getting crayfish and they are “not so bad” (tourism/charter operator).

6.0 Use characteristics and patterns

6.1 Summary

Use of the FMA varies considerably geographically and by user group. This has an impact on people's perceptions of the FMA, its values and use (discussed in later sections). The people who visit the FMA most frequently are the people who work there (i.e. commercial fishers and tourism operators/employees). Many people have a long-term association with the area, especially commercial fishers. The transitory nature of the tourism industry is evident – this group exhibits a shorter period of association. The 'visitor' group is dominated by one-off visitors – a visit to Fiordland is a once in a lifetime experience for most 'visitors' (related to the international character of this user group). Most 'visitors' stay for less than one day. Many other user groups stay within the FMA for multiple days.

Tourism in the FMA is principally focussed on Milford Sound/Piopiotahi, with a secondary node within Doubtful Sound/Patea. Tourism also occurs within the southern fiords. Commercial fishing is more widespread throughout the FMA. Commercial fishers spend varying amounts of the year within the FMA – 5-6 months being a 'common' period of time. Commercial fishers primarily access the FMA by boat, while all other users are dependent upon the road access points at Milford Sound/Piopiotahi and Doubtful Sound/Patea.

The following sections first discuss temporal use characteristics, then use parameters related to spatial patterns, followed by other characteristics of use behaviour.

Sources of data:

- 'User' survey Qs 2-6, 18, 28, 31
- 'Visitor' survey Qs 1-5
- Interviews

6.2 Frequency of visit

Data on frequency of visit (Q2) were classified into low, medium or high use levels, as follows:

- Low use level: Once per year or less.
- Medium use level: Between two and 100 visits per year.
- High use level: More than 100 visits per year.

Tourism operators/employees visit the FMA most frequently, with 67% of respondents in this group visiting the area over 40 times per year. Commercial fishers also used the area relatively frequently, with almost 70% visiting between 2-40 times per year. Recreational fishers and respondents in the 'other' category had a relatively even split between low and medium use of the FMA. See Figure 6.1.

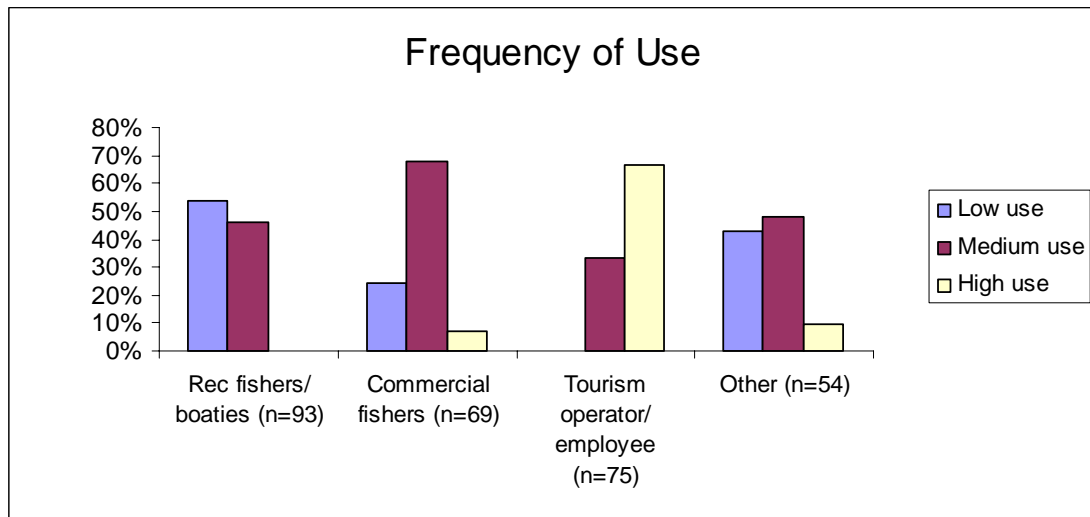


Figure 6.1: FMA users' frequency of use - Q2

Most 'visitors' (81%) had not been to the FMA prior to their current visit (VQ1). Of the 19% of 'visitors' who had previously been to the area, the majority (12%) had only visited once before. Fewer than 8% had been two or more times. When the 'visitor' sub-group is examined further, a statistically significant difference was found between site and previous use⁷. Doubtful Sound/Patea 'visitors' are more frequent users, with 29% having visited the FMA on at least one previous occasion. Only 15% of Milford Sound/Piopirotahi respondents reported as many previous FMA trips. See Figure 6.2.

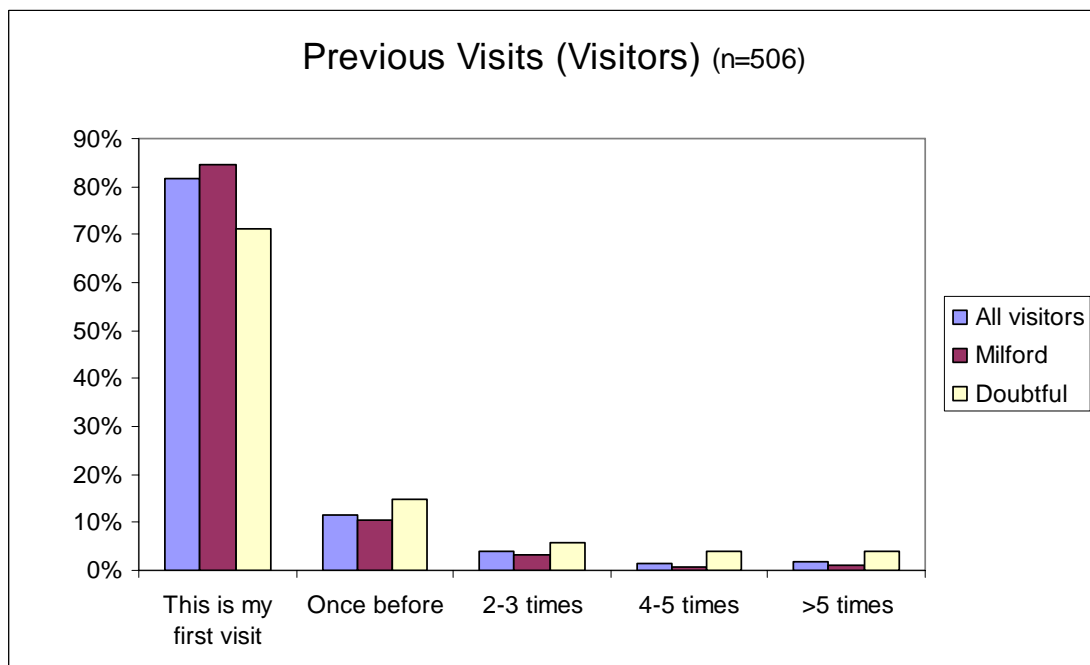


Figure 6.2: Visitors' previous visits to FMA - VQ2 ('visitor' survey results only)

⁷ Chi square statistics: $\chi^2=11.8$, $df=1$, $p<.001$

6.3 Period of time respondents have used the FMA

Among survey respondents, commercial fishers have been using the FMA for the longest period of time (Figure 6.3). Almost half of the respondents in this group had been visiting the area for over 20 years, and almost three-quarters had over ten years experience in Fiordland. Only 1% had been in Fiordland for less than a year. Recreational fishers/boaties were also relatively experienced in the FMA, with over half of them having used the area for more than ten years. At least 50% of all four user sub-groups (excluding ‘visitors’) had over six years experience in Fiordland. Of the ‘tourism operators and employees’ sub-group, 45% had been visiting the area for less than five years, but 45% had visited for more than 11 years. As expected, the ‘visitors’ sub-group stands out with a low level of association with the FMA (owing to the high proportion of ‘first timers’).

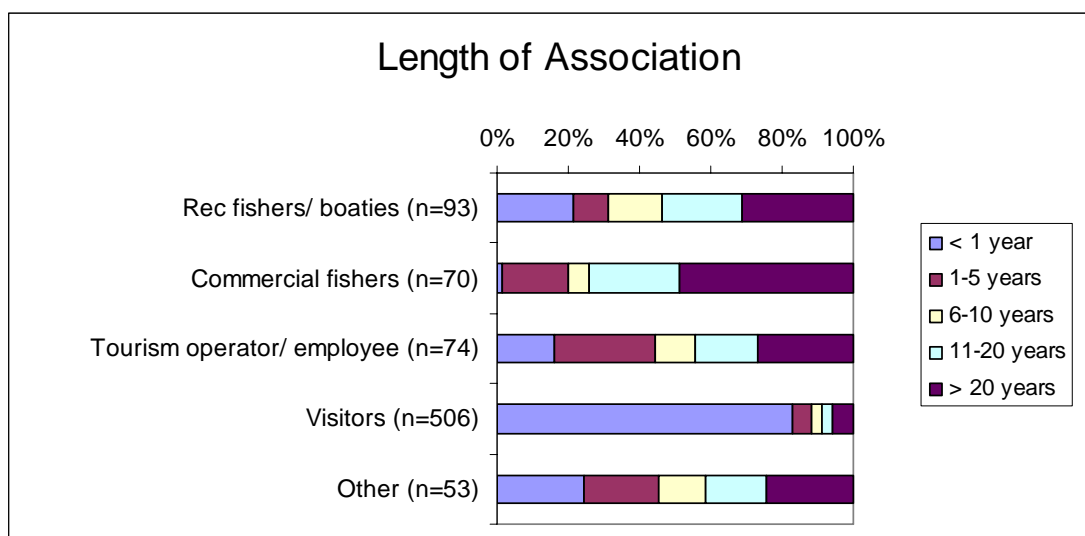


Figure 6.3: FMA users’ length of time associated with the FMA - Q3/VQ3

6.4 Length of stay

Figure 6.4 illustrates that the vast majority of respondents in the ‘visitors’ category (89%) spent less than one day in the Fiordland Marine Area. Eleven percent spent between 2-7 days in the area, and only 1% stayed for more than a week. However, when sub-divided further, it is evident that ‘visitors’ to Doubtful Sound/Patea have significantly longer visits than their Milford counterparts⁸. Nearly 50% of Milford Sound/Piopiotaahi visits were of two hours duration or less, compared with under 10% of ‘visitors’ at Doubtful Sound/Patea. Furthermore, 62% of Doubtful Sound/Patea respondents spent a day or more in the FMA, compared with 24% of those from Milford Sound/Piopiotaahi.

Commercial fishers and recreational fishers were the *least* likely to spend less than a day in the area on their last visit – 14% and 12% respectively. Tourism operators/employees spent the most time in the area, with 45% staying for more than seven days on their last visit, perhaps reflecting the residents of Milford

⁸ Chi square statistics: $\chi^2= 44.2$, $df=2$, $p<.001$

Sound/Piopirotahi. The majority of recreational fishers/boaties (77%) and commercial fishers (55%) spent between 2-7 days in the area.

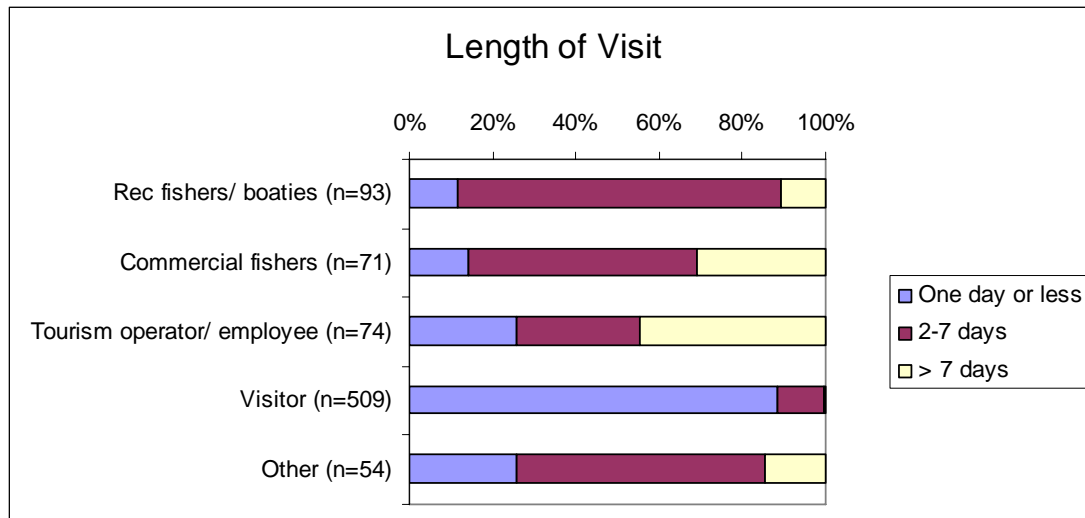


Figure 6.4: FMA users' length of visit to the FMA - Q5/VQ5

6.5 Fishing activity

Figure 6.5 illustrates that the length of time spent *commercially* fishing in the FMA varied considerably between respondents. Data are limited to the commercial fishers sub-group. Figure 6.5 does not include data for the six respondents from outside this user group who indicated that they commercially fished in the FMA, owing to very small numbers within each sub-group (4 recreational fishers/boaties, 1 tourism operator/employee, 1 'other').

The most common length of time involved in commercial fishing in the FMA was between 5-6 months annually, with 22% choosing this option. Only 11% of people spent longer than 6 months each year, while 15% fished for 5-6 weeks a year, another 15% for 7-11 weeks, and 29% spent less than four weeks a year commercially fishing in the FMA.

The frequency with which respondents fished *recreationally* in Fiordland varied between user sub-groups. For ease of analysis and presentation, the reported frequencies for recreational fishing have been reclassified into use levels representing low, medium and high frequencies as follows:

- Low frequency once a year or less
- Medium frequency once every 2 – 6 months
- High frequency once a month or more

Tourism operators/employees most frequently undertook recreational fishing, perhaps reflecting their length of stay in the FMA. Many recreational fishers/boaties are relatively low frequency fishers (50% fishing once a year or less), as are 'other' FMA users (50%). Commercial fishers have a more even spread across the low (36%), medium (39%) and high (25%) use categories. See Figure 6.6.

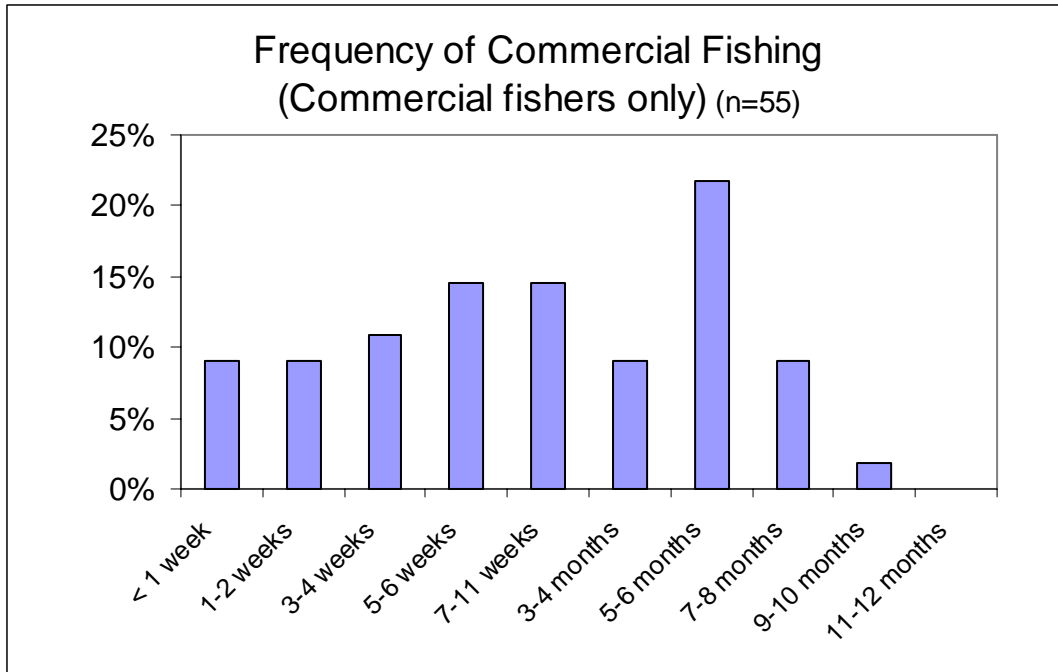


Figure 6.5: FMA commercial fishers' annual amount of time commercially fishing in the FMA - Q28

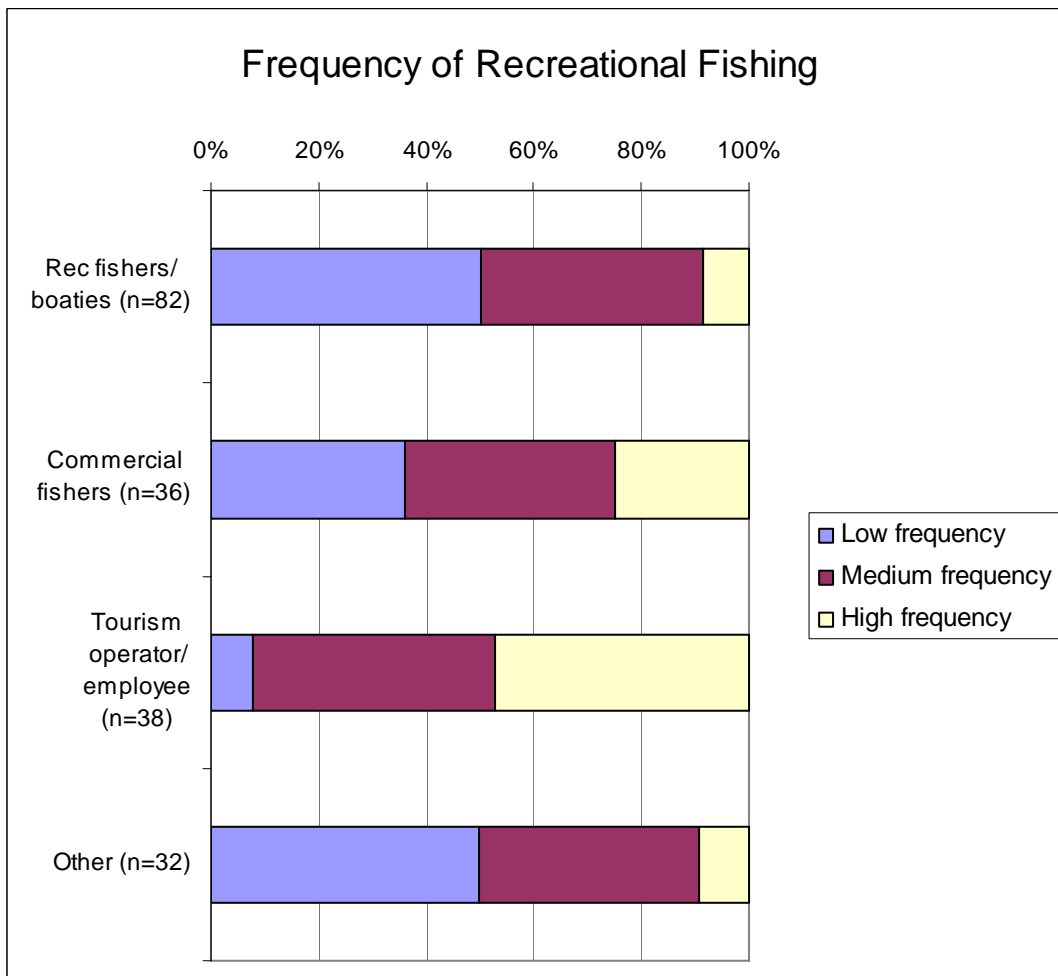


Figure 6.6: FMA users' frequency of recreational fishing in the FMA - Q31

6.6 Spatial characteristics of use

6.6.1 Survey data

Respondents were asked to indicate on a map, each fiord or coastal section that made up part of their most recent trip to the FMA. Visits to the various specified locations within the FMA (22 in total – see Figure 6.7), were aggregated in order that the proportion of visits to specific identified sites could be calculated. See Table 6.1; the same data are presented graphically in Figure 6.8. The specified locations were classified into four zones:

- Milford/Piopirotahi: coastal Milford, inner Milford
- Doubtful/Patea: coastal Doubtful, inner Doubtful, inner Thompson/Bradshaw
- North Fiords: coastal and fiord areas south of Milford Sound/Piopirotahi and north of Thompson Sound
- South Fiords: coastal and fiord areas south of Doubtful Sound/Patea

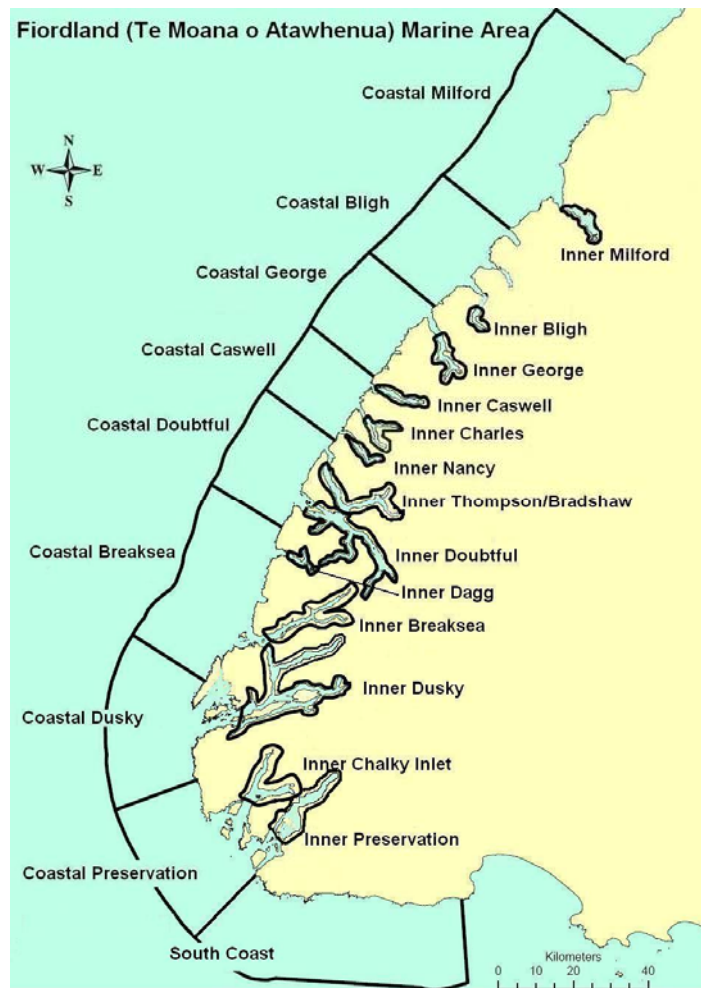


Figure 6.7: Map used in questionnaire to show fiord and coastal sections

Of the total set of FMA visits reported by commercial fishers, the South Fiords (38%) accounted for the greatest proportion, and Doubtful Sound/Patea (10%) the smallest. The converse was true for recreational fishers/boaties, among whom the highest percentage of FMA visits were made to Doubtful Sound/Patea (45%), with the remainder split relatively evenly between North Fiords (23%), South Fiords (19%)

and Milford Sound/Piopiotaahi (14%). Among the tourism operator/employee sub-group, 39% of the total reported visits occurred within the Milford zone, whereas for respondents in the ‘other’ category, Doubtful Sound/Patea (36%) and Milford Sound/Piopiotaahi (27%) were most commonly reported.

