ANGLER DISPLACEMENT ON AND FROM PRESSURE-SENSITIVE RIVERS IN OTAGO AND SOUTHLAND

Stuart Hayes
Brent Lovelock

Centre for Recreation Research
Business School
University of Otago
PO Box 56
Dunedin 9054
New Zealand

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

BUSINESS SCHOOL

CENTRE FOR RECREATION RESEARCH

Sales enquiries

Additional copies of this publication may be obtained from:
Centre for Recreation Research
C/- Department of Tourism
University of Otago
PO Box 56
Dunedin
New Zealand

Telephone +64 3 479 8520
Facsimile +64 3 479 9034
Email tourism@otago.ac.nz
Websites http://www.otago.ac.nz/tourism/ http://www.crr.otago.ac.nz/

Bibliographic reference

Authors: Hayes, S. & Lovelock, B.A.
Publication Date: 2019
Title: Angler displacement on and from pressure-sensitive rivers in Otago and Southland
Place of Publication: Dunedin, New Zealand
Publisher: Centre for Recreation Research, Otago Business School, University of Otago

Suggested citation: Hayes, S., & Lovelock, B.A. (2019). *Angler displacement on and from pressure-sensitive rivers in Otago and Southland.* Dunedin, New Zealand. Centre for Recreation Research, Department of Tourism, University of Otago.

ISBN (PDF): 978-0-473-49231-1

Cover Photos (E. Garrick): *Above:* Angler on the upper Mataura River, Southland; *Below:* The upper Oreti River, Southland.

The authors

This study was carried out on behalf of the Southland and Otago Fish and Game Councils by staff from the Centre for Recreation Research, Department of Tourism, University of Otago. The research team comprised Professor Brent Lovelock and Stuart Hayes, who is a PhD student and Research Assistant in the Department.

Acknowledgements

The researchers would like to acknowledge the contribution of staff from the Southland and Otago Fish and Game Councils, especially Erin Garrick and Helen Trotter. Thanks go to Pip Lennon and Karen Bosworth of the Department of Tourism, University of Otago for administrative support and assistance with the production of the final report, and to Tim Jowett of the Department of Mathematics and Statistics, University of Otago for support with calculating sample sizes. Finally, we would like to acknowledge the assistance of all the anglers who completed the online questionnaire.

Table of Contents

List of Tables ..... **iv**

List of Figures ..... **v**

1 Executive summary **1**

1.1 Overview 1

1.2 The nature and scope of angler displacement on and from pressure-sensitive rivers in Otago and Southland 2

1.3 The potential effects of alternative management mechanisms on angler displacement 2

2 Background **3**

2.1 Rationale 3

2.2 Southland rivers in context 4

2.3 Otago rivers in context 6

3 Methods **8**

3.1 Survey design 8

3.2 Recruitment, data collection and analysis 8

4 Findings **11**

4.1 Upper Oreti 11

4.2 Worsley 26

4.3 Clinton 40

4.4 Upper Mataura 54

4.5 Hunter 69

4.6 Dingle 83

4.7 Caples 98

4.8 Greenstone 112

5 Concluding remarks **121**

6 References **125**

7 Appendices **126**

7.1 Appendix 1: Abbreviated version of final survey 126

7.2 Appendix 2: Survey invitation 156

7.3 Appendix 3: Demographic information for anglers who fish less often/have stopped fishing (all rivers) 158

List of Tables

Table 3-1: Final response rates 9
Table 4-1: Fishing activity on the upper Oreti 11
Table 4-2 Temporal patterns of behaviour on the upper Oreti 14
Table 4-3: Fishing activity on the Worsley 26
Table 4-4 Temporal patterns of behaviour on the Worsley 29
Table 4-5: Fishing activity on the Clinton 40
Table 4-6 Temporal patterns of behaviour on the Clinton 43
Table 4-7: Fishing activity on the upper Mataura 54
Table 4-8 Temporal patterns of behaviour on the upper Mataura 57
Table 4-9: Fishing activity on the Hunter 69
Table 4-10 Temporal patterns of behaviour on the Hunter 72
Table 4-11: Fishing activity on the Dingle 83
Table 4-12 Temporal patterns of behaviour on the Dingle 86
Table 4-13: Fishing activity on the Caples 98
Table 4-14 Temporal patterns of behaviour on the Caples 101
Table 4-15: Fishing activity on the Greenstone 112
Table 4-16: Temporal patterns of behaviour on the Greenstone 115
Table 5-1: Summary of key findings: Displacement 121
Table 5-2: Summary of key findings: Management mechanisms 123