Table 6.1: FMA users’ places visited – Q6

	Milford	Doubtful	North Fiords	South Fiords
Commercial Fishers (n=71)	22%	10%	30%	38%
Rec Fishers / Boaties (n=93)	14%	45%	23%	19%
Tourism Operator / Employee (n=75)	39%	27%	10%	24%
Other FMA (n=54)	27%	36%	18%	19%

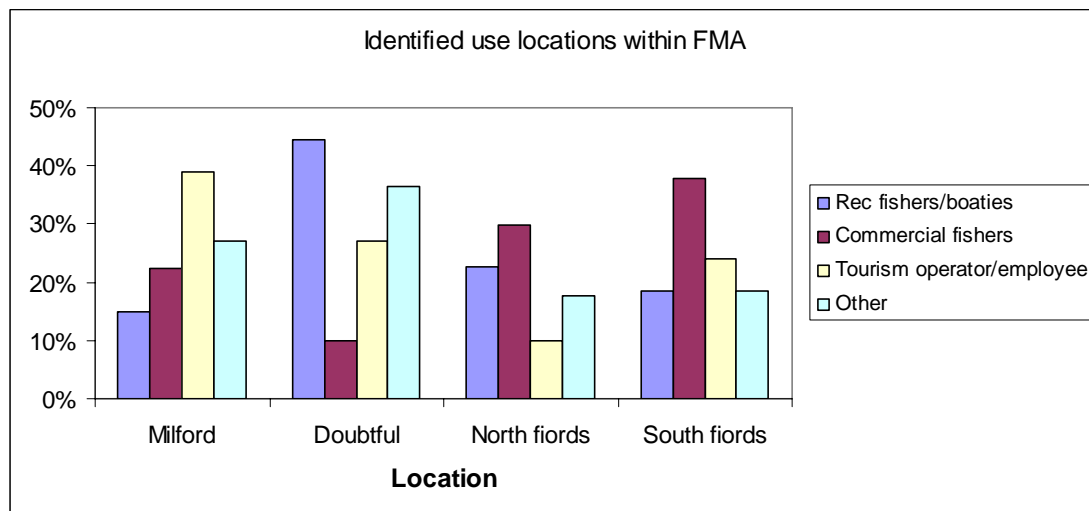


Figure 6.8: FMA users’ places visited – Q6

6.6.2 Interview data

Interviewees provided information about the spatial use of the FMA. These comments are grouped by area to give the flavour of each ‘zone’, followed by a discussion of the inter-relationship of the FMA with wider regional, national and international influences.

6.6.2.1 All FMA

The FMA is not uniform in terms of the characteristics of the physical resource or the ways in which it is used, the threats to resource and use values, and associated management issues. There are three distinct (but overlapping) use zones evident from interviewees’ use patterns: Milford Sound/Piopiotaahi (interviewees included the coastal area south of Milford Sound/Piopiotaahi in this zone, since they accessed it via Milford Sound/Piopiotaahi), Doubtful Sound/Patea, and the southern fiords. The

‘North Fiords’ were not discussed as a distinct geographic area, but rather as an area accessed from Milford Sound/Piopirotahi.

Some people have very specific areas of focus within the FMA. Not all users use the same areas – there is a natural spread of activity. Many interviewees highlighted the importance of the land/sea connection – and that this should be managed in an integrated manner.

6.6.2.2 Milford Sound/Piopirotahi

Milford Sound/Piopirotahi was largely discussed with reference to the inner fiord area. It was described as an area of high tourist activity (scenic boat tours, kayak and commercial dive groups, some large cruise ships), commercial fishing boats (use Milford as an access point/base), and recreational boaties (access via Milford). Very few charter boats use Milford Sound/Piopirotahi, although some come in from outside the FMA. It attracts mainly international tourists and the fiord was neatly summed up by one tourism/charter operator: “Milford Sound is the icon”. It was noted that the ease of road access has a huge influence upon use of Milford Sound/Piopirotahi.

The land/sea interface is particularly relevant at Milford Sound/Piopirotahi. Threats and management issues identified by the interviewees were often associated with land-based problems. Those who operate in Milford Sound/Piopirotahi are a lot more focused on the land infrastructure and issues with development – an important factor in what makes the three areas of the FMA so different – the FMG was considered to be less important at Milford Sound/Piopirotahi.

Comments were made by many interviewees about Milford being ‘ruined’ or ‘overcrowded’. Some commercial operators defended it with statements such as:

- “The drive in and the whole experience of Milford Sound is still absolutely fabulous – on a good day Milford Sound is still hard to beat” (tourism/charter operator)
- “Really enjoy the scenery in Milford Sound – one of the nice things about working in this area is that you can’t get bored with it – you might have been into Milford Sound 200 times but the people on the boat haven’t and their enthusiasm rubs off – you can’t help but remain enthusiastic about it” (tourism/charter operator)
- “DOC and most Kiwis will say that Milford Sound is overcrowded, but by international standards it is not – and most visitors to Milford Sound are international” (tourism/charter operator)
- “People going there are not necessarily looking for a wilderness experience” (tourism/charter operator)
- “Milford Sound has sort of been sacrificed, in that it has the traffic, but they started sacrificing that the day Donald Sutherland set his hotel up in the 1880s” (tourism/charter operator)

6.6.2.3 Doubtful Sound/Patea

This zone incorporates Doubtful Sound/Patea and the area between Dusky Sound (in the south) and Caswell Sound (in the north). Access is provided via Doubtful Sound/Patea and this lake/road access is critical to the types of use that occur here.

Indeed, this zone exhibits the broadest range of activity of any zone: tourist boats, charter vessels, commercial fishing boats (moorings and access point), private and syndicate recreational boats, and kayak groups. Users are a mix of international visitors and New Zealanders.

Interviewees indicate that Doubtful Sound/Patea has much more difficult access (compared with Milford Sound/Piopirotahi). It can be hard to find out how to get there, which keeps out all but the 'keenest' users. It was noted that there are more 'bureaucratic hoops to jump through' with Doubtful Sound/Patea: getting boats over Wilmot Pass, getting consents for boat moorings and for the operation of tourism and charter businesses.

It offers a more remote experience than Milford Sound/Piopirotahi: "you can go and hop up any arm and be away from people if you want to" (recreational fisher/boatie). Indeed comparisons with Milford Sound/Piopirotahi were frequently made – either to note that Doubtful Sound/Patea was following Milford's pattern of development, or else, the view was expressed that the difficulty of access will keep it less developed.

Collectively, comments about this zone indicated that it is perceived to have the greatest number of issues (especially threats from increased use). In comparison, Milford Sound/Piopirotahi is perceived by many as already ruined, while the southern fiords are protected from 'over-use' by weather and difficulty of access.

6.6.2.4 Southern fiords

This area encompasses Chalky and Preservation Inlets and sometimes was described as the area north to Breaksea and Dusky Sound. Use includes commercial fishing, charter boats, occasional tourist boats, and a few recreational boats. Access is usually from southern ports – Bluff and Riverton – although Doubtful Sound/Patea also acts as an access point.

The majority of users are New Zealanders on charter and tourist boats. Most passengers on tourist boats are retired or around retirement age:

- "Most are first timers in the FMA – have read about it, dreamed about it, lain in bed at 5 am listening to the Puysegur weather forecast" (tourism/charter operator)
- "Generally the type of people you get on these trips are ones for whom the touristy spots don't appeal – they want to get out of the way and get into the real stuff – instead of watching tour boats go by" (tourism/charter operator)

There is greater emphasis on human history on tourism cruises in the southern fiords – operators can 'sell' different tourism experiences. The protection of historical sites is of concern to iwi. Concern was expressed over possible environmental threats from large visiting cruise ships.

6.6.2.5 'Outside' influences and inter-connections

Some interviewees stressed the influence of external factors on FMA use patterns. For example, New Zealand tourism patterns affect tourism in the FMA, and the agricultural economy affects recreational boating. Concomitantly, recreation and

tourism in the FMA has implications elsewhere (e.g. effects upon accommodation providers in Te Anau). Therefore, use of the FMA should not be considered in isolation from the rest of the region, New Zealand and the world.

6.7 Mode of access to the FMA

Travelling by road into Milford Sound/Piopiotaahi was by far the dominant way to access the FMA – particularly for Milford ‘visitors’ (89%) and tourist operators/employees (62%) (Figure 6.9). As expected, access across Lake Manapouri and the Wilmot Pass into Doubtful Sound/Patea was the primary option for Doubtful Sound/Patea ‘visitors’ (93%), as well as an important means of access for tourism operators/employees (20%) and ‘others’ (35%). This was the most popular access route for recreational fishers (63%). The vast majority of commercial fishers (71%) accessed the area entirely by boat, with 36 percent of these originating at Bluff, and 25 percent at Riverton. Approximately one quarter (23%) of commercial fishers accessed the FMA via the Milford road.

Seven percent of ‘visitors’ accessed the area by ‘other’ means, all of whom had walked the Milford Track. ‘Other’ means of access listed by the remaining sub-groups included aeroplane / fixed wing / floatplane (n=3), kayak (n=1) and one person noted they were a Milford Sound/Piopiotaahi resident (n=1). Some respondents accessed the FMA by boat from alternative ports of origin (than those listed in the question). These were Nelson/Marlborough (n=8), Greymouth (n=6), Westport (n=2), Jacksons Bay (n=4), North Island (n=2), Lake Hauroko (n=1) and Bluecliffs Beach (n=1).

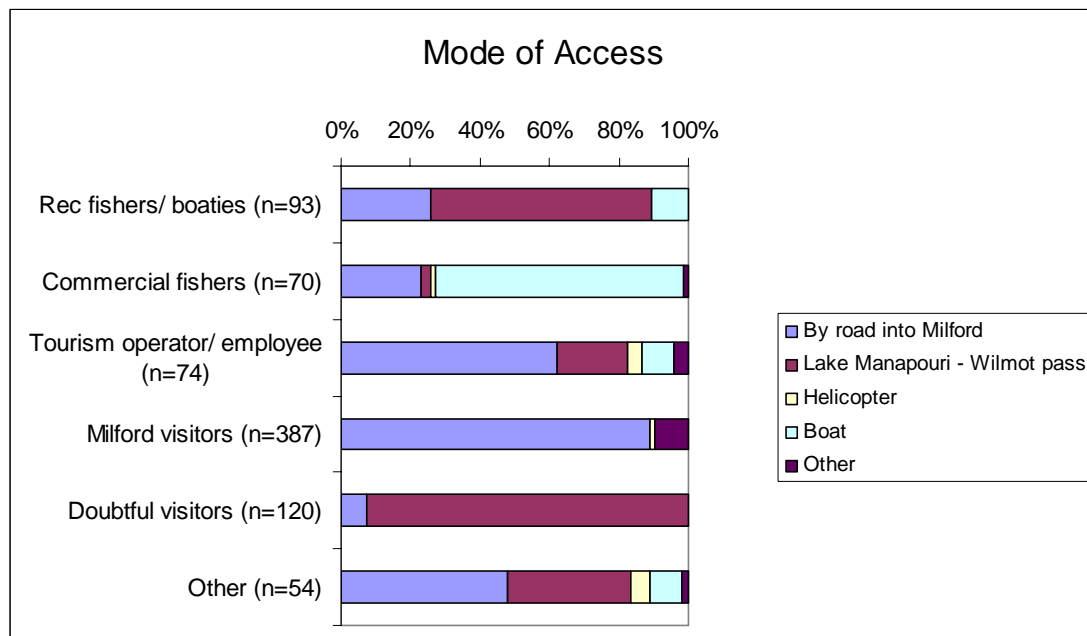


Figure 6.9: FMA users’ mode of access to the FMA - Q4/VQ4

6.8 Ownership/operation of marine vessels

Not surprisingly, commercial fishers were the most likely user group to own or operate a marine vessel in the FMA, with 70% indicating that they did so (Figure 6.10). Almost half (47%) of the tourism operators/employees indicated that they

owned or operated a vessel, as did 35% of 'others'. Recreational fishers/boaties were the *least* likely to own or operate a marine vessel (35%).

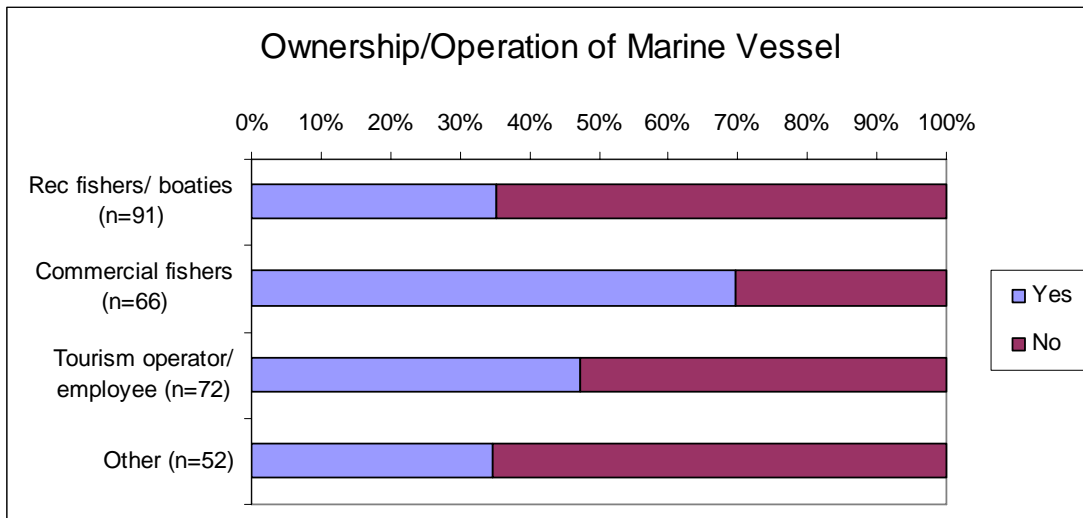


Figure 6.10: FMA users' ownership/operation of a marine vessel in the FMA - Q18

7.0 Values and motivations

7.1 Summary

Individual users indicated a wide array of motivations for visiting the FMA, with commercial fishers being the only group with a narrow focus (catching fish). The second ‘worker’ category (tourism operators/employees) exhibited various reasons (beyond work rationale) for being in the FMA. The other user groups also exhibited a multiple set of motives, including recreational fishers/boaties, the members of which made it plain that catching fish was only part of their reason for visiting the FMA.

The dominant motivations highlighted by all sub-groups, with the exception of commercial fishers, were nature-based:

- To experience nature
- To see wildlife
- To view scenery
- To experience wilderness
- To experience the special character of Fiordland

Cultural and spiritual motives did not receive high rankings by any sub-group.

One value stood out as important to users: almost all sub-groups rated the FMA’s ‘beautiful scenery and views’ as the highest value. Other values that were very important to all user groups were the presence of unique wildlife, a wide variety of marine species, an absence of marine pests and weeds, and high water quality. Consistent with responses about motivations for visiting, people said Maori cultural values and spiritual values were less important to them.

Themes from the interviews were that interviewees valued the naturalness of Fiordland, as well as its economic and recreational uses. They took pride in the natural grandeur of Fiordland and the recreational/tourist experience (which included fishing for many). Recreational use of the FMA was perceived as part of the Kiwi identity – the ability to ‘experience’ Fiordland, and to fish there.

Sources of data:

- ‘User’ survey Qs 7-8
- ‘Visitor’ survey Qs 6-7
- Interviews

7.2 Motivations

Respondents were asked to indicate how well each of a list of possible reasons for visiting the FMA corresponded with their own reasons. In the survey, a 7-point scale was used to facilitate this response: respondents were asked to select a number between 1 and 7, where 1 = ‘does not describe my reasons at all’; and 7 = ‘describes my reasons exactly’. In Table 7.1, the mean score for each reason is presented by user sub-group. Mean scores of 5.0 or greater are emboldened to emphasise those reasons most closely representing the motivations of sub-group users.

Table 7.1: FMA users' reasons for visiting the FMA - Q7/VQ6

	Rec fishers/ boaties	Commercial fishers	Tourism operator/ employee	Visitor	Other
To work	1.15	6.29	6.70	1.14	3.91
To see a new place	4.68	3.41	3.46	6.12	4.09
To experience nature	5.53	4.11	5.51	6.25	5.40
To meet new people	3.25	1.85	3.63	2.86	2.55
To 'get away' from the town or city	5.07	3.86	5.14	4.46	5.17
To see wildlife	5.35	4.29	5.48	5.53	5.67
To view scenery	6.08	4.84	5.77	6.65	5.50
To be with friends/family	5.61	2.38	3.34	3.74	4.09
To learn about nature or history	3.91	2.52	4.08	4.74	4.18
To catch fish/shellfish	5.78	6.60	2.89	1.21	3.65
To experience wilderness	5.38	3.94	5.37	5.79	5.20
To get 'back to basics' for a while	4.52	2.58	3.63	3.72	4.04
To get away from people	3.80	3.29	3.09	2.96	3.53
To see a familiar place	3.19	3.26	4.22	1.55	3.59
To experience a quiet place	4.76	3.97	4.46	4.55	4.49
To pursue recreational activities	6.12	3.33	4.64	3.92	5.38
For cultural reasons	1.62	1.27	2.14	2.17	2.02
For spiritual reasons	1.69	1.88	2.47	1.94	2.47
To experience the special character of Fiordland	6.34	4.74	5.49	6.22	5.80

The reasons for visiting the FMA varied considerably by user sub-group⁹. Understandably, the main reason why commercial fishers and tourism operators/employees were in the area was 'to work', and for the commercial fishers in particular, the reason was 'to catch fish'. Work-related reasons were the dominant motivations for commercial fishers, but tourism operators/employees said that they were also there to experience nature, to view scenery, to see wildlife and to experience wilderness. These responses may reflect the different nature of employees in the tourism industry (more transient) compared with employees in the fishing industry.

Recreational fishers/boaties had the widest range of reasons for visiting. The most frequently cited reasons were to experience the special character of Fiordland, to pursue recreational activities, to view scenery, to be with friends and family, and to catch fish. 'Visitors' to Fiordland were primarily there to view scenery, to experience nature, to view wildlife, to see a new place and to experience wilderness, although there were statistically significant differences between visitor sites. For instance,

⁹ Tests for significance (F-test) were undertaken for each reason, comparing mean scores across sub-groups. With the exception of 'to learn about nature and history', all other reasons indicated significant statistical differences between groups to at least the p<.05 level

Doubtful Sound/Patea respondents placed more emphasis on ‘experiencing nature’ (6.45), ‘experiencing a quiet place’ (5.02) and ‘getting away from people’ (3.40), than did their Milford counterparts (6.19, 4.38 and 2.81 respectively). Each of these results was found to be statistically significant.¹⁰

People in the ‘other’ user category particularly were in Fiordland to ‘get away’ and to see wildlife. Table 7.1 also shows that commercial fishers clearly were not using the FMA to meet new people (1.85), or for cultural (1.27) or spiritual (1.88) reasons. Similarly, neither recreational fishers/boaties nor ‘visitors’ found affinity with work-related reasons, and the latter group was not interested in catching fish (1.21). While also scoring them lowly, tourism operators/employees and ‘visitors’ rated cultural reasons as more relevant to their experience than did other sub-groups.

Further analysis was conducted to identify differences *within* the sub-groups with reference to the previous experience levels of respondents. Results of statistical tests showed that commercial fishers with the lowest levels of experience (i.e. with a use frequency of ‘once per year or less’) evaluated the reasons ‘to see a familiar place’ (1.69) and ‘to pursue recreation activities’ (1.85) as significantly lower than those respondents in the medium (4.56 and 4.37) and high (3.26 and 3.33) frequency user categories.¹¹ Recreational fishers/boaties also differed in motivation depending on level of FMA experience. Those who used the area *less* frequently were significantly more likely to associate with motives including ‘seeing a new place’ (5.21), ‘experiencing nature’ (5.86), ‘meeting new people’ (3.88), ‘seeing wildlife’ (5.84), and ‘viewing scenery’ (6.36) than their more experienced counterparts (4.03, 5.14, 2.44, 4.76 and 5.74 respectively). Tests showed that each of these results was statistically significant.¹²

Respondents in the tourism operator/employee sub-group also differed in terms of the frequency of use and motivation. Those with the highest levels of use were significantly more likely to report the reasons ‘to work’ (6.96), ‘to meet new people’ (4.1) and ‘to pursue recreation activities’ (5.68) compared with those reporting medium use levels (6.21, 2.60 and 4.20 respectively). In contrast, those with the highest use levels were significantly *less* likely to associate with ‘catching fish’ (2.41) as a reason for using the FMA, when compared to those with lower use levels (4.00). All of these results were found to be statistically significant¹³.

Twenty-five respondents noted ‘other’ reasons for visiting the FMA (additional to those listed). The most frequently listed reasons were hunting (n=10), shelter from bad weather (n=3) and scientific research (n=2).

¹⁰ F-test statistics: F=4.2, df=1, p=.041; F=7.01, df=1, p=.008; F=8.07, df=1, p=.005 (respectively)

¹¹ F-test statistics: F=8.8, df=2, p=.001; F=5.3, df=1, p=.01 (respectively)

¹² F-test statistics: F=5.3, df=1, p=.024; F=4.4, df=1, p=.038; F=10.7, df=1, p=.002; F=9.5, df=1, p=.003; and F=5.9, df=1, p=.017 (respectively)

¹³ F-test statistics: F=9.4, df=1, p=.003; F=5.6, df=1, p=.021; F=6.8, df=1, p=.01; F=7.7, df=1, p=.007 (respectively)

7.3 Values

7.3.1 Survey data

Using a similar 7-point scale to that reported in section 7.2, respondents rated the importance to them of each item in a list of values of possible relevance to the FMA. On the scale, 1 = ‘not at all important’, and 7 = ‘very important’. Hence, a high mean score corresponds to values perceived by respondents as more important than those assigned a lower score. Table 7.2 contains the mean scores by FMA user sub-group¹⁴.

All user groups considered multiple values as important (Table 7.2). There was also consistent agreement among sub-groups about the most significant values in the FMA. The mean scores indicate that almost all sub-groups rated the FMA’s ‘beautiful scenery and views’ as the highest value. Other values that were very important to all user groups were the presence of unique wildlife, a wide variety of marine species, an absence of marine pests and weeds, and high water quality. The water quality and marine life was especially important to people in the ‘other’ sub-group – perhaps reflecting the high proportions of kayakers and divers in this group (outlined in Table 2.3). Commercial and recreational fishers/boaties valued the fishing opportunities very highly, but this was not as important to the other user groups. Tourism operators/employees and ‘visitors’ also placed a high level of importance on the remote/wilderness values and the opportunities for peace and quiet in the area. These values were slightly less important for the other user groups. There appears to be less of a consensus about the value of Maori culture and spiritual aspects of the FMA, and the importance of ‘plentiful tourism opportunities’.

Table 7.2: FMA users’ values associated with the FMA - Q8/VQ7

	Rec fishers/boaties	Commercial fishers	Tourism operator/employee	Visitor	Other
A wide variety of marine species	5.91	6.18	6.04	5.70	6.36
Absence of marine pests and weeds	5.82	6.08	6.10	5.44	6.18
High water quality	5.93	6.02	6.26	5.99	6.74
Presence of unique wildlife	6.13	5.41	6.35	6.28	6.40
Good fishing opportunities	5.97	6.39	4.44	2.71	4.57
Beautiful scenery/views	6.58	6.25	6.68	6.77	6.69
Plentiful tourism opportunities	2.91	3.19	4.74	4.28	3.10
Remote wilderness places	5.90	5.25	6.06	6.15	5.90
Peace and quiet	5.57	5.34	6.07	5.97	5.69
Absence of other people	4.81	4.12	4.99	4.81	4.70
Maori cultural values	1.66	2.05	3.84	3.83	2.63
Spiritual values	1.77	2.36	3.49	3.00	2.92

¹⁴ Tests for significance (F-test) were undertaken for each value, comparing mean scores across sub-groups. With the exception of ‘absence of other people’, all other values indicated significant statistical differences between groups to at least the $p < .05$ level

Additional analysis showed that there were a small number of statistically significant differences *within* sub-groups also. Commercial fishers with the lowest levels of FMA use ('once per year or less') rated 'good fishing opportunities' (5.29) as significantly less important than did those with medium (6.8) and high (6.6) use levels.¹⁵ Similarly, recreational fishers/boaties differed in the importance given to the 'absence of pests and weeds'. Those with lowest levels of use appeared less concerned (5.48) than those with more experience (6.21).¹⁶

For the 'visitors' to the FMA, some statistically significant differences were identified with respect to the site (Figure 7.1). Clearly, wildlife, marine species, water quality, remoteness, scenery, and peace and quiet are important to the majority of 'visitors' at both Milford Sound/Piopirotahi and Doubtful Sound/Patea. However, there are significant differences in what values are important to each of these two groups. In particular, Doubtful Sound/Patea 'visitors' place much greater importance on the values of 'remoteness' (6.4) 'absence of other people' (5.6), 'peace and quiet' (6.4), the 'variety of marine species' (6.1), and the 'presence of unique wildlife' (6.6) compared with their Milford Sound/Piopirotahi counterparts (6.1, 4.5, 5.8, 5.6 and 6.2 respectively).¹⁷ While neither the availability of 'plentiful tourism opportunities' nor 'Maori cultural values' were rated especially highly by either group, 'visitors' to Milford (4.5 and 4.0) rated these significantly higher than their Doubtful Sound/Patea counterparts (3.6 and 3.4).¹⁸

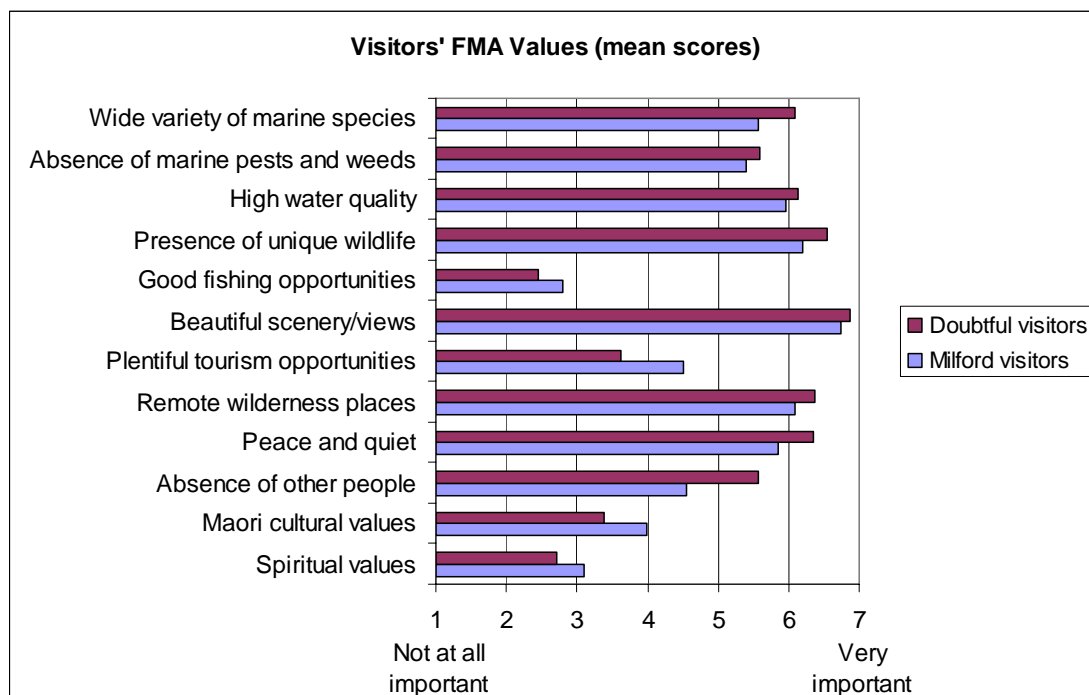


Figure 7.1: Visitors' values associated with the FMA - VQ7 ('visitor' sub-group only)

¹⁵ F-test statistics: F=8.3, df=2, p=.001

¹⁶ F-test statistics: (F=4.1, df=1, p=.047)

¹⁷ F-test statistics: F= 4.9, df=1, p=.027; F=25.9, df=1, p=.000; F=11.8, df=1, p=.001; F=8.8, df=1, p=.003; F=7.14, df=1, p=.008 (respectively)

¹⁸ F-test statistics: F=18.3, df=1, p=.000; F=7.5, df=1, p=.007 (respectively)

7.3.2 Interview data

Interviewees were asked about the values they hold for the FMA. This question was asked early in the interview, to ensure that subsequent questions did not lead or influence responses about values. A summary of the data about interviewees' values follows.

7.3.2.1 General

The FMA is prized for its natural values, economic benefits and recreational opportunities. Interviewees used words like 'pristine', 'unique', 'untouched', 'grandeur' and 'remote' to express the natural values of the FMA. Economic benefits were attributed mainly to the tourism and fishing opportunities that the FMA supports. Some interviewees commented that all values centre upon the natural values – any adverse change to these (e.g. decline in fish stocks, reduction in scenic attractiveness) will negatively affect the human values derived from the FMA (economic and recreational values).

Values varied across the 'zones' of the FMA. Milford Sound/Piopiotahi is seen as having considerable economic and scenic value; Doubtful Sound/Patea has a combination of these, plus recreation; while the southern fiords are less commercially oriented, and strongly focused on remote recreation experiences.

Interviewees commented that it is difficult to achieve all values in one place – some values may need to be sacrificed. Most interviewees think Doubtful Sound/Patea needs to be saved from a loss of remoteness/wilderness qualities. Threats to values are discussed in Section 9.0.

7.3.2.2 Unique and timeless

The FMA is perceived as a unique place, and within the FMA, each fiord is unique. A tourism/charter operator encapsulated this notion: "Every day is different in there – I still carry a camera after 30 years – I take photos every day".

A few interviewees noted the unchanging timelessness of Fiordland and appreciated the importance of this. This included comments about viewing the 'untouched' FMA environment – that it was the same as Maori and Captain Cook saw it. Others were forward-looking, wanting to ensure that Fiordland remained unchanged for future generations. Some expressed concern that this would be difficult to achieve ("If something drastic is not done, my kids will not be able to do what I did" - recreational fisher/boatie), while others did not foresee any problem ("The geographical isolation will allow it to remain. In a hundred years time the boats will look different, but we will still be able to go down to George Sound and be the only person there" - tourism/charter operator).

7.3.2.3 Taking pride in the FMA

Interviewees took obvious pride in the FMA and liked showing it off to people. Some tourism/charter operators believed their passengers liked their trips because they were affected by the operator's enthusiasm about Fiordland. Some commercial fishers

reflected on the FMA in comparison with other parts of New Zealand, in terms of the bounty of the fishing resource.

7.3.2.4 Part of the Kiwi way of life

Two distinct groups of people were described by interviewees: visitors and those who 'belong'. For visitors, Fiordland is a "once in a lifetime experience" (tourism/charter operator). The latter group (those who 'belong') was linked to the fact that Fiordland is perceived as a place for ordinary people - the "average Joe Kiwi" (tourism/charter operator).

Many of the values of Fiordland were associated with 'the greater good' for New Zealand and the continuation of the New Zealand way of life (like taking kids fishing). Use and enjoyment of wilderness areas (like the FMA) was seen by some as a good social control mechanism for young people – important for instilling family values.

7.3.2.5 Tough environment, tough users

The challenging nature of the FMA environment was frequently mentioned. Discussion of FMA use often came around to the need for users to be similarly 'tough' to survive in that environment. Images of the 'Southern man' abounded in the rhetoric – an identity of ruggedness, accepting a high level of risk. Indeed, some noted that their recreational experience is enhanced by these challenges. A common theme was the pioneer spirit of living off the land: "It is about living off the land – enjoy fishing and eating the fish caught" (tourism/charter operator).

The number of users was seen to be self-limiting (kept low), because recreational users need to be experienced to handle the conditions. The behaviour of users was linked to this notion – for example, that some pleasure boaties are often 'macho' about not notifying others of their intentions.

7.3.2.6 Traditional use and historical attachment: A 'right to be there'

Various interviewees commented that people have a 'right' to pursue tourism and fishing in the FMA. This is typified by the comment: "Those that are in there now and who have put the history in there and put the asset in there – they deserve to be able to stay there and have some sort of security – provided the care and attention umbrella they are working under now doesn't fall" ('other'). Milford was mentioned in that "Milford Sound was set up for tourism – the Milford Road was built for tourism" (tourism/charter operator). 'Fizz boats' were mentioned – their right to be there was associated with the Kiwi identity discussed earlier.

7.3.2.7 The FMA is for fishing

A related concept centred on the fishing tradition of the FMA (both recreational and commercial fishing). Views were polarised. A large proportion of interviewees (many of whom fished) considered that fishing controls/regulations were acceptable but total protection/prevention of fishing was not. In other words, saving the fisheries means

saving the fish for people to catch – not protecting them so that no one can use them. In contrast, a smaller number of interviewees sought a fishing ban.

7.3.2.8 Miss the commercial fishermen

Several interviewees said they miss the commercial fishing boats and fishermen. A tourism/charter operator described them as part of the ‘cultural character’ of the FMA. This includes ‘selling’ this image to visitors: “Seeing the commercial fishermen when we are down in the southern fiords is part of the tourist experience – pulling up beside them and they hold up a couple of crays for photographs – it’s a whole deal” (tourism/charter operator).

8.0 Perceptions of change in FMA quality

8.1 Summary

Perceptions of changes in the quality of the FMA vary by user group. Commercial and recreational fishers/boaties were the most likely to believe that the quality had improved and a large proportion of both sub-groups believed it had stayed the same. Tourism industry workers and ‘other’ users were the most pessimistic. Similar percentages of respondents reported that the quality of the FMA had got worse compared with improved, for both sub-groups. ‘Visitors’ were not asked their views owing to the expected high proportion with no prior experience of the FMA.

Interviewees had no common agreement on trends in boat numbers, however the general view is that tourism has increased. Recreational use appears to be spreading geographically in response to improvements in technology. Some identified increasing numbers of visitors south of Milford Sound/Piopiotaahi (especially in Doubtful Sound/Patea). FMA user behaviour was felt to have improved, but this may be influenced by the users’ own personal experience (which they reported had improved with age).

Sources of data:

- User survey Q 10
- Interviews

8.2 Trends in quality

8.2.1 Survey data

Respondents to the ‘user’ survey were asked their opinion on how the ‘quality of the FMA’ had changed over the last five years. This was a generic measure and specific dimensions of quality were not defined for respondents.

The majority of users felt that the quality of the FMA had either improved or stayed the same over the past five years (Figure 8.1). Commercial fishers and recreational fishers/boaties were most likely to feel that the quality had improved (both 23%). Tourism operators/employees and ‘others’ were most likely to feel that the area had worsened, but only around 25% of respondents from each group felt this way. Very few commercial or recreational fishers believed that the quality of the area had worsened (13% and 9% respectively). A substantial proportion of tourism operators/employees (34%) did not know how the quality had changed, perhaps reflecting the 40% who had been using the area for less than five years.

When the ‘don’t know’ responses are removed from the analysis, the differences between sub-groups are even more apparent. Further analysis shows that the tourism operator/employee (40%) and ‘other’ (31%) sub-groups are significantly more likely to report that the FMA’s quality has worsened, compared with commercial fishers (12%) and recreational fishers/boaties (15%).¹⁹

¹⁹ Chi square statistics: $\chi^2=16.7$, $df=3$, $p<.001$

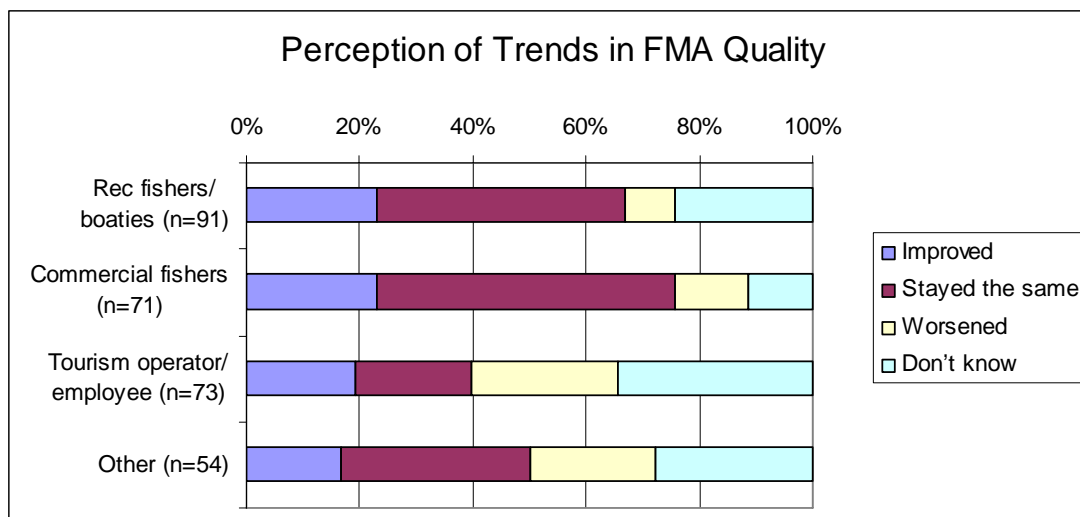


Figure 8.1: FMA users’ assessment of trends in quality of FMA over the past 5 years - Q10

Many respondents made comments as part of their response to Q10, giving their opinion on changes in FMA quality over the past 5 years. Most notable from this set of data is the divergence of opinion (e.g. almost equal numbers of respondents saying there was more fish compared with fewer fish, although more respondents thought the cray-fishery had improved than thought it had declined). Clearly users of the FMA hold a wide range of views and these will influence their perceptions of FMG management measures.

Some points were mentioned more frequently or consistently. A common theme was the increase in numbers of boats and people – the FMA is more busy. Much of this activity was attributed to commercial tourism. Users’ environmental practices were believed to have improved, and greater environmental responsibility was evident (especially commercial fishing and tourism operators – they had ‘cleaned up their act’). People noted less rubbish around the fiords.

8.2.2 Interview data

Interviewees were questioned about their observations of changes in the FMA and its use. Their comments are summarised by theme.

8.2.2.1 Use and user trends

The perception is held by some interviewees that there has been a shift southwards in terms of the busy-ness of the FMA, leading to concerns that “the average Kiwi adventurer” may be displaced from the FMA (tourism/charter operator).

Increases in tourism were discussed. Comments encompassed increases in the number of international tourists as well as charter boat clients (who are mainly New Zealanders). Comments were made that tourist boats have got bigger over time and do more trips, and that the tourist season has extended. A commercial fisher noted that tourist boats are doing more trips than in the past but they “don’t really worry you – the people don’t get off and they are not doing anything”. It was noted that New

Zealand visitors put more pressure on the fishing resource - international tourists merely look rather than fish (tourism/charter operator).

Interviewees believed that charter boats have increased in number. As a result of technological changes, the boats are now bigger and faster. Some attributed this increase in charter boat traffic to an increase in societal wealth (more people can afford their services). The corollary was that more people are fishing more continuously than in the past, and because charter boats are expensive, clients expect returns in terms of fish (recreational fisher/boatie). In sum, several interviewees said that charter boat operations are putting more pressure on fish resources. It was noted that a single charter boat could have a significant impact - "give it a fair whack" (tourism/charter operator).

Technology (including increased size of recreational boats) has increased the number and spatial range of recreational boaties. These changes include bigger boats, more stable boats, GPS, the ability to carry more fuel, better weather forecasting and better VHF reception. Indeed, VHF capabilities are part of an infrastructure that encourages more users.

8.2.2.2 Numbers of boats

A wide variety of opinions, often conflicting, were voiced about trends in boat numbers within the FMA. Perceptions of crowding may vary as a result.

When discussing increases in boat numbers outside scenic cruise zones, interviewees spoke of greater numbers of very small boats. When prompted, they elaborated their comments about increases in boat numbers with comments such as 'there used to be no other boats, but now you might see one other'. So the order of magnitude is large but the overall numerical increases remain small. Part of the special character of Fiordland is its emptiness (of people), therefore any increase will adversely effect that value. People's visual awareness of other boats appeared to be the critical factor.

8.2.2.3 Tolerance levels

Increases in numbers of people and boats are not necessarily a problem to all people. It was recognised that different people will have different tolerance levels. Boats may have increased in number, but seeing more boats is not necessarily a problem. Some interviewees voiced a sense of safety in numbers and security of knowing there are others around, especially given the harshness of the FMA environment. One recreational fisher/boatie indicated that he did not mind "seeing more boats around because it's still nice and quiet – you don't actually hear people talking".

Interviewees varied in their views of what is 'busy'. Two tourism/charter operators used the analogy of traffic lights to indicate busy areas: one was referring to Milford Sound/Piopirotahi, and the other, Dusky Sound: "The guys ask me why I don't go to Dusky, but why go there when you need traffic lights?"

8.2.2.4 Changes in user behaviour

Interviewees often commented that general behaviour and the attitude towards the environment is better now than it was in the past. This includes generational changes in behaviour - increased awareness of the environment and of appropriate ways to behave. It was noted that the establishment and actions of the FMG corresponds to this change.

Individuals spoke of their own behavioural changes, e.g. “Years ago all of us took more [fish] than we were allowed. It is not until you get older and wiser, and you are in business yourself, that you see what is going on - because there are new people coming in - they are probably just doing what we did years ago” (tourism/charter operator). One person noted that recreational boaties are more responsible than they used to be, e.g. will check in before going out (‘other’ user). In several instances it was noted that it only takes one occurrence of misbehaviour for a bad opinion to spread and this is remembered for a long time.

9.0 Perceived threats

9.1 Summary

Few activities currently are perceived to represent major threats to the area. Marine pests and pollution were perceived as the greatest threats by almost all sub-groups. Tourism was also seen as a potential threat by most groups – particularly ‘others’ and ‘visitors’. ‘Visitors’ believed the area to be threatened by more activities than any other sub-group. Their top five concerns (in order of importance) were pollution, commercial fishing, marine pests, climate change and recreational power craft. Recreational and commercial fishers were the least likely to perceive the area to be under threat from activities. Overall, the lowest perceived threats were associated with non-motorised recreational craft.

Interviewees perceived the depletion of fish stocks as the primary threat, with concerns often expressed about fishing, pollution and adverse environmental change. Interviewees commonly spoke of the threats to the recreational experience from the increasing number of tourists (perceived differently from increases in use by ‘those who belong’).

Most people reported that they had seen/read information about marine pests (with the exception of ‘visitors’). Fewer than half of all respondents reported that they could name any marine pests. Of the pests identified, three were most frequently mentioned: didymo, undaria and sea squirt.

Owners/operators of marine vessels indicated that they were very willing to take action against marine pests, particularly: maintaining an active anti-fouling coating on the vessel, carrying out regular inspections of the vessel and equipment for the presence of fouling, and out of water cleaning and drying of the vessel’s hull. The action that respondents were least willing to carry out was in-water cleaning of the vessel’s hull. A minority of respondents were currently taking preventive actions against marine pest introductions.

Sources of data:

- ‘User’ survey Qs 9, 16, 17, 19
- ‘Visitor’ survey Qs 8, 10
- Interviews

9.2 Activities

9.2.1 Survey data

Respondents in all sub-groups were asked to evaluate a list of activities in terms of the extent to which they threatened current FMA values. A 7-point scale was used in which 1 = ‘no threat at all’, and 7 = ‘significant threat’. Survey participants were also given a ‘don’t know’ option to select as applicable.

The perceptions of respondents are reported as mean scores in Table 9.1²⁰. Scores of 5.0 or greater have been emboldened to emphasise the greatest perceived threats. Mean scores of greater than 4.0 represent the perception of a potential threat to values.

Table 9.1 illustrates that perceptions of threats to the Fiordland Marine Area varied by user group, but that, overall, few activities currently are perceived to represent *major* threats to the area. The two greatest threats perceived by almost all user groups were marine pests and pollution. Tourism was also seen as a potential threat by most groups – particularly ‘others’ and ‘visitors’. The recreational fishers/boaties and tourism operators/employees were the least likely to see this as a threat.

Table 9.1: FMA users’ perception of activities as a current threat to the FMA - Q9/VQ8

	Rec fishers/ boaties	Comm fishers	Tourism operator/ employee	Visitor	Other
Commercial water craft	3.41	2.60	3.67	4.52	4.44
Recreational fishing	2.64	3.60	3.50	3.85	3.68
Commercial fishing	4.38	2.25	4.02	5.64	4.94
Aspects of current management	3.38	3.69	4.46	3.71	3.87
Tourism	3.72	4.01	3.99	4.38	4.71
Marine pests	5.14	5.26	5.36	5.40	5.42
Pollution	4.90	5.10	4.94	5.85	5.16
Diver damage to marine species	2.48	2.80	3.01	4.06	3.15
Recreational kayaking	1.86	1.91	1.89	2.53	2.25
Recreational power craft	2.49	2.90	3.47	4.78	3.37
Recreational sailing craft	1.93	2.05	2.50	3.08	2.29
Climate change	2.97	3.31	4.50	5.13	4.60
Anchor damage to marine species	2.37	2.15	3.50	4.78	4.21

‘Visitors’ believed the area to be threatened by more activities than any other sub-group. Their top five concerns (in order of importance) were pollution, commercial fishing, marine pests, climate change and recreational power craft. At the site-specific level, statistically significant differences were found for perceptions of threats associated with ‘commercial water craft’ and ‘commercial fishing’. In both cases, Doubtful Sound/Patea ‘visitors’ (4.8 and 6.0) perceived a more significant threat than those visiting Milford Sound/Piopiotahi (4.4 and 5.5).²¹ These findings are consistent with the results presented in section 7.3, where ‘visitors’ rated the values of ‘peace and quiet’, ‘remoteness’ and ‘scenic beauty’ more highly than any other sub-group.