List of Figures

Figure 2-1: Location of Southland catchment rivers 5
Figure 2-2: Location of Otago catchment rivers 7
Figure 4-1: Reasons for anglers fishing the upper Oreti less often 12
Figure 4-2: Reasons for stopping fishing the upper Oreti 13
Figure 4-3: Factors contributing to potential absolute displacement (upper Oreti) 15
Figure 4-4: Resident vs. non-resident future intentions to return to the upper Oreti 17
Figure 4-5: Reasons for never fishing the upper Oreti 19
Figure 4-6: The upper Oreti needs management mechanisms to control crowding 20
Figure 4-7: Resident vs. non-resident opinions: The upper Oreti needs management mechanisms to control crowding 21
Figure 4-8: Willingness of anglers who have fished the upper Oreti to pay an increased administration fee for management mechanisms 22
Figure 4-9: Resident vs. non-resident willingness to pay more for management mechanisms on the upper Oreti 23
Figure 4-10: Proportion of active anglers on the upper Oreti who would stop fishing the river if management mechanisms were introduced 24
Figure 4-11: Reasons for anglers fishing the Worsley less often 27
Figure 4-12: Reasons for stopping fishing the Worsley 28
Figure 4-13: Factors contributing to potential absolute displacement (Worsley) 30
Figure 4-14: Resident vs. non-resident future intentions to return to the Worsley 31
Figure 4-15: Reasons for never fishing the Worsley 33
Figure 4-16: The Worsley needs management mechanisms to control crowding 34
Figure 4-17: Resident vs. non-resident opinions: The Worsley needs management mechanisms to control crowding 35
Figure 4-18: Willingness of anglers who have fished the Worsley to pay an increased administration fee for management mechanisms 36
Figure 4-19: Resident vs. non-resident willingness to pay more for management mechanisms on the Worsley 37
Figure 4-20: Proportion of active anglers on the Worsley who would stop fishing the river if management mechanisms were introduced 38
Figure 4-21: Reasons for anglers fishing the Clinton less often 41
Figure 4-22: Reasons for stopping fishing the Clinton 42
Figure 4-23: Factors contributing to potential absolute displacement (Clinton) 44
Figure 4-24: Resident vs. non-resident future intentions to return to the Clinton 45
Figure 4-25: Reasons for never fishing the Clinton 47
Figure 4-26: The Clinton needs management mechanisms to control crowding 48
Figure 4-27: Resident vs. non-resident opinions: The Clinton needs management mechanisms to control crowding 49
Figure 4-28: Willingness of anglers who have fished the Clinton to pay an increased administration fee for management mechanisms 50

Figure 4-29: Resident vs. non-resident willingness to pay more for management mechanisms on the Clinton....51
Figure 4-30: Proportion of active anglers on the Clinton who would stop fishing the river if management mechanisms were introduced 52
Figure 4-31: Reasons for anglers fishing the upper Mataura less often....55
Figure 4-32: Reasons for stopping fishing the upper Mataura 56
Figure 4-33: Factors contributing to potential absolute displacement (upper Mataura)....59
Figure 4-34: Resident vs. non-resident future intentions to return to the upper Mataura....60
Figure 4-35: Reasons for never fishing the upper Mataura 61
Figure 4-36: The upper Mataura needs management mechanisms to control crowding....63
Figure 4-37: Resident vs. non-resident opinions: The upper Mataura needs management mechanisms to control crowding 64
Figure 4-38: Willingness of anglers who have fished the upper Mataura to pay an increased administration fee for management mechanisms....65
Figure 4-39: Resident vs. non-resident willingness to pay more for management mechanisms on the upper Mataura 66
Figure 4-40: Proportion of active anglers on the upper Mataura who would stop fishing the river if management mechanisms were introduced 67
Figure 4-41: Reasons for anglers fishing the Hunter less often....70
Figure 4-42: Reasons for stopping fishing the Hunter....71
Figure 4-43: Factors contributing to potential absolute displacement (Hunter) 73
Figure 4-44: Resident vs. non-resident future intentions to return to the Hunter....74
Figure 4-45: Reasons for never fishing the Hunter....76
Figure 4-46: The Hunter needs management mechanisms to control crowding 77
Figure 4-47: Resident vs. non-resident opinions: The Hunter needs management mechanisms to control crowding....78
Figure 4-48: Willingness of anglers who have fished the Hunter to pay an increased administration fee for management mechanisms....79
Figure 4-49: Resident vs. non-resident willingness to pay more for management mechanisms on the Hunter....80
Figure 4-50: Proportion of active anglers on the Hunter who would stop fishing the river if management mechanisms were introduced 81
Figure 4-51: Reasons for anglers fishing the Dingle less often 84
Figure 4-52: Reasons for stopping fishing the Dingle....85
Figure 4-53: Factors contributing to potential absolute displacement (Dingle) 87
Figure 4-54: Resident vs. non-resident future intentions to return to the Dingle 89
Figure 4-55: Reasons for never fishing the Dingle....91
Figure 4-56: The Dingle needs management mechanisms to control crowding....92
Figure 4-57: Resident vs. non-resident opinions: The Dingle needs management mechanisms to control crowding....93
Figure 4-58: Willingness of anglers who have fished the Dingle to pay an increased administration fee for management mechanisms....94
Figure 4-59: Resident vs. non-resident willingness to pay more for management mechanisms on the Dingle....95