Recreational and commercial fishers were the *least* likely to perceive the area to be under threat from other activities. Overall, the lowest perceived threats were

²⁰ Tests for significance (F-test) were undertaken for each threat, comparing mean scores across sub-groups. With the exception of ‘marine pests’, all other threats indicated significant statistical differences between groups to at least the $p < .05$ level

²¹ F-test statistics: $F=5.9$, $df=1$, $p=.019$; $F=5.8$, $df=1$, $p=.016$ (respectively)

associated with non-motorised recreational craft, perhaps reflecting the capacity of those activities to easily integrate with the natural character values of the FMA.

Additional intra-sub-group analysis revealed a very small number of differences. Among recreational fishers/boaties, for instance, respondents with the lowest frequency of use ('once per year or less') considered 'commercial fishing' as significantly more threatening (4.8) than those in the medium (3.9) use level category.²² Similarly, among tourism operators/employees, those with highest FMA use frequencies rated 'pollution' as a significantly greater threat (5.3) than those with lower use levels (4.3).²³

For all sub-groups except 'visitors', 5-10% of respondents consistently reported not knowing the extent of threat to FMA values. Recreational fishers/boaties (35%), commercial fishers (27%), tourism operators/employees (21%) and 'others' (37%) selected 'don't know' for the 'aspects of current management' threat. The proportion of 'don't know' responses was generally much higher for the 'visitor' group than other sub-groups, ranging from approximately 10% (threat associated with tourism) to more than 50% (aspects of current management).

Twenty-seven respondents listed 'other' activities that they felt were threats. The most common activities were: freshwater discharge from the Manapouri power station (n=5), research, especially of dolphins (n=3), tourism operations (harassing dolphins, overflights, smell from Real Journeys' Doubtful Sound/Patea treatment plant, general) (n=6), marine reserves restricting fishing (n=2), cruise ships (n=2).

9.2.2 Interview data

From the interviews, a range of comments was given in response to questions about threats to FMA values. Different geographical scales were evident – from global climatic factors like La Nina weather patterns, to localised erosion and shoreline damage from boat wakes.

The depletion of fish stocks was seen as the biggest threat by many interviewees (many interviewees were fishers, either recreational or commercial). Interviewees seemed to be in agreement that the threat from commercial fishing had been removed, but past poor behaviour of this sector was commented on a lot.

A tourism/charter operator summed up the views of many others, stating that the only things that are likely to effect the FMA were fishing, pollution and environmental change, including wave damage from boats. In relation to the dolphins (but not restricted to them), some interviewees expressed concern over freshwater inflow into Doubtful Sound/Patea and the need for monitoring.

Some commented on the power of natural forces - that they are stronger than anything people can do and that the weather controls where people will go and where they are fishing. A related point was that the physical environment protects itself. In particular,

²² F-test statistics: $F=4.3$, $df=1$, $p=.042$

²³ F-test statistics: $F=3.94$, $df=1$, $p=.05$

the weather protects the FMA from high levels of use and associated damage, as well as repairing damage.

Threats to the nature of the FMA 'recreational experience' were commonly raised. The potential loss of solitude was a common theme expressed by many people, related to increasing numbers of users. This comment was made with reference to tourists and not to those who 'belong' (New Zealanders who have a personal attachment to the FMA and have earned the right to be there through the effort of accessing the FMA). There was a clear separation between recreational users and tourists: "Don't mind recreational users being there [Doubtful Sound/Patea] – if they have got there they have done pretty well – it is allowing more and more concessions to go through that will increase use and make it more accessible" (tourism/charter operator).

Solitude was highlighted in several ways – a lack of people, getting away from it all, solitude from the rest of the world. For example: "All of the appeal of the place is to go out there and there is no TV, no radio and you can get away from it all and just relax – park up the head of a sound and be alone" (tourism/charter operator).

Comments were made about spatial use patterns and the displacement of users. One commercial fisher noted that stopping commercial fishers going into the fiords concentrates them in a relatively narrow zone between the inner fiord boundary and the open sea area. In other words, limiting use in some areas puts more pressure on other areas (all types of users commented on this). One interviewee noted that: "If you close the whole fiord up, you are stuffing up the rights of the average New Zealander [recreational boaties]" (tourism/charter operator).

Milford Sound/Piopirotahi appeared to be treated differently in interviewees' perceptions of crowding. The Sound appeared solely to play the role of access point – when discussing their use of the FMA, some people simply ignored Milford, it was not part of their FMA experience. When prompted, a couple of interviewees' noted that they had accessed the FMA via Milford, which was busy, but they were not thinking of Milford when they spoke about the FMA (which was beyond Milford Sound/Piopirotahi).

Interviewees exhibited an ability to separate themselves from the topic under discussion. For example, when discussing three charter boats moored together and the resultant loss of solitude he experienced, a recreational fisher/boatie conveniently ignored the fact he was a passenger on one of the boats. Other solitude research has identified this phenomenon (Manning, 1999).

One interviewee ('other' sub-group) spoke of safety issues related to risks for passengers on cruise ships and small fizza boats, which are now going further out to sea than before.

9.3 Marine pests

9.3.1 Survey data

Most respondents had seen, read or heard information about marine pests of threat to Fiordland, with the exception of ‘visitors’ (Figure 9.1). Respondents in the ‘other’ category were the most likely to have come across information about this subject (77%). ‘Visitors’ to the area (31%) and recreational fishers/boaties (59%) were the least likely to have seen any information about marine pests, a statistically significant result.²⁴

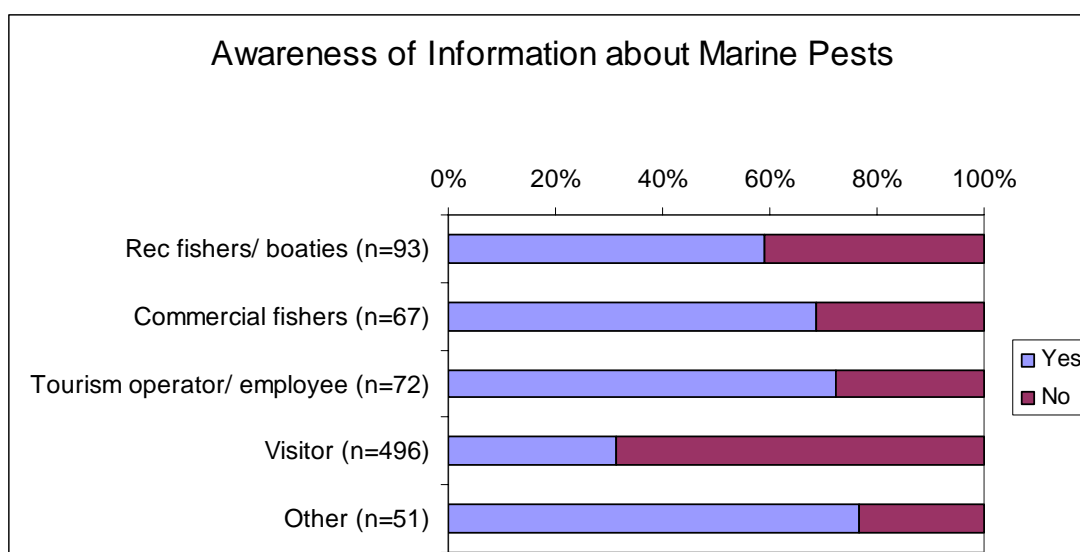


Figure 9.1: FMA users’ awareness of information about marine pests of threat to Fiordland - Q16/VQ10

When the ‘visitor’ group is sub-divided by site, it is apparent that ‘visitors’ to Doubtful Sound/Patea (42%) are significantly more likely than ‘visitors’ to Milford Sound/Piopiotahi (28%) to report receiving information about marine pests in the FMA.²⁵ Similarly, there are statistically significant differences *within* other FMA user sub-groups in terms of frequency of use, and length of association with the area. Commercial fishers with the lowest use of the area (i.e. use the FMA once per year or less) were much less likely (47%) than those with more frequent use levels (76%) to report having seen information about pests.²⁶ The same trend appears to be true for recreational fishers/boaties, with more frequent users (69%) reporting awareness of pest information more than those with lower use frequencies (50%).²⁷

Fewer than half of respondents reported that they could name any of the marine pests that currently threaten the FMA (Figure 9.2). Commercial fishers and recreational fishers/boaties were the *least* likely to be able to name any pests (36% and 37% respectively). Just over half of the tourism operators/employees and ‘others’ said that they could name a marine pest.

²⁴ Chi square statistics: $\chi^2 = 102.2$, $df=4$, $p<.001$

²⁵ Chi square test statistics: $\chi^2 = 8.85$, $df=1$, $p<.01$

²⁶ Chi square test statistics: $\chi^2 = 6.2$, $df=2$, $p<.05$

²⁷ Chi square test statistics: $\chi^2 = 3.4$, $df=1$, $p<.05$

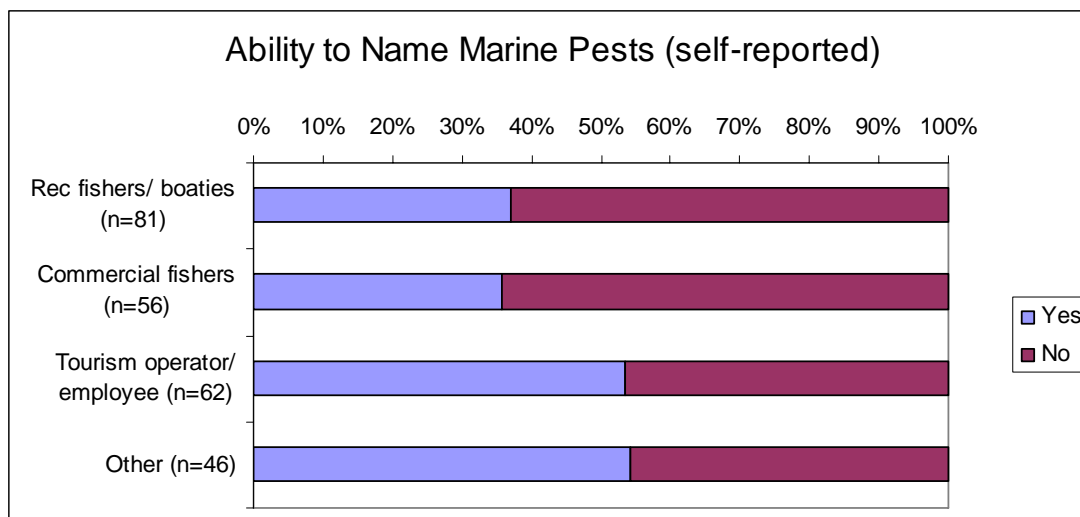


Figure 9.2: FMA users’ self-reported ability to name marine pests that currently threaten the FMA - Q17

Users were asked to list any marine pests that they thought currently threatened the FMA (Q17) – 132 people did so. Table 9.1 provides the full list of all responses and the number of respondents who mentioned each ‘pest’. Many respondents mentioned more than one pest.

Table 9.1: Marine pests that users perceive to be threatening the FMA – Q17

Reported marine pest	n
Marine algae (seaweed)	
Undaria, undaria pinnatifida, pinnat fida, Japanese seaweed	44
Sea squirt, styela clava	34
Weeds on boats	3
Wanganella weed	1
Algae, red algae, algal bloom, red tide	6
Seaweed, types of seaweed, imported or overseas seaweed	18
‘Plants’	2
Freshwater algae	
Didymo, rock snot	44
Marine invertebrates	
Starfish, imported starfish	11
Five finger starfish	1
Eleven finger starfish	1
Sea star	1
Shellfish, types of shellfish	1
Sea urchin, kina (removing the lobster)	2
Brittle star	1
Crab	1
Marine mammals and fish	
Seals, fur seals, too many seals	13
Leopard seal (eating the penguins)	1
Sea lion	1
Killer whales	1

Sharks (mako, white – eat dolphins)	1
Terrestrial animals	
Shags	1
Possoms	2
Stoats	2
Rodents, rats, mice	8
Deer	1
General	
Ballast discharge	2
Bilge water	1
Pollution, pollution from boats	3
Commercial fishing	1
Large vessels, cruise ships	2
Power station (fresh water discharge)	1
People	
'People'	2
DOC	5
Scientists, dolphin researchers	4
Greenpeace	1
Greenies	1
Milford Development Authority	1
Unclear	
Eleyen	1
Gardaia	1

Those respondents who owned or operated a marine vessel in the FMA were asked to indicate the extent of their willingness to undertake various pest introduction prevention strategies. Responses were made on a 7-point scale where 1= 'not at all willing', and 7 = 'very willing'. Respondents were also given the opportunity to indicate if they were already taking the action.

Most sub-groups were very willing to take action against marine pests in the FMA (Figure 9.3). The actions that respondents were most happy to undertake were: maintaining an active anti-fouling coating on the vessel, carrying out regular inspections of the vessel and equipment for the presence of fouling, and out of water cleaning and drying of the vessel's hull. The action that all sub-groups were *least* willing to carry out was in-water cleaning of the vessel's hull.

Commercial fishers and tourism operators/employees were the most willing to undertake *most* forms of preventative action against pests. Commercial fishers were slightly less willing to inspect and clean vessel equipment before going elsewhere.

A minority of respondents were currently taking preventive actions against marine pest introductions (Figure 9.4). Between 25-30% of recreational fishers/boaties, commercial fishers and tourism operators/employees currently maintain an anti-fouling coating on the vessel, carry out regular inspections of the vessel and equipment for the presence of fouling, and undertake out-of-water cleaning and drying of the vessel's hull. Fewer than a quarter of respondents in these three user sub-groups reported cleaning and disinfecting marine equipment, or inspecting and cleaning the vessel before going elsewhere.

Respondents in the ‘other’ category were the least likely to be undertaking most forms of preventative action – perhaps because few of them own or operate a vessel. They were, however, the most likely group to clean and disinfect marine equipment. This may reflect the high percentage of divers and kayakers in this group.

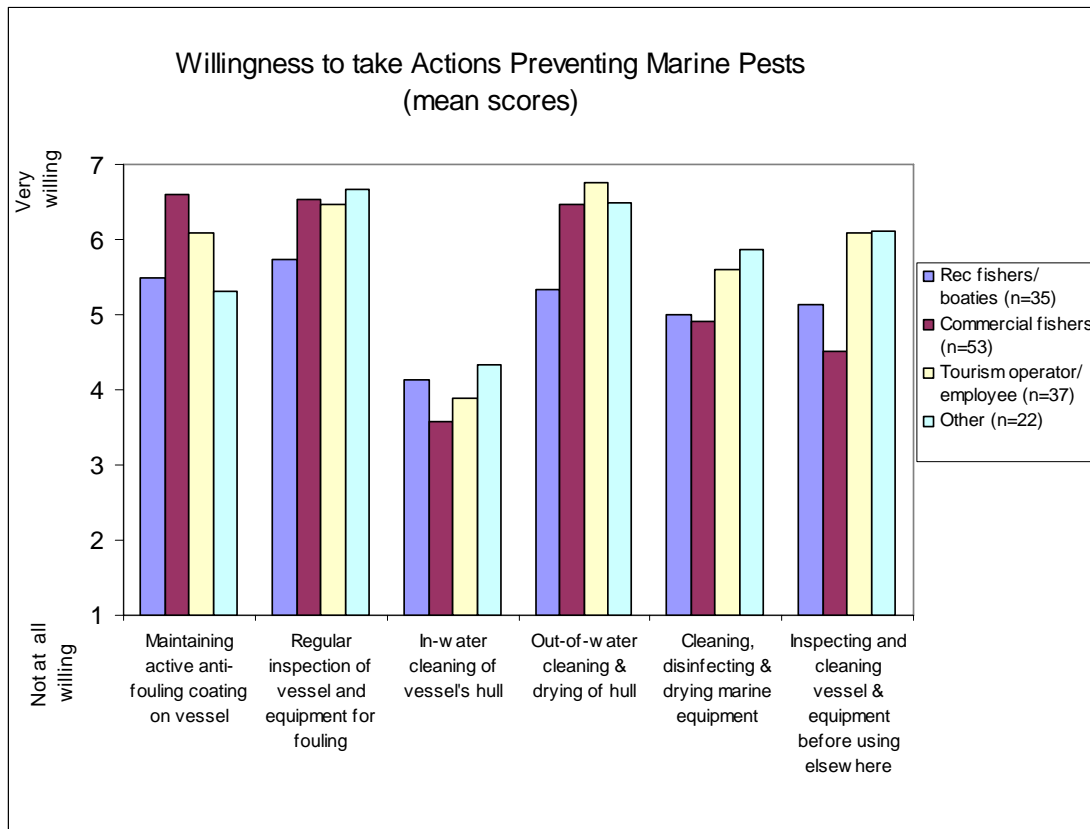


Figure 9.3: FMA users’ willingness to undertake actions to help prevent marine pests from entering Fiordland - Q19

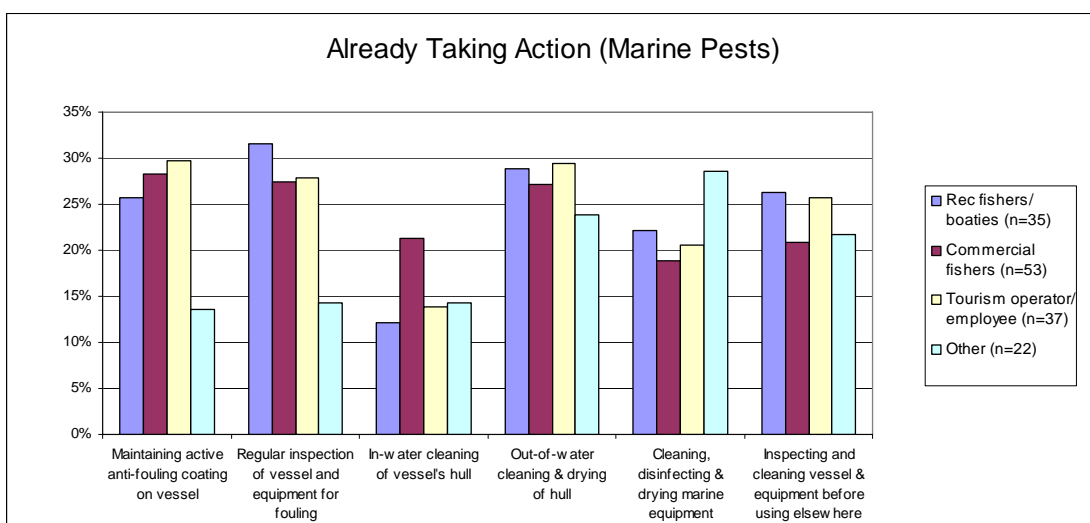


Figure 9.4: FMA users’ already taking action to prevent marine pests entering Fiordland – Q19

9.3.2 Interview data

In interviews, a wide range of opinions was expressed about marine pests and comments were similarly widely varied. These included:

- Visiting cruise ships bring pests – threat from outside the FMA ('other')
- Marine pests are not easy to recognise (recreational fisher/boatie)
- If marine pests are introduced, then nothing can be done about them (recreational fisher/boatie)

With respect to preventing pest introductions, some interviewees commented that it is a boat owner's personal responsibility to check for pests. One interviewee commented that he thought regulations on boat cleaning were too much for the 'average boatie'. A commercial fisher thought that there is a need for more information on marine pests, especially in terms of people being able to recognise pests.

10.0 Marine reserves

10.1 Summary

The current level of marine reserve protection, as perceived by participants, is considered to be adequate. Respondents tended to under-estimate the number of marine reserves but over-estimate the proportion of the FMA that is protected by marine reserves. There are ten reserves encompassing 1.1% of the FMA. Marine reserves have a positive influence upon enjoyment and use. The indicators used to gauge awareness (knowledge of numbers of reserves and areal extent) suggest many people lack knowledge of marine reserves. However, most people appear to understand the rules surrounding marine reserves, with the exception of confusion around feeding fish and, to a lesser extent, about anchoring.

Sources of data:

- ‘User’ survey Qs 11-15
- ‘Visitor’ survey Q 9
- Interviews

10.2 Knowledge of marine reserves

There are currently ten marine reserves in the FMA. Very few respondents could correctly identify the number of existing marine reserves (i.e. few ticked the ‘8-10’ response option). Only 19% of commercial fishers and 30% of tourism operators/employees selected the correct answer. Recreational fishers/boaties and ‘others’ fared a little better, with 35% and 34% answering correctly. Of those respondents who answered incorrectly, the majority thought there were fewer marine reserves than actually exist. Commercial fishers and ‘others’ were the most likely respondents to answer ‘don’t know’. See Figure 10.1.

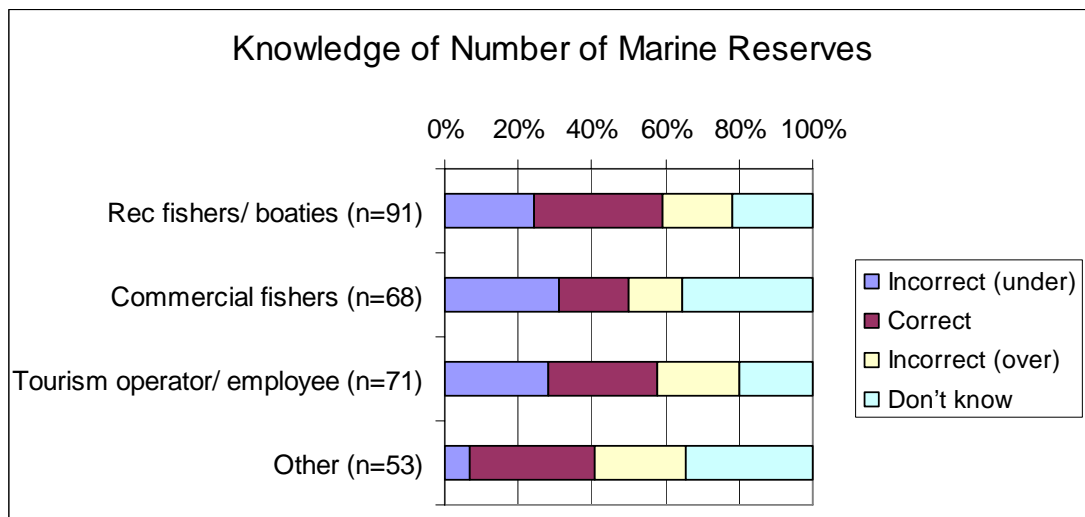


Figure 10.1: FMA users’ knowledge of the number of marine reserves in the FMA - Q11

Table 10.2 presents data about users' perceptions of activities that are allowed within FMA marine reserves based on whether their response was correct. Responses were translated from the options chosen by respondents ('allowed', 'sometimes allowed', 'never allowed') into correct/incorrect answers as shown in Table 10.1. A tick indicates this response was considered a 'correct' answer. One activity (anchoring) had two correct options owing to the fact that anchoring is allowed in marine reserves, but the FMA 'china shop' areas do not allow anchoring. With respect to five activities, researchers may gain permits to undertake the activity but otherwise they are not allowed (fishing from a boat, fishing from shore, collecting rocks and shells, collecting shellfish, erecting structures). In all cases, the 'usual' state of 'never allowed' was treated as the correct response.

Table 10.1: Correct responses to Q12 about activities allowed in FMA marine reserves (indicated by a tick)

Activity	This <u>is allowed</u> in marine reserves (✓)	This is <u>sometimes allowed</u> in marine reserves (✓)	This is <u>never allowed</u> in marine reserves (✓)
<i>Fishing from a boat</i>			✓
<i>Kayaking</i>	✓		
<i>Power boating</i>	✓		
<i>Sail boating</i>	✓		
<i>Collecting rocks and shells</i>			✓
<i>Navigating through the reserve</i>	✓		
<i>Collecting shellfish</i>			✓
<i>Anchoring</i>	✓	✓	
<i>Introducing new marine species</i>			✓
<i>Rubbish disposal</i>			✓
<i>Feeding fish</i>	✓		
<i>Erecting structures</i>			✓
<i>Fishing from shore</i>			✓
<i>Diving</i>	✓		
<i>Swimming</i>	✓		
<i>Photography</i>	✓		

Most respondents had a fairly accurate idea of what activities are allowed in marine reserves. The main exception to this was the beliefs about feeding fish, with relatively small proportions of each sub-group reporting this activity as permitted in a marine reserve – one fifth of the recreational fishers/boaties, half of commercial fishers, just six percent of tourism operators/employees, and 13 percent of 'others'. Feeding fish is allowed in marine reserves.

Between 30-40% of respondents in each user group thought that anchoring was not allowed in marine reserves (anchoring is allowed except in designated anchor-free zones). Small but important minorities within several user groups believed that 'fishing from a boat' (10-15%), 'collecting rocks and shells' (10-15%) 'introducing new marine species' (10-20%), 'erecting structures' (12-25%), and 'fishing from shore' (10-20%) were permitted activities in marine reserves (they are not). Some

people thought ‘diving’ was not allowed or only sometimes allowed (16-27%), while 12-22% thought similarly for ‘power boating’.

Table 10.2: FMA users’ knowledge of activities allowed in marine reserves - Q12

Knowledge of activities allowed in marine reserves (% correct)				
Activity	Rec fishers/ boaties (n=92)	Commercial fishers (n=67)	Tourism operator/ employee (n=71)	Other (n=50)
<i>Fishing from a boat</i>	85.4	89.6	87.3	96.0
<i>Kayaking</i>	94.4	95.2	90.4	96.1
<i>Power boating</i>	85.6	85.2	77.8	87.8
<i>Sail boating</i>	93.2	95.1	84.7	98.0
<i>Collecting rocks and shells</i>	85.9	88.9	85.9	88.2
<i>Navigating through the reserve</i>	87.8	95.1	83.3	86.0
<i>Collecting shellfish</i>	91.1	93.3	84.7	94.1
<i>Anchoring</i>	69.4	70.8	61.4	61.2
<i>Introducing new marine species</i>	88.4	77.8	89.7	79.6
<i>Rubbish disposal</i>	95.5	96.2	95.7	96.0
<i>Feeding fish</i>	21.7	50.9	5.8	13.0
<i>Erecting structures</i>	87.6	81.0	71.4	74.0
<i>Fishing from shore</i>	86.5	88.9	79.7	92.2
<i>Diving</i>	73.0	84.4	72.2	82.0
<i>Swimming</i>	82.2	95.2	83.1	94.1
<i>Photography</i>	95.6	98.4	91.8	98.0

A substantial proportion of respondents in every user sub-group (almost half in most cases) stated that they did not know what proportion of the FMA is currently protected by marine reserves (Table 10.3). Of those people who did answer the question, most thought that between 5-10% of the area was protected. The correct answer is 1.1%.

Table 10.3: FMA users’ knowledge of the proportion of the total FMA currently protected by marine reserves - Q13

	Rec fishers/ boaties (n=89)	Commercial fishers (n=68)	Tourism operator/ employee (n=68)	Other (n=52)
0%	0.0	1.5	0.0	0.0
1%	4.5	5.9	11.8	5.8
2%	9.0	2.9	7.4	3.8
5%	11.2	10.3	8.8	13.5
10%	14.6	7.4	14.7	21.2
15%	7.9	2.9	5.9	5.8
20%	5.6	2.9	2.9	1.9
> 20%	4.5	11.8	4.4	3.8
Don't know	42.7	54.4	44.1	44.2

10.3 Attitudes toward marine reserves

10.3.1 Survey data

Respondents were asked to evaluate the current level of marine reserve protection in terms of the overall percentage of area protected, the size of individual reserves, and the range of marine habitats protected. Responses were recorded on a 7-point scale, where 1 = ‘very inadequate’, and 7 = ‘very adequate’.

Most respondents reported that the current level of protection was adequate in terms of the percentage of area protected, the sizes of individual reserves and the range of marine habitats protected (Figure 10.2). Respondents’ views on the adequacy of marine reserves generally were consistent across the three aspects examined – the area protected, size of reserves or range of habitats.

Additional scrutiny of the data was undertaken to examine the relationship between perceptions of adequacy and knowledge of marine reserve protection. When ‘don’t know’ responses are removed from the analysis, 97 percent of commercial fishers, and 70 percent of recreational fisher/boaties, evaluated current marine reserve protection as ‘adequate’ (classified as 5, 6 or 7 on the scale). For commercial fishers reporting protection as ‘adequate’, the vast majority (83%) thought that more than five percent of the FMA was already under protection (and half of these believed the protection area was more than ten percent)²⁸. Recreational fishers/boaties who reported the existing protection as ‘adequate’ were most likely to believe that 5-10 percent was already protected (compared with those who believed that 1-2 percent, or more than ten percent of the FMA was currently protected). This result was found to be statistically significant²⁹.

There are also other statistically significant differences between and within the sub-groups (Figure 10.2³⁰). Commercial fishers are the most satisfied with the level of protection, scoring means over 6.0 for each of the three attributes. Recreational fishers/boaties are also very satisfied with the status quo, with mean scores of between 5.3 and 5.4. Tourism operators/employees and those in the ‘other’ category appeared significantly less satisfied with protection aspects, with mean scores ranging from 4.3 to 4.5.

Additional analysis of the recreational fishers/boaties sub-group revealed that those who used the FMA less frequently (once per year or less) held statistically significantly different attitudes to those with higher annual use levels. Fishers/boaties with the lowest use assessed the overall percentage of marine reserve protection as less adequate (4.85) than more frequent users (5.80).³¹ Similarly, for the less frequent users, the sizes of individual reserves (4.93) and range of protected habitat (5.05) were rated as less adequate than by their higher use counterparts (5.8 and 5.84

²⁸ The high proportion (54%) of ‘don’t know’ responses in Q13 did not allow tests of significance for the commercial fishers data

²⁹ Chi square test statistics: $\chi^2 = 14.8$, $df=4$, $p < .01$

³⁰ F-test statistics: $F=12.4$, $df=3$, $p < .001$; $F=10.4$, $df=3$, $p < .001$; $F=14.1$, $df=3$, $p < .001$; $F=7.3$, $df=3$, $p < .001$ (respectively)

³¹ F-test statistics: $F=5.3$, $df=1$, $p=.024$

respectively).³² Tourism operators/employees scored the lowest for this question, but still believed that the current levels of protection are adequate.

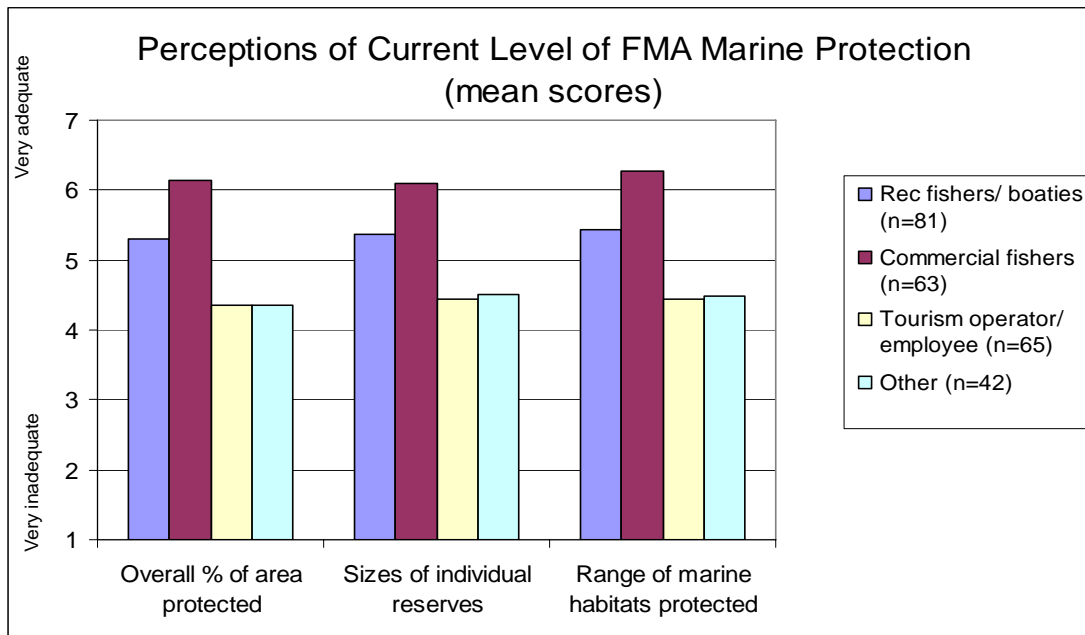


Figure 10.2: FMA users' perceptions of the current level of marine reserve protection in the FMA - Q14

On another 7-point scale, respondents were asked to consider the extent to which marine reserves had a positive or negative influence on their use or enjoyment of the FMA. The mean scores (Figure 10.3) indicate that all sub-groups believed that marine reserves had a positive influence on their use or enjoyment of the area. Commercial fishers held the lowest overall ranking (4.20). Fifteen percent of 'visitors' did not know they were visiting a marine reserve (17% Milford Sound/Piopiota; 9% Doubtful Sound/Patea).

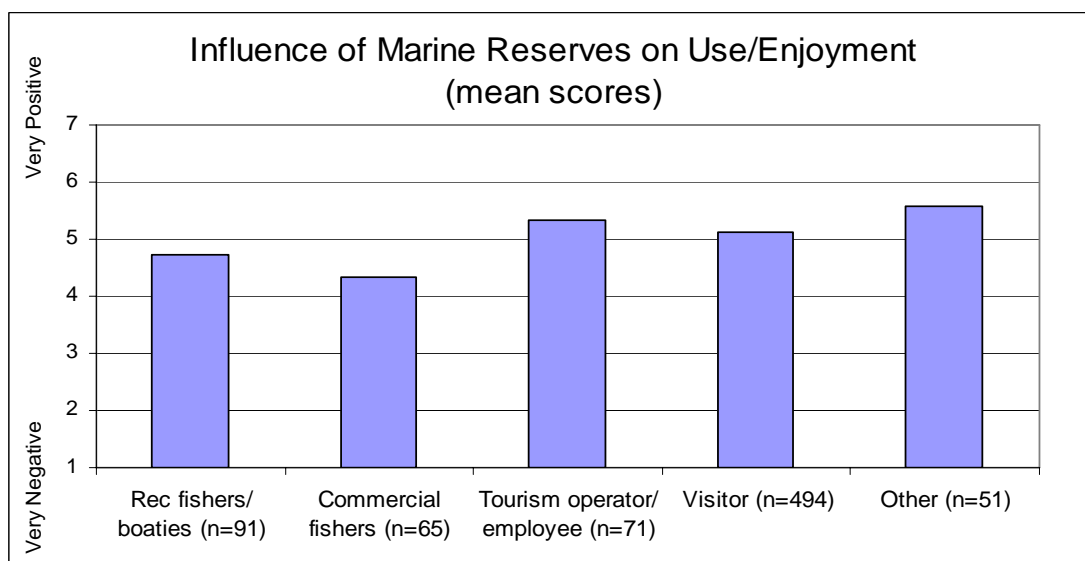


Figure 10.3: Influence of marine reserves on FMA users' use or enjoyment of the FMA - Q15/VQ9

³² F-test statistics: $F=4.45$, $df=1$, $p=.038$; $F=10.8$, $df=1$, $p=.002$ (respectively)

10.3.2 Interview data

When asked about their views on marine reserves, interviewees' opinions were polarised as to whether marine reserves were a good thing, whether they were in the right places, and whether they should be better marked. There did not appear to be a 'common' opinion within user groups. Opinions seemed to be more closely related to the individual's opinion of protected areas *per se* and which areas they used. Some interviewees commented that marine reserves made a difference to their experience if they have their family on board. Recreational fishers/boaties do not go so far out when their wife/children/grandchildren are on board. Marine reserve restrictions on fishing in the inner fiords have the effect of restricting use to those with experience, or those prepared to take more risks.

11.0 Management

11.1 Summary

Most respondents had seen/heard information about the management of the FMA, mainly from information brochures, as well as articles in magazines, newspapers, signs at the water's edge, and 'word of mouth'. Most people did not feel very well-informed about management of the FMA. Interviewees provided some ideas about means to disseminate information to FMA users.

Most respondents do not want to change any aspect of the current FMA management. Interviewees noted the complexity and confusing nature of the regulations. The current management regime does not appear to be having any significant positive or negative effect on people's use or experience of Fiordland. Current fishing regulations are having a slightly positive effect on recreational and commercial fishing activity in Fiordland and similarly upon enjoyment of recreational fishing.

Over half of users (in all 'user' sub-groups) claimed to have heard of the Fiordland Marine Guardians prior to participating in the survey – commercial fishers reported the greatest awareness. Most respondents seemed reasonably knowledgeable about the role of the Guardians.

Sources of data:

- User survey Qs 20-26, 29, 32-33
- Interviews

11.2 Information and knowledge about FMA management

11.2.1 Survey data

The majority of respondents in all user sub-groups had heard or seen information about the current management of the FMA: 83% of commercial fishers, 73% of recreational fishers, 67% of tourism operators/employees, and 71% of 'others' (Figure 11.1). 'Visitors' were not asked this question (nor other questions about FMA management, on the assumption they would not know about this topic). Tests found no statistically significant differences between any of the user groups. However, further analyses show that there are some significant differences *within* the sub-groups on the basis of extent of FMA use – more frequent users report greater awareness of FMA management information.

Commercial fishers with the highest use levels (more than five months fishing per year) were much more likely (94%) to report awareness of information about FMA management compared with those in the lower use category (63%).³³ Similarly, those recreational fishers/boaties with the lowest levels of association with the FMA (five years or less), were significantly less likely to report awareness of FMA management (41%) compared to those with 6-20 years (85%) and more than 20 years (93%)

³³ Chi square statistics: $\chi^2 = 6.43$, $df=2$, $p < .05$

association with the area.³⁴ The same pattern is evident for tourism operators/employees, where a shorter length of time associated with the FMA corresponds to significantly lower awareness of FMA management (41%) compared to those with longer associations (88%).³⁵

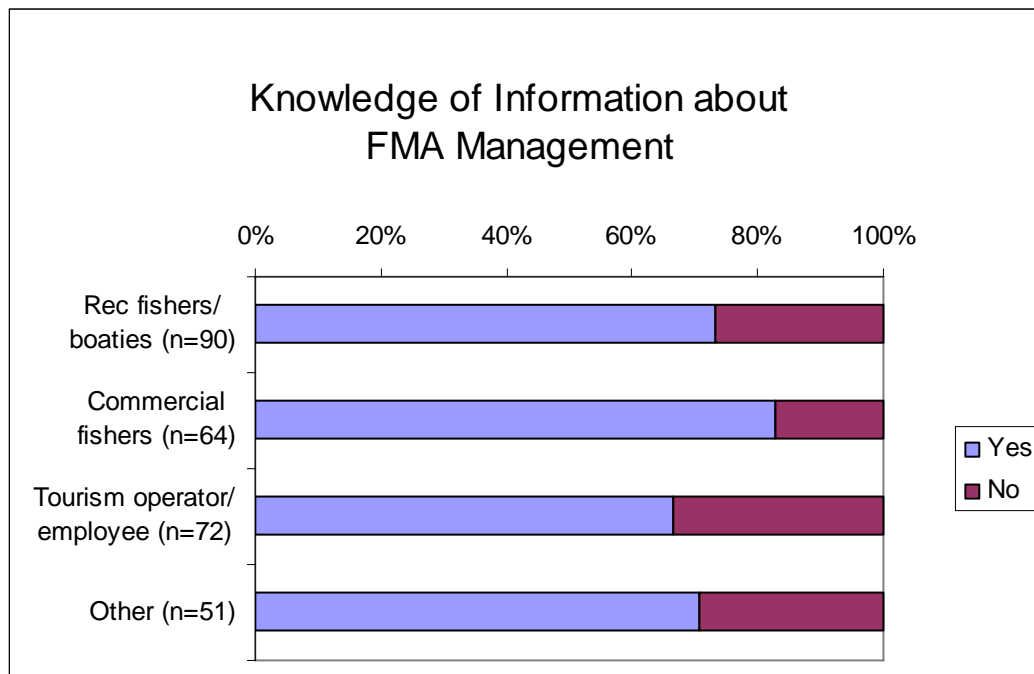


Figure 11.1: FMA users’ knowledge of information about the current management of the FMA - Q20

The most common means of learning about the current management of the FMA is through information brochures: 84% of recreational fishers/boaties, 64% of commercial fishers, 73% of tourism operators/employees and 89% of ‘others’ found their information in this way (Figure 11.2). Other sources of information that were common across most user groups were articles in magazines, newspapers and signs at the water’s edge. ‘Word of mouth’ was also a popular means of gathering information about the FMA – this included sources such as work places or work mates, friends and family, or other people at wharves/ramps.

A large proportion of commercial fishers (76%) read about FMA management in magazines. Relatively high proportions of tourism operators/employees (55%) and ‘others’ (43%) learnt about FMA management from their work place or work mates. Information sources that were used the *least* by respondents were: commercial radio, marine radio and the internet.

‘Other’ sources of information were listed by 13 respondents and comprised: government agencies (n=7) [‘Environment Southland’ (n=1), ‘DOC’ (n=2), ‘MAF’ (n=3), ‘government reports’ (n=1)], members of the Guardians (n=3), ‘mail outs’ (unspecified) (n=2) and Guardians of Fiordland’s Fisheries meetings (n=1).

³⁴ Chi square statistics: $\chi^2 = 22.8$, $df=2$, $p < .001$

³⁵ Chi square statistics: $\chi^2 = 17.6$, $df=2$, $p < .001$

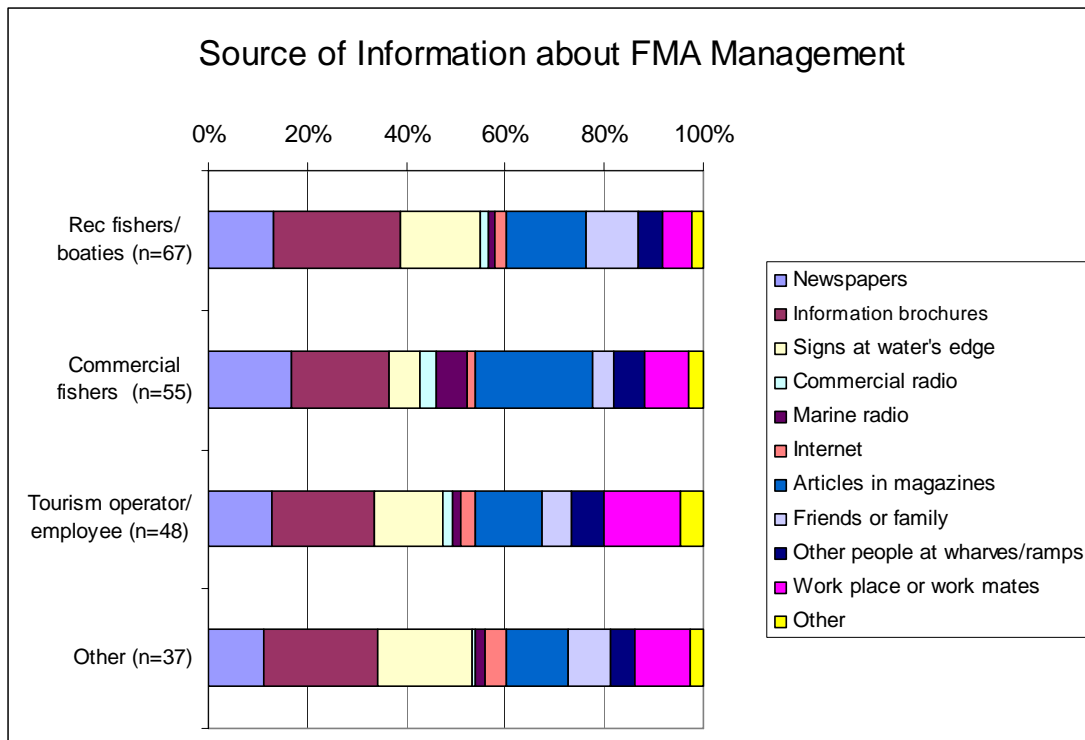


Figure 11.2: Source of information about the current management of the FMA - Q21

Respondents were asked to evaluate the extent to which they felt well-informed about management of the FMA. In order to do this, a 7-point scale was used in which 1 = 'not well-informed at all', and 7 = 'very well-informed'.

None of the respondents felt that they were very well informed about the management of the FMA (Figure 11.3). All four sub-groups had a mean score of between 3.87 and 4.27.

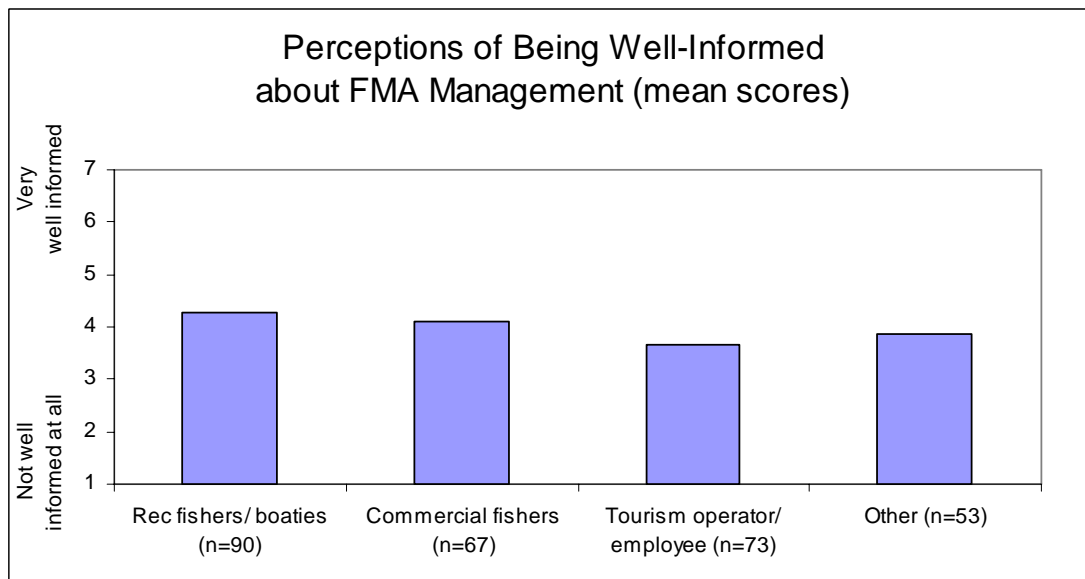


Figure 11.3: FMA users' sense of feeling informed about FMA management - Q22

11.2.2 Interview data

Interviewees made comment on ways they thought the FMG could disseminate information, including:

- Talks to clubs (not just obvious mainstream clubs) – a few recreational fishers/boaties commented that information had reached them via speakers to their recreational club
- Information via boat sellers
- Information in the post
- Information in the Mana Cruising Guide (on the regulations)
- Information at boat ramps (Deep Cove, Milford, Riverton, etc): “Think the notice board at Doubtful Sound is good – not too much information on it” (tourism/charter operator). Someone else noted that “Kiwis don’t read signs, they think signs are for someone else to read, not them” (tourism/charter operator)
- Pamphlets at the boat ramp: “You would definitely grab one and throw it in the boat and somebody would look at it” (recreational fisher/boatie)
- Use the tourist companies to distribute information (regulations)
- Advertisements on television
- Through schools (frequently mentioned) – tell the next generation and have them tell their parents. e.g. “Have an education officer going around the schools” (tourism/charter operator)

These responses were answers to direct questions about how the FMG could reach people like themselves. Some ‘reality checks’ were apparent, for example, one recreational fisher/boatie said he had never noticed the information board at the Milford boat ramp and, while he had taken information home from the talk he went to, he had not looked at any of it. Concern was expressed that the FMG publicity has worked to increase the profile of the FMA and increased the number of people going there.

Most interviewees were keen to be kept informed about the FMG and their work, and some expressed that it was important that the FMG ‘keep their profile up’. A few, particularly recreational fishers/boaties, didn’t really care. One tourism/charter operator expressed dissatisfaction, saying that he was interested in the plans of the FMG but had heard nothing.

Some ideas presented in interviews were:

- Keep the public informed about the ‘bigger picture’ plan of FMG, i.e. report study results, describe FMG long-term plans, progress on management changes, effects of changes and issues, etc
- Keen to know the outcomes from the changes in regulations that the FMG were going to revisit in two years
- Convene a forum where information is shared. There has been a lot of different research, perhaps some replication of research. There is a need to sit down and talk about what everyone already knows

Perceptions of interviewees included that the FMG was mainly about fishing regulations – and therefore of little interest to some users (e.g. kayakers). Knowledge

of the regulations appeared to vary considerably by user sub-group. For example, commercial fishers know the rules well, but recreational fishers/boaties are highly variable. Some recreational fishers admitted they did not know the regulations despite frequently fishing in the FMA.

11.3 Effect of FMA management on use and experience

A 7-point scale was used to assess the nature of FMA management’s effect on users’ experience and use. On the scale, 1 represents ‘very negatively’ and 7 represents ‘very positively’.

The current management regime does not appear to be having any significant positive or negative effect on people’s use or experience of Fiordland. Figure 11.4 shows that all four user groups scored means between 4.20 and 4.76, which suggests that their use of the area is slightly positively affected by management. There was little variation between user sub-groups.

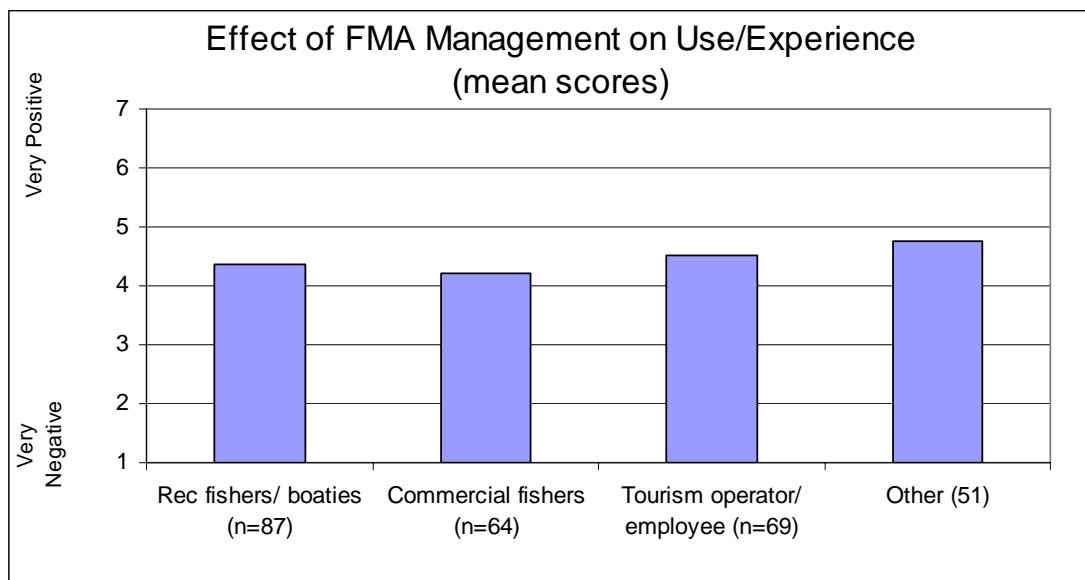


Figure 11.4: Effect of FMA management upon FMA users’ use or experience of Fiordland - Q23

Many respondents took the opportunity to comment in support of their response to Q23. Analysis of these comments provides no common opinions or effects upon users’ experience or use. Comments ranged from bouquets for the FMG’s management measures (e.g. “strongly support the ‘fish for a feed and no accumulation’ policy and sustainability ethic promoted by Guardians of Fiordland”), to criticism of the fishing regulations (e.g. “it has closed some very good areas that were commercially dived for paua and crayfish and which were already protected under quota management”), to those who stated they were not affected by FMA management.

Commercial fishers and all people who recreationally fish in the FMA (not just those who are categorised as a ‘recreational fisher/boatie’) were asked specific questions about the effects of the fishing regulations upon their activity and their enjoyment of the area.

Respondents were asked to rate how current fishing regulations affected their commercial fishing activity in Fiordland on a scale of 1-7, in which 1 represented 'very negatively' and 7 represented 'very positively' (Q29). The mean score for the commercial fishers sub-group was 4.33, indicating that the current regulations have a slightly positive effect on their activities. Calculations were not undertaken for the six people from other sub-groups who indicated that they commercially fished the FMA, owing to the very small numbers of respondents.

Some commercial fishers chose to make comments in their response to Q29. Most stated that the regulations had not affected them. Of those that were affected, the most commonly mentioned effect was the loss of traditional fishing grounds. This appeared primarily to be an issue in bad weather. A small number supported the regulations.

The current fishing regulations do not appear to have a significant positive or negative effect on recreational fishing *activities* in the FMA (Figure 11.5). All user groups scored means between 4.2 and 4.8, indicating that the regulations have a mildly positive effect on their recreational fishing activity. There was little variation between user groups.

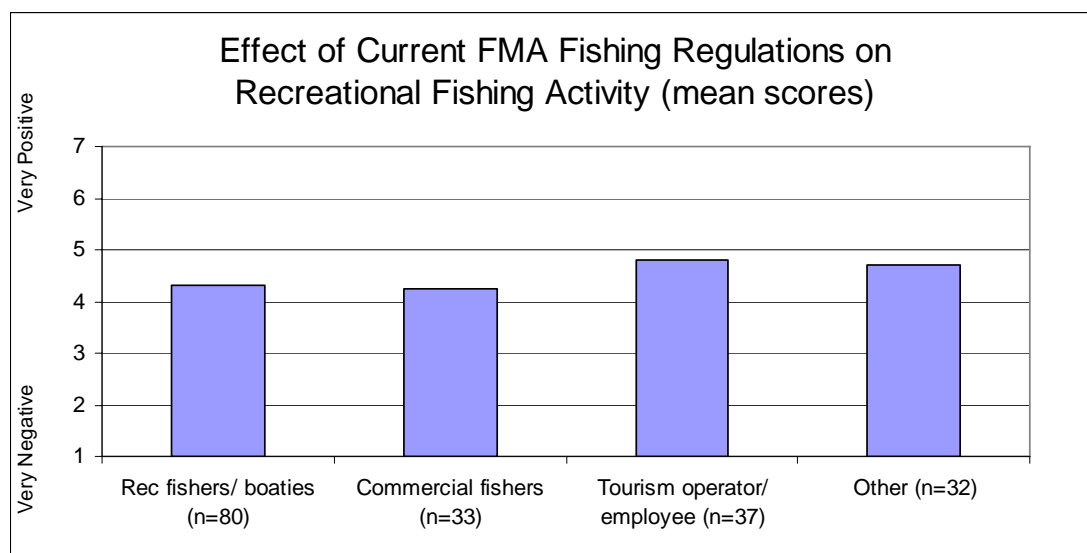


Figure 11.5: Effect of current FMA fishing regulations upon recreational fishing activity - Q32

Comments associated with Q32, made by respondents who recreationally fish, indicate that many people are not affected by the regulations. Approximately equal numbers of respondents made positive, compared with negative, comments about the regulations. Positive comments related to: the protection of fish stocks, that regulations were fair/reasonable, that there were still areas to fish, and that it was good to know the area was being controlled/managed. Negative comments mainly centred around blue cod restrictions within the fiords, forcing recreational fishers to go to other places, including out to sea where the water is rougher. The net effect was concerns over safety. Some people thought the limits were too low, others that they are too high (no clear majority opinion). Some specific detailed comments were made, including:

- “The ability not to be able to accumulate the daily limit of 3 cod per person per day is a major disappointment to our passengers and has had an effect on the numbers of passengers coming to the area. I have no grizzle with the limit of 3 cod per person if we can accumulate”
- “Catch and release is most popular with clients, this could be promoted better in your booklet, not all fish survive being caught if not handled correctly. For example scarlet wrasse can be released but only after popping air sack”
- “I agree with quotas but the rules are too complex. There is not enough room here to explain in full but in most cases the number limit is all that is required. Extra clauses are unnecessary and create confusion and resentment”

Similarly, the current fishing regulations do not appear to have a significant effect on people’s recreational fishing *enjoyment* (Figure 11.6). As with the previous question, all user groups scored a mean of between 4.2 and 4.6 on the 7-point scale, also indicating that the regulations have a slightly positive effect on recreational fishing enjoyment. Again, there was little variation between user groups.

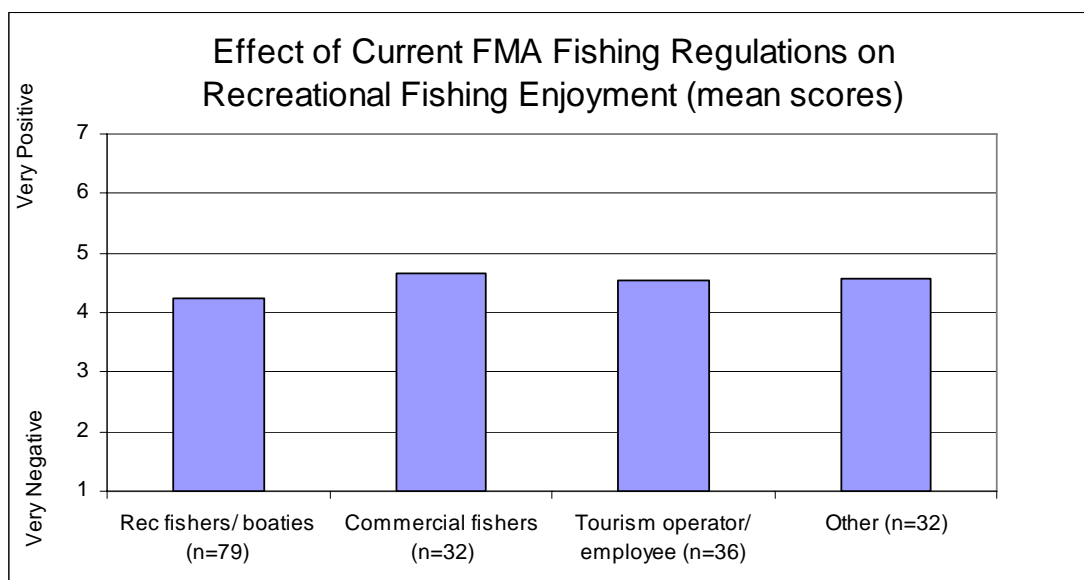


Figure 11.6: Effect of current FMA fishing regulations upon recreational fishing enjoyment - Q33

Comment provided by recreational fishers to explain their response varied from positive comments encouraging the FMG to retain the regulations in order to protect the fishery and the environment, to those who noted that the regulations prevented them from catching the number of fish they wanted, that they were forced to travel further (costs in fuel and time) and safety issues (when bad weather) with respect to having to travel further out of the fiord to catch fish. One person said they now go somewhere else to fish. Most people said the regulations had no effect upon them, as they were still able to fish as they wanted. Some specific and detailed answers were provided:

- “The fact that we cannot accumulate the daily catch has negatively reflected on our ability to attract groups of family and friends to cruise with us. They do not want to take home large numbers of fish but they see the current situation as being a deterrent to coming here”

- “Some areas I used to dive and fish have had restrictions put in place, but when stocks improve it would be great to open them up again and close down somewhere else, by rotation”
- “If I go commercial fishing for two weeks and don’t unload any commercial catch, I am only allowed one day’s amateur catch. If a recreational boat goes out of Milford daily, it is allowed a daily limit. If it stays away it is allowed a maximum 15 crays p.p.[per person]. A commercial fisher is only allowed 6 p.p.[per person]”
- Two people commented that it was hard to keep up with changes in the regulations

11.4 Desired changes to FMA management

11.4.1 Survey data

Most user groups seemed satisfied with the current management of the FMA. Around 20% of all user groups stated that they wanted to change some aspect of FMA management, while between 32 and 39% (across sub-groups) did not want to change anything (Figure 11.7). Tourism operators/employees were the sub-group most likely to want changes to management, with 23% of respondents selecting this option. ‘Others’ were the least likely, with 17% wanting some change.

A significant proportion of respondents in all user groups (between 40-45%) answered ‘don’t know’ to this question, perhaps reflecting a lack of knowledge about the existing management of the area, or alternatively, a sense of apathy about how the area is managed, or belief that it was not relevant to them .

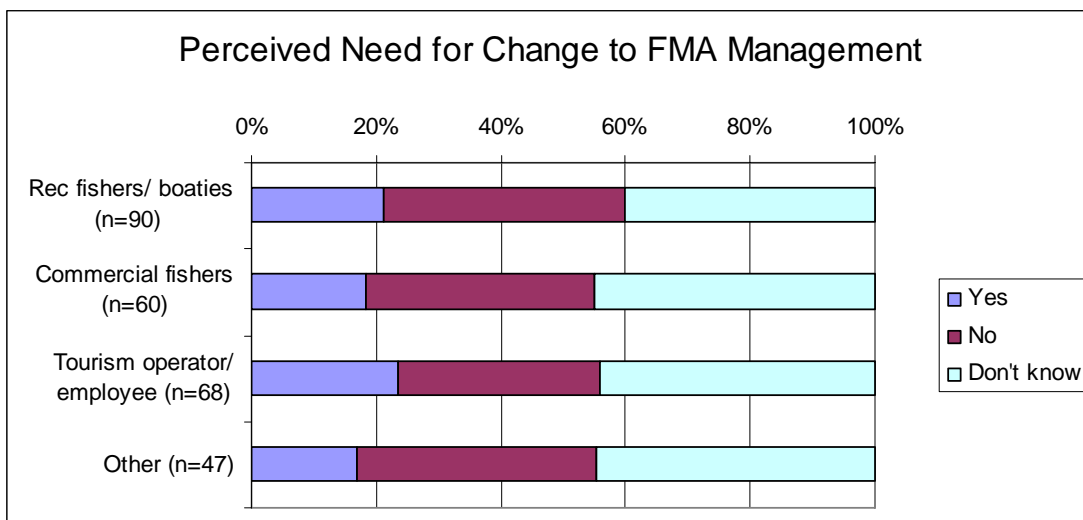


Figure 11.7: Desire for change to FMA management - Q26

Owing to the varied and specific nature of the comments made in support of responses for Q26 (i.e. users’ suggested management changes), these comments are presented in full in Volume 2 of this report. Co-presented in Volume 2 are comments from the end of the questionnaire (‘any other comments’) made by users. These often took the form of instructions for the FMG.

11.4.2 Interview data

Interview data provides further understanding of users' views on FMA management. These comments are thematically categorised.

11.4.2.1 Management regulations – general comments

Many interviewees commented upon the complexity and confusing nature of the regulations. This was the predominant comment about FMA regulations.

An underlying perspective seemed to be that the regulations haven't yet disturbed the activities of too many people and therefore are largely accepted (e.g. marine reserve in Milford Sound/Piopiotaahi on 'shady side' so poor fishing there anyway). Some people commented that the subsequent use changes probably would have happened anyway. Critical to this summation is the sense that further regulatory change might start to impact on what people want to do. This suggests that the FMG may 'buy a fight' in the future if proposed regulations directly affect users' activities.

The nature of the physical environment (which presents safety issues) was raised by some in terms of both the need to overrule regulations when people's safety is at risk (e.g. anchoring) and that the weather can restrict recreational fishers/boaties within Doubtful Sound/Patea to the inner fiord, with the implication that people should still be able to catch something (linked to the notion that they have the 'right' to catch fish).

Comments about the rules included the usual responses to bureaucratic impositions, such as that: "A lot of the rules seem to be made by people sitting in an office and saying this is how it will be done – they have no knowledge of what the reality is like" (tourism/charter operator) and that the FMG is overloaded with bureaucratic requirements.

Some interviewees had the perception that the work of the FMG was good (the right outcomes) but appeared to be driven by specific concerns of individual sub-groups rather than considering the needs of everyone (e.g. possible threat to the dolphins is driving concern over freshwater inflow to Doubtful Sound/Patea, rather than the effect it may have on fishermen's livelihood - a problem for live crayfish storage). It is therefore important to show that things are being done for 'the right reasons'.

Linked to this, was the notion that some user sub-groups were being controlled but not others. For example, controls are exerted on the actions of commercial tourism companies but no controls on the recreational users. Some commercial fishers held the view that charter operators 'get away' with catching fish in commercial numbers yet they are governed by recreational rules and that this is unfair. Resentment exists about the differentiation in burden of compliance costs upon some users and not others (e.g. that some syndicate boats appear to be operating as charter vessels but avoid compliance issues because they are unlicensed).

Polarised views were presented about policing the FMA regulations. On the one hand some interviewees felt that there should be more policing, while others believed that it

was the personal responsibility of users, noting that some users ‘kept an eye on things’.

Similarly, a wide division in comments was evident about the degree to which the regulations were currently being followed. Various comments about reasons for breaking the rules were presented, including that it was mainly through ignorance, that there will always be the ‘rogues’ who disregard the rules, but that they are fewer in number than they used to be. General comments made about rule breaking included that commercial fishermen do not always obey the commercial exclusion zone rules, that some types of users are unfairly subject to regulations (e.g. noise controls on charter boats) and that different rules for different user groups potentially causes division in what was once a uniform community of FMA users. It was suggested that users may be following the ‘letter of the law’ but not the spirit of it – e.g. recreational boaties sometimes go in to Doubtful Sound/Patea in large groups and take a lot of fish all at once.

11.4.2.2 Ideas for new management measures

Interviewees were asked whether they saw the need for new management measures. Ideas and comments included:

- Close the FMA to everyone for a three-month period every year
- Close specific fiords for fishing until fish stocks are ‘up’, then rotate use across fiords: “It is all about saving the fisheries, not about making the whole place a reserve. Have 2-3 sounds open at any one time – if they are harder ones to get at, tough”
- Licence the ‘reccies’ (recreational boaties) and collect more information about them
- Standardise bag limits across inner and outer fiords, review over time and amend when necessary
- Upper size limit for crayfish to stop the ‘big ones’ being caught: “The ones that have earned their position – the big breeding males”
- Total fishing ban

11.4.2.3 Radio issues

Interviewers enquired about the interviewee’s perceptions of VHF communication in Fiordland. This topic received mixed and varied responses, typified by these paraphrased comments:

- VHF communication in the inner fiords is not very good – especially from Charles or Nancy to the middle of Dusky. In the outer parts of the fiord and on the coast it is fine
- Would like to see a repeater up on the back of Dusky somewhere – an official marine repeater linked up to Taupo maritime
- Boats from outside Fiordland are not always aware that VHF will not work everywhere

Having more radio access picks up notion of over-bureaucratisation. The following comment elaborates:

“I think that in Fiordland you need to be pretty self-reliant – it operates as a community, in the fact that if anybody gets into trouble everybody will go and

help, but a lot of what has been implemented over the years causes division amongst everybody – when it was all fisherman and a few charter operators, anybody coming in from outside could go and ask them where to go and anchor up – gets that way that the greenie camp and the fishermen are not doing that” (tourism/charter operator).

11.5 Knowledge of the Fiordland Marine Guardians

11.5.1 Survey data

Over half of respondents in all user sub-groups claimed to have heard of the Fiordland Marine Guardians prior to participating in the survey (Figure 11.8). Commercial fishers (82%) were significantly more likely to report awareness of the FMG than other sub-group respondents.³⁶ The remaining user groups had similar levels of knowledge, with 59% of recreational fishers/boaties, 61% of tourism operators/employees and 57% of 'others' having previously heard of the Guardians.

Analysis of differences *within* sub-groups revealed some statistically significant findings for the two fisher groups – the greater the use/association with the FMA, the greater the awareness of the FMG. Commercial fishers in the lowest use category (i.e. four weeks or less fishing per year) were significantly less likely to report awareness of the FMG (60%) when compared with those in higher use categories (90%).³⁷ Recreational fishers/boaties with more than five years association with the FMA also reported significantly higher awareness of the FMG (76%) compared with those with five years or less (28%).³⁸

Involvement as a survey respondent is likely to have inflated results (increased the awareness of the FMG). This factor was acknowledged by the researchers prior to commencement of the study. Given the primary purpose of the survey is a longitudinal monitor, this was not considered a major limitation.

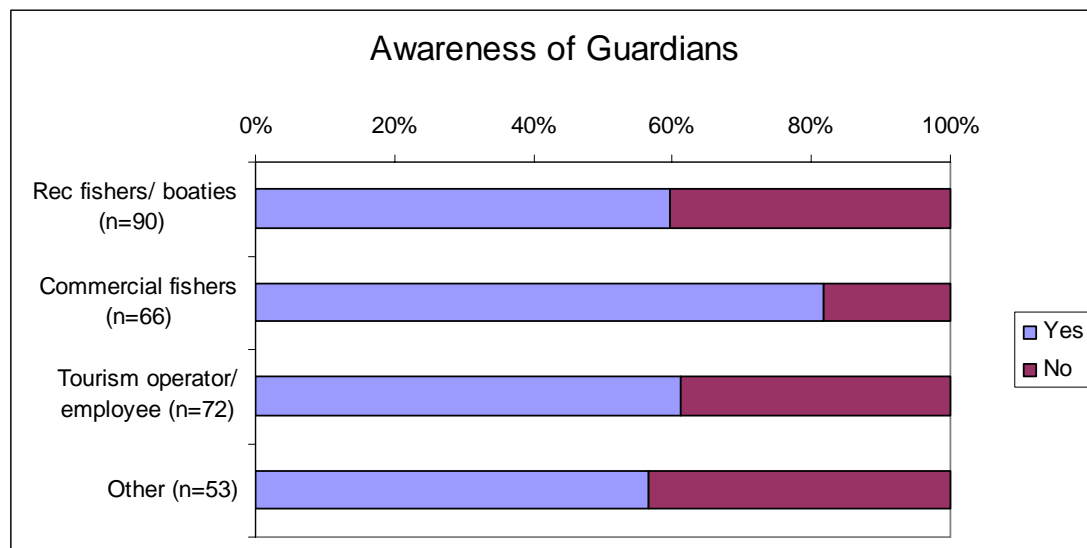


Figure 11.8: FMA users' awareness of the Fiordland Marine Guardians – Q24

When questioned about the role of the FMG, most respondents were reasonably well informed. Figure 11.9 depicts the proportions of each sub-group who indicated that specified tasks were a role of the FMG.

³⁶ Chi square statistics: $\chi^2 = 11.2$, $df=3$, $p < .05$

³⁷ Chi square statistics: $\chi^2 = 6.5$, $df=2$, $p < .05$

³⁸ Chi square statistics: $\chi^2 = 19.8$, $df=2$, $p < .001$

Of the five functions presented for respondents to consider, two were bogus: ‘to monitor the impact of hydro activity on Lake Manapouri’, and ‘to help assess applications for commercial operations within the FMA’. With respect to the latter function, subsequent to survey administration it was noted that the FMG can put in a submission on such applications, although they do not assess them (this is a regional council role). This may have created some confusion in respondents’ minds and therefore answers need to be treated with caution. Most people recognised that monitoring hydro activity was not a function of the FMG, especially commercial fishers (only 11% thought it was a FMG role) and tourism operators/employees (15%). However, between 17% (tourism operators/employees) and 50% (‘others’) incorrectly believed the FMG assessed commercial operations applications. Commercial fishers (28%) and recreational fishers/boaties (30%) fell between these two extremes.

Of their true roles, the most clearly recognised was ‘assist agencies with monitoring the state of the marine environment’ (approximately 60% recognition for all sub-groups, i.e. the majority of every sub-group knew this was a role of the FMG). About half of all people correctly identified the roles ‘promote integrated management’ and ‘assist agencies in planning and management’ (between 40-58% recognition by people within all sub-groups). A consistent 13-15% across all ‘user’ sub-groups stated they did not know about the roles of the FMG. No one sub-group stood out as better informed than others.

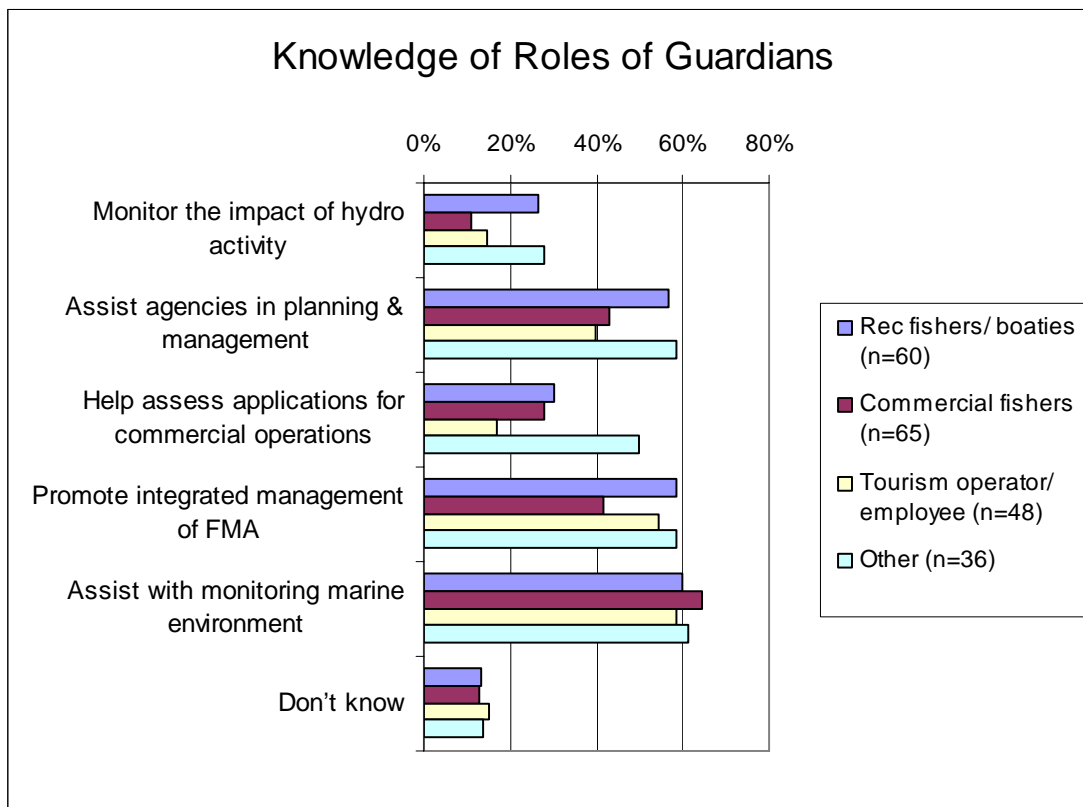


Figure 11.9: FMA users’ knowledge of the roles of the Fiordland Marine Guardians – Q25

11.5.2 Interview data

Data from interviews add to this picture. Comments follow.

11.5.2.1 Awareness and representativeness of the FMG

A wide array of comments were made about the Guardians, including that it was a good organisational model for other parts of New Zealand to follow and that awareness of the FMG was dependent on personal links to individual Guardians – it is ‘who you know’.

Some interviewees were unsure of the role of the FMG, especially what powers it has. It was reasonably common for interviewees to think DOC was the primary manager for most aspects of marine management (e.g. marine pest control). A tourism/charter operator commented that they would like to see all the Fiordland organisations better integrated: “The compliance costs are getting higher all the time – we are only a small business and it is just about a full-time job for someone doing all the bookwork”.

One charter vessel operator expressed concern with representation of charter operators. Another said: “I think all the users should have been consulted – I don’t know if someone represented us (charter vessel operators) – so in saying that, something is not working”. Another interviewee commented that perhaps the FMG too strongly favours those who fish - greater representation from users who have nothing to do with fishing was encouraged.

However, it was felt that commercial fishermen were well-informed, in terms of being up to date with regulations and what the FMG was doing, through their constituent fishing organisations.

Some negative comments were given by interviewees, including dissatisfaction with the process used for the establishment of the FMG. One interviewee felt that the FMG model was imposed on him rather than a result of fair consultation. The same person noted that he was happy with what the FMG did, but not always with how they did it.

11.5.2.2 Iwi involvement on FMG

When asked about iwi involvement on the FMG and whether this was appropriate or adequate, a common response was: “not interested in having Maori on the board just because they are Maori” (recreational fisher/boatie). It was felt to be appropriate to have Maori if they were good people for the job, but not simply because they were Maori.

11.5.2.3 Concern FMG will ‘go green’

A ‘thread’ through comments was the concern from some interviewees that the FMG would become too ‘green’ (conservationist). Some cynicism was expressed about this point. In short, it was seen to be important that the Guardians remained pro-user and representative of the “normal guy that likes boating and fishing” (recreational fisher/boatie). One commercial fisher noted that “You want people [on the FMG] that are open-minded and there for the good of everybody”.

12.0 Conclusions and recommendations

12.1 Use and perceptions of the FMA

This report outlines the FMA user monitoring method and presents the results of its first implementation. These data establish benchmarks against which future survey results can be compared and trends established. The following summary of survey results highlights key attributes of FMA use for future monitoring:

- Descriptive data on use and user characteristics (Sections 5 and 6) did not present any unexpected results, detailing the influence of tourism (visitors, primarily international) and the recreational and commercial purposes of the FMA (New Zealanders, particularly Southlanders).
- The FMA is attractive to users for a wide range of reasons, and individuals visit for multiple reasons (it is not simply for one reason). Nature-related motives dominate. The FMA values of greatest importance to respondents match these motivations – they centre around natural values. Economic and recreational benefits are widely valued.
- Few activities are currently perceived to represent major threats to the area. Threats often noted included marine pests, pollution and, to some, tourism. Most people think the FMA has either remained the same, or improved, in quality in the last five years.
- Most respondents (with the exception of ‘visitors’) reported that they had seen/read information about marine pests but fewer than half of all users reported that they could name any marine pests. Owners/operators of marine vessels indicated that they were very willing to take action against marine pests (with the exception of in-water cleaning of the vessel’s hull) but a minority were currently doing so.
- The current level of marine reserve protection is perceived by participants to be adequate and has a positive influence upon enjoyment and use. The indicators used to gauge awareness suggest many people lack knowledge of marine reserves. However, most respondents appear to understand the rules surrounding marine reserves, with the exception of confusion around feeding fish and, to a lesser extent, about anchoring.
- Taken as a whole, the data about perceptions of FMA management suggest that the FMG has avoided ‘ruffling too many feathers’ to date. The current management regime does not appear to be having any significant positive or negative effect on people’s use or experience of Fiordland, and most respondents do not want to change any aspect of current FMA management. While most respondents had seen/heard information about the management of the FMA, overall they did not feel very well-informed about FMA management. The question arises as to whether this is a problem. Despite some misperceptions about its role, awareness and knowledge of the FMG was reasonably sound.

12.2 Monitoring method

As a result of the first application of the monitoring method, eight minor alterations to question and sample design are recommended. These do not alter the integrity of the monitoring method.

1. Reword Q12 ('user' questionnaire) to include the word 'usually' to overcome the problem that researchers may be permitted to do activities that are usually not allowed.

*The list below contains a variety of marine activities. For each activity, please show whether you think it **usually** is allowed, sometimes allowed, or never allowed in marine reserves (etc).*

2. Reword Q25 ('user' questionnaire) to avoid confusion about the FMG role 'to help assess applications for commercial operations within the FMA'.
3. Add one new response category to Q4 of the 'visitor' questionnaire (mode of access) to account for Milford Track walkers.
4. A new question asking what activities users undertake in the FMA would provide information about the multi-activity nature of FMA use.
5. A 'cleaner' list of commercial fishers would increase the response rate and reduce inconvenience to ineligible fishers (who were sent questionnaires mistakenly).
6. Two surveyors are recommended for Milford Sound/Piopirotahi on-site survey. One surveyor for Doubtful Sound/Patea (at 2007 use levels).
7. Interviews could ask about the perceptions of likely future use trends.
8. Avoid labels 'user' and 'visitor' for surveys in future iterations, as a little confusing.

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Appendix 1: 'User' questionnaire

Fiordland Marine Area User Survey 2007

Please help us learn more about how the Fiordland Marine Area is used and valued

This survey is intended to collect information about how people make use of the Fiordland Marine Area (FMA) for work and recreation. We are also interested in learning what people know and think about this place, and how these things change over time.

For the purposes of this study, the FMA includes 13 major fiords, and extends 12 nautical miles offshore from Awarua Point at the northern limit, to Sandhill Point at the southern limit. Please see the map in Question 6 for more detail.

If you have never visited the FMA, please tick this box and return the uncompleted booklet in the freepost envelope provided. Thank you for your time.

If you have visited the FMA, even only occasionally, please continue with the survey!

The survey is organised into five sections:

1. your connection with Fiordland;
2. what you think about this place;
3. managing Fiordland's marine environment;
4. your activities in the FMA; and
5. personal profile information.

Please follow the directions carefully, and answer each of the questions in this booklet as accurately and truthfully as you can. There are no 'right' or 'wrong' answers, and your responses are just as valuable as those of every other person who completes the survey.

Section 1 Your connection with Fiordland

Q1 Which of the following best describes your use of the Fiordland Marine Area?

(please tick one box only)

<input type="checkbox"/> 1 Commercial fisher	<input type="checkbox"/> 5 Tourism operator / tourism employee
<input type="checkbox"/> 2 Recreational boater or fisher	<input type="checkbox"/> 6 Charter vessel operator
<input type="checkbox"/> 3 Kayaker	<input type="checkbox"/> 7 Researcher
<input type="checkbox"/> 4 Diver	<input type="checkbox"/> 8 Other _____

Q2 About how often do you visit the Fiordland Marine Area?

(please tick one box only)

<input type="checkbox"/> 1 Less than once a year	<input type="checkbox"/> 6 10 - 20 times per year
<input type="checkbox"/> 2 Once a year	<input type="checkbox"/> 7 21 – 40 times per year
<input type="checkbox"/> 3 2 to 3 times per year	<input type="checkbox"/> 8 41 – 100 times a year
<input type="checkbox"/> 4 4 to 6 times per year	<input type="checkbox"/> 9 More than 100 times a year
<input type="checkbox"/> 5 7 to 9 times per year	

Q3 How long have you been going to the Fiordland Marine Area?

(please tick one box only)

<input type="checkbox"/> 1 Less than 1 year	<input type="checkbox"/> 4 11 to 20 years
<input type="checkbox"/> 2 1 – 5 years	<input type="checkbox"/> 5 More than 20 years
<input type="checkbox"/> 3 6 to 10 years	

Q4 On your most recent visit, how did you access the Fiordland Marine Area? (please tick one box only)

<input type="checkbox"/> 1 By road into Milford Sound	<input type="checkbox"/> 6 By boat from Bluff
<input type="checkbox"/> 2 Over Lake Manapouri and the Wilmot Pass into Doubtful Sound	<input type="checkbox"/> 7 By boat from Stewart Island
<input type="checkbox"/> 3 By helicopter from Tuatapere	<input type="checkbox"/> 8 By boat from Riverton
<input type="checkbox"/> 4 By helicopter from Milford	<input type="checkbox"/> 9 By boat from elsewhere Please state: _____
<input type="checkbox"/> 5 By helicopter from Te Anau	<input type="checkbox"/> 10 Other _____

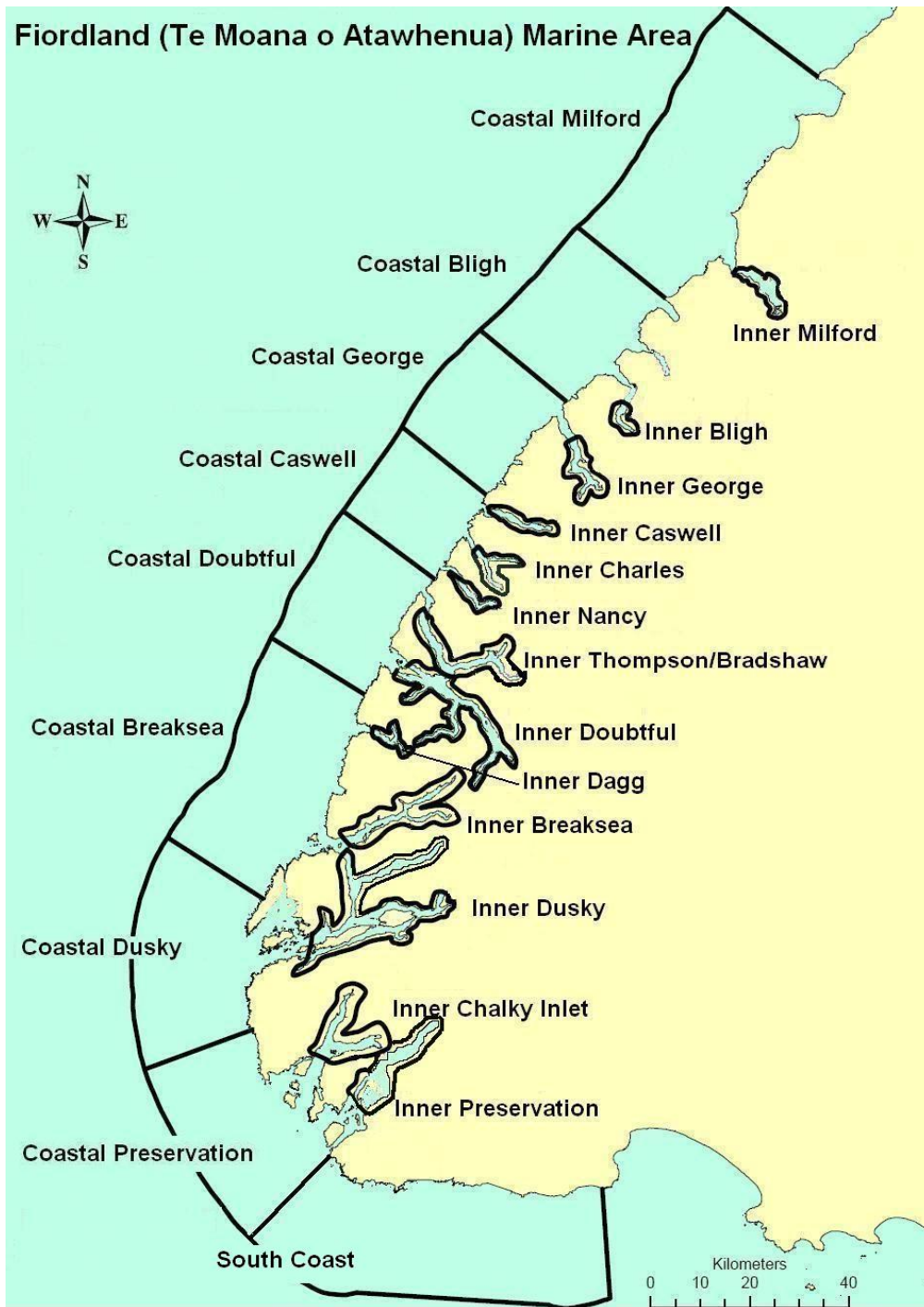
Q5 On your most recent visit, how long did you stay in the Fiordland Marine Area? (please tick one box only)

<input type="checkbox"/> 1 Less than 1 hour	<input type="checkbox"/> 5 Two days
<input type="checkbox"/> 2 1 or 2 hours	<input type="checkbox"/> 6 Three or four days
<input type="checkbox"/> 3 Half a day	<input type="checkbox"/> 7 Between five and seven days
<input type="checkbox"/> 4 One day	<input type="checkbox"/> 8 More than seven days

Q6 On your most recent visit to the Fiordland Marine Area, where did you go?
 Please mark the map below to show the parts of the FMA that you went to.

Use an **X** to indicate each fiord or coastal section that made up part of your most recent trip.

If you don't know where you went, tick here , then go to Q7



Q7 The following is a list of possible reasons for visiting the Fiordland Marine Area. For each of the reasons listed, please show how well it describes your own reasons for visiting. There is a space at the end of the list if you need to add other reasons.

Using the scale, please show how well each reason describes why you go to the FMA. Show your choice by circling a number between 1 and 7.

1 = 'Does not describe my reasons at all'
 7 = 'Describes my reasons exactly'

Possible reasons for visiting the Fiordland Marine Area	Does not describe my reasons at all							Describes my reasons exactly
<i>To work</i>	1	2	3	4	5	6	7	
<i>To see a new place</i>	1	2	3	4	5	6	7	
<i>To experience nature</i>	1	2	3	4	5	6	7	
<i>To meet new people</i>	1	2	3	4	5	6	7	
<i>To get away from the town or city</i>	1	2	3	4	5	6	7	
<i>To see wildlife</i>	1	2	3	4	5	6	7	
<i>To view scenery</i>	1	2	3	4	5	6	7	
<i>To be with friends / family</i>	1	2	3	4	5	6	7	
<i>To learn about nature or history</i>	1	2	3	4	5	6	7	
<i>To catch fish / shellfish</i>	1	2	3	4	5	6	7	
<i>To experience wilderness</i>	1	2	3	4	5	6	7	
<i>To get 'back to basics' for a while</i>	1	2	3	4	5	6	7	
<i>To get away from people</i>	1	2	3	4	5	6	7	
<i>To see a familiar place</i>	1	2	3	4	5	6	7	
<i>To experience a quiet place</i>	1	2	3	4	5	6	7	
<i>To pursue recreation activities</i>	1	2	3	4	5	6	7	
<i>For cultural reasons</i>	1	2	3	4	5	6	7	
<i>For spiritual reasons</i>	1	2	3	4	5	6	7	
<i>To experience the special character of Fiordland</i>	1	2	3	4	5	6	7	
<i>Other reason(s):</i>								
	1	2	3	4	5	6	7	
	1	2	3	4	5	6	7	

Section 2: *What you think about this place*

Q8 The following is a list of possible values for the Fiordland Marine Area. Please rate the importance of each to you. Show the level of importance to you by circling a number between 1 and 7 on each line.

1 = 'Not at all important'
7 = 'Very important'

<i>How important is it to you that the FMA has...</i>	Not at all important						Very important
A wide variety of marine species	1	2	3	4	5	6	7
Absence of marine pests and weeds	1	2	3	4	5	6	7
High water quality	1	2	3	4	5	6	7
Presence of unique wildlife such as corals, dolphins, and penguins	1	2	3	4	5	6	7
Good fishing opportunities	1	2	3	4	5	6	7
Beautiful scenery / views	1	2	3	4	5	6	7
Plentiful tourism opportunities	1	2	3	4	5	6	7
Remote wilderness places	1	2	3	4	5	6	7
Peace and quiet	1	2	3	4	5	6	7
Absence of people (other than my companions)	1	2	3	4	5	6	7
Maori cultural values	1	2	3	4	5	6	7
Spiritual values	1	2	3	4	5	6	7

Q9 The following is a list of activities that may threaten marine environments and the things people value about them.

Using the scale, please show how much you think each activity is a current threat to the Fiordland Marine Area. Show the level of threat by circling a number between 1 and 7 on each line.

1 = 'No threat at all'
7 = 'Significant threat'

(Alternatively, you may tick 'don't know' if you wish)

	No threat at all				Significant threat				
Commercial water craft	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Recreational fishing	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Commercial fishing	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Aspects of current management	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Tourism	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Marine pests	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Pollution	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Diver damage to marine species	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Recreational kayaking	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Recreational power craft	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Recreational sailing craft	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Climate change	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Anchor damage to marine species	1	2	3	4	5	6	7	<input type="checkbox"/> don't know	
Other (please list below):									
	1	2	3	4	5	6	7		
	1	2	3	4	5	6	7		

<p>Q10 In your opinion, how has the quality of the Fiordland Marine Area changed <u>over the last 5 years?</u></p>	<p> <input type="checkbox"/> 1 It has improved <input type="checkbox"/> 2 It has stayed the same <input type="checkbox"/> 3 It has worsened <input type="checkbox"/> 4 I don't know </p>
Please explain your answer here:	

Section 3 Managing Fiordland's marine environment

(A) Marine Reserves

<p>Q11 How many marine reserves are there in the Fiordland Marine Area?</p>	
<p> <input type="checkbox"/> 1 None <input type="checkbox"/> 2 1 - 2 <input type="checkbox"/> 3 3 - 4 <input type="checkbox"/> 4 5 - 7 </p>	<p> <input type="checkbox"/> 5 8 - 10 <input type="checkbox"/> 6 11 - 15 <input type="checkbox"/> 7 More than 15 <input type="checkbox"/> 8 I don't know </p>

<p>Q12 What activities are allowed in marine reserves?</p> <p>The list below contains a variety of marine activities. For <u>each</u> activity, please show whether you think it is <i>allowed</i>, <i>sometimes allowed</i>, or <i>never allowed</i> in marine reserves. Show your choices by placing a tick (✓) in the relevant column.</p>

For each activity, please tick only one column

Activity	This is <u>allowed</u> in marine reserves (✓)	This is <u>sometimes allowed</u> in marine reserves (✓)	This is <u>never allowed</u> in marine reserves (✓)
<i>Fishing from a boat</i>			
<i>Kayaking</i>			
<i>Power boating</i>			
<i>Sail boating</i>			
<i>Collecting rocks and shells</i>			
<i>Navigating through the reserve</i>			
<i>Collecting shellfish</i>			
<i>Anchoring</i>			
<i>Introducing new marine species</i>			
<i>Rubbish disposal</i>			
<i>Feeding fish</i>			
<i>Erecting structures</i>			
<i>Fishing from shore</i>			
<i>Diving</i>			
<i>Swimming</i>			
<i>Photography</i>			

Q13 What proportion of the total Fiordland Marine Area is currently protected by marine reserves? (please tick one box only)

<input type="checkbox"/> 1 0 per cent	<input type="checkbox"/> 6 15 per cent (approx)
<input type="checkbox"/> 2 1 per cent (approx)	<input type="checkbox"/> 7 20 per cent (approx)
<input type="checkbox"/> 3 2 per cent (approx)	<input type="checkbox"/> 8 More than 20 per cent
<input type="checkbox"/> 4 5 per cent (approx)	<input type="checkbox"/> 9 I don't know
<input type="checkbox"/> 5 10 per cent (approx)	

Q14 What do you think of the current level of marine reserve protection in the Fiordland Marine Area, in terms of:

	Very inadequate					Very adequate	
Overall percentage of the FMA protected in marine reserves?	1	2	3	4	5	6	7
Sizes of individual reserves?	1	2	3	4	5	6	7
The range of marine habitats protected in marine reserves?	1	2	3	4	5	6	7

Q15

	Very negatively					Very positively	
How do marine reserves influence your use or enjoyment of the Fiordland Marine Area?	1	2	3	4	5	6	7

(B) Marine Pests

Q16 Have you seen, read, or heard any information about marine pests of threat to Fiordland?

<input type="checkbox"/> 1 Yes
<input type="checkbox"/> 2 No

Q17 Can you name any marine pests that currently threaten the Fiordland Marine Area?

<input type="checkbox"/> 1 Yes (please list below)
<input type="checkbox"/> 2 No (go to Q18)

Please list any marine pests you think currently threaten the FMA:

Q18 Do you currently own or operate a marine vessel in the Fiordland Marine Area? ₁ Yes (go to Q19) ₂ No (go to Q 20)

Q19 The following is a list of actions that you can take to help prevent marine pests from entering Fiordland.

Using the scale provided, please indicate your willingness to undertake each action. Show your level of willingness by circling a number between 1 and 7 on each line.

1 = 'Not at all willing to do this'
7 = 'Very willing to do this'

In the final column, please also indicate if you are already taking this action

Actions	Not at all willing							Very willing
	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action
Maintaining an active anti-fouling coating on the vessel	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action
Regular inspection of the vessel and equipment for presence of fouling	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action
In-water cleaning of the vessel's hull	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action
Out-of-water cleaning and drying of the vessel's hull	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action
Cleaning, disinfecting and drying marine equipment (buoys, lines, fishing gear etc)	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action
Inspection and cleaning of vessel and equipment before using in a different location	1	2	3	4	5	6	7	<input type="checkbox"/> already taking action

(C) Information about management of the FMA

Q20 Have you ever seen or heard any information about the current management of the Fiordland Marine Area? ₁ Yes (go to Q21) ₂ No (go to Q22)

Q21 Where did you see or hear the information about the current management of the Fiordland Marine Area? (please tick any that apply)

<input type="checkbox"/> 1 Newspapers	<input type="checkbox"/> 7 Articles in fishing / boating / diving magazines
<input type="checkbox"/> 2 Information brochures	<input type="checkbox"/> 8 Friends or family
<input type="checkbox"/> 3 Signs at the water's edge	<input type="checkbox"/> 9 Other people at wharfs / ramps
<input type="checkbox"/> 4 Commercial radio	<input type="checkbox"/> 10 Work place or workmates
<input type="checkbox"/> 5 Marine radio	<input type="checkbox"/> 11 Other (please specify)
<input type="checkbox"/> 6 Internet	_____

		Not well- informed at all						Very well- informed
Q22	How well-informed do you feel about how the Fiordland Marine Area is managed?	1	2	3	4	5	6	7

		Very negatively						Very positively
Q23	How does the management of the Fiordland Marine Area affect your use or experience of Fiordland?	1	2	3	4	5	6	7
Please explain your answer here:								

Q24	Prior to receiving this survey, had you heard of a group called the <i>Fiordland Marine Guardians</i> (FMG)?	<input type="checkbox"/> Yes (go to Q25) <input type="checkbox"/> No (go to Q26)
-----	--	---

Q25	What is the role of the Fiordland Marine Guardians? (please tick any that you think apply)	
	<input type="checkbox"/> To monitor the impact of hydro activity on Lake Manapouri <input type="checkbox"/> To assist agencies in planning and management of the FMA <input type="checkbox"/> To help assess applications for commercial operations within the FMA	<input type="checkbox"/> To promote the integrated management of the FMA <input type="checkbox"/> To assist management agencies in monitoring the state of the marine environment within the FMA <input type="checkbox"/> I don't know

Q26	Is there any aspect of the current Fiordland Marine Area management that you would like to change?	<input type="checkbox"/> Yes (please explain below) <input type="checkbox"/> No <input type="checkbox"/> I don't know
Please explain the aspects of marine management you would like to change:		

Section 4 Your main activities in the Fiordland Marine Area

Q27	Are you a commercial fisher in the Fiordland Marine Area?	<input type="checkbox"/> Yes (go to Q28) <input type="checkbox"/> No (go to Q30)
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Q28	How many weeks / months in total <u>per year</u> (approximately) do you commercially fish in the Fiordland Marine Area? (please tick <u>one</u> box only)										
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> less than 1 week</td> <td style="width: 50%; border: none;"><input type="checkbox"/> 3 – 4 months</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> 1 – 2 weeks</td> <td style="border: none;"><input type="checkbox"/> 5 – 6 months</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> 3 – 4 weeks</td> <td style="border: none;"><input type="checkbox"/> 7 – 8 months</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> 5 – 6 weeks</td> <td style="border: none;"><input type="checkbox"/> 9 – 10 months</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> 7 – 11 weeks</td> <td style="border: none;"><input type="checkbox"/> 11 – 12 months</td> </tr> </table>	<input type="checkbox"/> less than 1 week	<input type="checkbox"/> 3 – 4 months	<input type="checkbox"/> 1 – 2 weeks	<input type="checkbox"/> 5 – 6 months	<input type="checkbox"/> 3 – 4 weeks	<input type="checkbox"/> 7 – 8 months	<input type="checkbox"/> 5 – 6 weeks	<input type="checkbox"/> 9 – 10 months	<input type="checkbox"/> 7 – 11 weeks	<input type="checkbox"/> 11 – 12 months
<input type="checkbox"/> less than 1 week	<input type="checkbox"/> 3 – 4 months										
<input type="checkbox"/> 1 – 2 weeks	<input type="checkbox"/> 5 – 6 months										
<input type="checkbox"/> 3 – 4 weeks	<input type="checkbox"/> 7 – 8 months										
<input type="checkbox"/> 5 – 6 weeks	<input type="checkbox"/> 9 – 10 months										
<input type="checkbox"/> 7 – 11 weeks	<input type="checkbox"/> 11 – 12 months										

		Very negatively						Very positively
Q29	How do current Fiordland Marine Area fishing regulations affect your commercial fishing activity?	1	2	3	4	5	6	7
Please explain your answer here:								

Q30	Do you fish recreationally in the Fiordland Marine Area?	<input type="checkbox"/> Yes (go to Q31) <input type="checkbox"/> No (go to Q34)
-----	--	---

Q31	How often do you fish (for recreation) in the Fiordland Marine Area? (please tick <u>one</u> box only)								
	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> Daily</td> <td style="width: 50%; border: none;"><input type="checkbox"/> Once every 6 months</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Weekly</td> <td style="border: none;"><input type="checkbox"/> Once a year</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Monthly</td> <td style="border: none;"><input type="checkbox"/> Less than once a year</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Every 2-3 months</td> <td></td> </tr> </table>	<input type="checkbox"/> Daily	<input type="checkbox"/> Once every 6 months	<input type="checkbox"/> Weekly	<input type="checkbox"/> Once a year	<input type="checkbox"/> Monthly	<input type="checkbox"/> Less than once a year	<input type="checkbox"/> Every 2-3 months	
<input type="checkbox"/> Daily	<input type="checkbox"/> Once every 6 months								
<input type="checkbox"/> Weekly	<input type="checkbox"/> Once a year								
<input type="checkbox"/> Monthly	<input type="checkbox"/> Less than once a year								
<input type="checkbox"/> Every 2-3 months									

		Very negatively						Very positively
Q32	How do current Fiordland Marine Area fishing regulations affect your recreational fishing activity?	1	2	3	4	5	6	7
Please explain your answer here:								

Q33	How do current Fiordland Marine Area fishing regulations affect your recreational fishing <i>enjoyment</i> ?	Very negatively					Very positively	
		1	2	3	4	5	6	7
Please explain your answer here:								

Section 5: About you

Q34	In which part of New Zealand do you normally live? (please tick one box only)					
1	<input type="checkbox"/> Southland	7	<input type="checkbox"/> Tasman	13	<input type="checkbox"/> Bay of Plenty	
2	<input type="checkbox"/> Otago	8	<input type="checkbox"/> Wellington	14	<input type="checkbox"/> Waikato	
3	<input type="checkbox"/> Canterbury	9	<input type="checkbox"/> Manawatu –Wanganui	15	<input type="checkbox"/> Auckland	
4	<input type="checkbox"/> West Coast	10	<input type="checkbox"/> Taranaki	16	<input type="checkbox"/> Northland	
5	<input type="checkbox"/> Marlborough	11	<input type="checkbox"/> Hawkes Bay	17	<input type="checkbox"/> I don't normally live in New Zealand	
6	<input type="checkbox"/> Nelson	12	<input type="checkbox"/> Gisborne			

Q35	Are you:	1	<input type="checkbox"/> Male
		2	<input type="checkbox"/> Female

Q36	What is your age in years?	1	<input type="checkbox"/> 15 – 19	6	<input type="checkbox"/> 40 - 44	11	<input type="checkbox"/> 65 - 69
		2	<input type="checkbox"/> 20 – 24	7	<input type="checkbox"/> 45 - 49	12	<input type="checkbox"/> 70 - 74
		3	<input type="checkbox"/> 25 - 29	8	<input type="checkbox"/> 50 - 54	13	<input type="checkbox"/> 75 – 79
		4	<input type="checkbox"/> 30 - 34	9	<input type="checkbox"/> 55 - 59	14	<input type="checkbox"/> 80 yrs +
		5	<input type="checkbox"/> 35 – 39	10	<input type="checkbox"/> 60 - 64		

Thank you very much for your participation in this research

If you have any other comments to make about the Fiordland Marine Area or its management, please record them here:

Please place the completed survey into the FREEPOST envelope provided (there is no need to attach a stamp) and return it as soon as possible.

Appendix 2: 'Visitor' questionnaire

Fiordland Marine Area User Survey 2007

Please help us learn more about how the Fiordland Marine Area is used and valued

This survey is intended to collect information about how people make use of the Fiordland Marine Area. We are also interested in learning what people know and think about this place, and how these things change over time.

The Fiordland Marine Area covers the waters of all the fiords and extends 12 nautical miles offshore, but it does not include the land. Please think about your time on the boat when you are answering the questions.

The survey is organised into three sections:

1. your connection with Fiordland;
2. what you think about this place;
3. personal profile information.

Please follow the directions carefully, and answer each of the questions in this booklet as accurately and truthfully as you can. There are no 'right' or 'wrong' answers, and your responses are just as valuable as those of every other person who completes the survey.

Section 1 Your connection with Fiordland

- Q1 Have you visited the Fiordland Marine Area before? ₁ Yes (go to Q2) ₂ No (go to Q4)

Q2 How often have you visited the Fiordland Marine Area?

(please tick one box only)

- ₁ This is my first visit
₂ Once before this visit
₃ 2 or 3 times
₄ 4 or 5 times
₅ More than 5 times

Q3 In what year did you first visit the Fiordland Marine Area?

Please write the year here: _____

Q4 For this current visit, how did you access the Fiordland Marine Area?
(please tick one box only)

- ₁ By road into Milford Sound
₂ By aeroplane into Milford Sound
₃ By helicopter into Milford Sound
₄ Over Lake Manapouri and the Wilmot Pass into Doubtful Sound
₅ Other: _____

Q5 How long is your stay in the Fiordland Marine Area on this current visit?
Remember we are only talking about your trip on the waters of the fiord
(please tick one box only)

- ₁ Less than 1 hour
₂ 1 or 2 hours
₃ Half a day
₄ One day or overnight
₅ Two days
₆ Three or four days
₇ Between five and seven days
₈ More than seven days

Q6 The following is a list of possible reasons for visiting the Fiordland Marine Area. For each of the reasons listed, please show how well it describes your own reasons for visiting. There is a space at the end of the list if you need to add other reasons.

Using the scale, please show how well each reason describes why you came to the fiord for this trip. Show your choice by circling a number between 1 and 7.

1 = 'Does not describe my reasons at all'
 7 = 'Describes my reasons exactly'

Possible reasons for visiting the Fiordland Marine Area	Does not describe my reasons at all	1	2	3	4	5	6	7	Describes my reasons exactly
<i>To work</i>		1	2	3	4	5	6	7	
<i>To see a new place</i>		1	2	3	4	5	6	7	
<i>To experience nature</i>		1	2	3	4	5	6	7	
<i>To meet new people</i>		1	2	3	4	5	6	7	
<i>To get away from the town or city</i>		1	2	3	4	5	6	7	
<i>To see wildlife</i>		1	2	3	4	5	6	7	
<i>To view scenery</i>		1	2	3	4	5	6	7	
<i>To be with friends / family</i>		1	2	3	4	5	6	7	
<i>To learn about nature or history</i>		1	2	3	4	5	6	7	
<i>To catch fish / shellfish</i>		1	2	3	4	5	6	7	
<i>To experience wilderness</i>		1	2	3	4	5	6	7	
<i>To get 'back to basics' for a while</i>		1	2	3	4	5	6	7	
<i>To get away from people</i>		1	2	3	4	5	6	7	
<i>To see a familiar place</i>		1	2	3	4	5	6	7	
<i>To experience a quiet place</i>		1	2	3	4	5	6	7	
<i>To pursue recreation activities</i>		1	2	3	4	5	6	7	
<i>For cultural reasons</i>		1	2	3	4	5	6	7	
<i>For spiritual reasons</i>		1	2	3	4	5	6	7	
<i>To experience the special character of Fiordland</i>		1	2	3	4	5	6	7	
<i>Other reason(s):</i>									
		1	2	3	4	5	6	7	
		1	2	3	4	5	6	7	

Section 2: *What you think about this place*

Q7 The following is a list of possible values for the Fiordland Marine Area. Please rate the importance of each to you. Show the level of importance to you by circling a number between 1 and 7 on each line.

1 = 'Not at all important'
7 = 'Very important'

<i>How important is it to you that the Fiordland Marine Area has...</i>	Not at all important							Very important
A wide variety of marine species	1	2	3	4	5	6	7	
Absence of marine pests and weeds	1	2	3	4	5	6	7	
High water quality	1	2	3	4	5	6	7	
Presence of unique wildlife such as corals, dolphins, and penguins	1	2	3	4	5	6	7	
Good fishing opportunities	1	2	3	4	5	6	7	
Beautiful scenery / views	1	2	3	4	5	6	7	
Plentiful tourism opportunities	1	2	3	4	5	6	7	
Remote wilderness places	1	2	3	4	5	6	7	
Peace and quiet	1	2	3	4	5	6	7	
Absence of people (other than my companions)	1	2	3	4	5	6	7	
Maori cultural values	1	2	3	4	5	6	7	
Spiritual values	1	2	3	4	5	6	7	

Q8 The following is a list of activities that may threaten marine environments and the things people value about them.

Using the scale, please show how much you think each activity is a current threat to the Fiordland Marine Area. Show the level of threat by circling a number between 1 and 7 on each line.

1 = 'No threat at all'
7 = 'Significant threat'

(Alternatively, you may tick 'don't know' if you wish)

	No threat at all							Significant threat
Commercial water craft	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Recreational fishing	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Commercial fishing	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Aspects of current management	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Tourism	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Marine pests	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Pollution	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Diver damage to marine species	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Recreational kayaking	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Recreational power craft	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Recreational sailing craft	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Climate change	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Anchor damage to marine species	1	2	3	4	5	6	7	<input type="checkbox"/> don't know
Other (please list below):								
	1	2	3	4	5	6	7	
	1	2	3	4	5	6	7	

Q9	Very negatively						Very positively	
		1	2	3	4	5	6	7
How did visiting a marine reserve influence your enjoyment of your trip?								

Q10	Have you seen, read, or heard any information about marine pests of threat to Fiordland?	₁ <input type="checkbox"/> Yes
		₂ <input type="checkbox"/> No

Section 3: About you

Q11	In which part of the world do you normally live? (please tick one box only)
	<input type="checkbox"/> New Zealand <input type="checkbox"/> Australia <input type="checkbox"/> United Kingdom <input type="checkbox"/> USA <input type="checkbox"/> Germany <input type="checkbox"/> Other: _____

If you come from New Zealand, go to Q12.
If you come from another country, go to Q13.

Q12	In which part of New Zealand do you normally live? (please tick one box only)
	<input type="checkbox"/> Southland <input type="checkbox"/> Tasman <input type="checkbox"/> Bay of Plenty <input type="checkbox"/> Otago <input type="checkbox"/> Wellington <input type="checkbox"/> Waikato <input type="checkbox"/> Canterbury <input type="checkbox"/> Manawatu - Wanganui <input type="checkbox"/> Auckland <input type="checkbox"/> West Coast <input type="checkbox"/> Taranaki <input type="checkbox"/> Northland <input type="checkbox"/> Marlborough <input type="checkbox"/> Hawkes Bay <input type="checkbox"/> I don't normally live in <input type="checkbox"/> Nelson <input type="checkbox"/> Gisborne New Zealand

Q13	Are you:	₁ <input type="checkbox"/> Male
		₂ <input type="checkbox"/> Female

Q14	What is your age in years?	₁ <input type="checkbox"/> 15 - 19	₆ <input type="checkbox"/> 40 - 44	₁₁ <input type="checkbox"/> 65 - 69
		₂ <input type="checkbox"/> 20 - 24	₇ <input type="checkbox"/> 45 - 49	₁₂ <input type="checkbox"/> 70 - 74
		₃ <input type="checkbox"/> 25 - 29	₈ <input type="checkbox"/> 50 - 54	₁₃ <input type="checkbox"/> 75 - 79
		₄ <input type="checkbox"/> 30 - 34	₉ <input type="checkbox"/> 55 - 59	₁₄ <input type="checkbox"/> 80 yrs +
		₅ <input type="checkbox"/> 35 - 39	₁₀ <input type="checkbox"/> 60 - 64	

Thank you very much for your participation in this research

If you have any other comments to make about the Fiordland Marine Area or its management, please record them here:

Please return your completed survey to the person who gave it to you when you disembark.

Appendix 3: Interview questions schedule



FMA interview schedule: Question prompts

Connection

- Activities in the FMA: what, where and how often
- How long been using the FMA
- Use of boat in FMA: Where, when, how often, most common anchorage

Values

- Key things value about the FMA
- What makes Fiordland marine environment unique
- Special places in the FMA? Places facing any threats?

Trends

- How has use of the FMA changed over the last 5 years?

Awareness/Information: FMA/FMG

- Knowledge of FMA management (regulations)
- Want more information on the FMA? Best way to get information?
- Knowledge of Fiordland Marine Guardians?
- Support the FMG? Why (not)?
- FMG group accessible to you?

Management

- Current marine management: Any changes wanted?
- Which threats are well managed, which not?
- Is management well integrated across agencies?
- Do you think that [user type, eg commercial fishers] would like to be more involved in the management of the FMA? How do this?
- New management measures: (since 2005):
 - Led to people using FMA differently?
 - Prompt: rec fishing activity/behaviour different?
 - Changed the way people think about the FMA? How?
 - Altered how you conduct your activity?

How affect your enjoyment (success) of your activity?

Kaitiakitanga

- Knowledge of kaitiakitanga?
- Is the concept evident in the FMA?

Marine reserves

- Awareness of marine reserves in FMA
- Use them? In what ways?
- Support them? Why (not)?
- Any issues with them? (eg. knowing when inside reserve)

Biosecurity

- Awareness of marine pests: How aware of pests
- Awareness of pest management: Know how to reduce risk of introduction?
- How willing to do something to reduce pest introduction
- Received any marine pests info? What were main messages?

Boat users only

- Radio trip intentions? Who to?
- Any trouble with VHF in FMA – use other forms of communication?
- Awareness of rules of boating near marine mammals
- Awareness of speed restriction in the fiords

Survey analysis

- Questions related to survey results (use questionnaire with frequencies)

Any other comments