Figure 4-60: Proportion of active anglers on the Dingle who would stop fishing the river if management mechanisms were introduced 96
Figure 4-61: Reasons for anglers fishing the Caples less often 99
Figure 4-62: Reasons for stopping fishing the Caples 100
Figure 4-63: Factors contributing to potential absolute displacement (Caples) 102
Figure 4-64: Resident vs. non-resident future intentions to return to the Caples 103
Figure 4-65: Reasons for never fishing the Caples 105
Figure 4-66: The Caples needs management mechanisms to control crowding 106
Figure 4-67: Resident vs. non-resident opinions: The Caples needs management mechanisms to control crowding 107
Figure 4-68: Willingness of anglers who have fished the Caples to pay an increased administration fee for management mechanisms 108
Figure 4-69: Resident vs. non-resident willingness to pay more for management mechanisms on the Caples 109
Figure 4-70: Proportion of active anglers on the Caples who would stop fishing the river if management mechanisms were introduced 110
Figure 4-71: Reasons for anglers fishing the Greenstone less often 113
Figure 4-72: Reasons for stopping fishing the Greenstone 114
Figure 4-73: Factors contributing to potential absolute displacement (Greenstone) 116
Figure 4-74: Resident vs. non-resident future intentions to return to the Greenstone 117
Figure 4-75: Reasons for never fishing the Greenstone 119

1 Executive summary

1.1 Overview

This report presents the findings of research conducted between June and July 2019 on behalf of the Southland and Otago Fish and Game Councils. These councils are part of Fish and Game New Zealand (FGNZ), the organisation responsible for managing, maintaining and enhancing freshwater sports fish and their habitats throughout New Zealand. The research was prompted by concerns that issues such as crowding may be negatively impacting on the angling experience at a number of popular, but pressure-sensitive, rivers in Otago and Southland, potentially leading to displacement (see section 2.1 for definition). These rivers are: Hunter, Dingle, Caples and Greenstone (Otago); and upper Oreti, Worsley, Clinton and upper Mataura (Southland). The main aim of the research was, therefore:

1. **To assess the nature and scope of angler displacement on and from pressure-sensitive rivers in Otago and Southland.**

In addition, FGNZ were also interested in understanding what might happen, in terms of angler displacement, if management mechanisms to control crowding were to be introduced on pressure-sensitive rivers in the future. An additional aim of the research was, therefore:

2. **To evaluate the potential effects of alternative management mechanisms on angler displacement.**

Electronic questionnaires were distributed to a sample of New Zealand resident and non-resident adult anglers who purchased a whole season fishing license in Otago or Southland during the 2018/2019 fishing season[1]. A total of 2,482 questionnaires were completed or partially completed[2][3]. Most who returned questionnaires were resident anglers (62%, n = 1542) and the largest proportion of those were from Otago (37% of overall sample, n = 927). Southland residents constituted 21% (n = 513) of the overall sample and 4% (n = 102) were New Zealand residents from outside the Otago/Southland region. Non-resident anglers made up a further 15% (n = 362) of the sample and the remaining anglers (23%, n = 578) did not provide sufficient residency information. The following provides an overview of the key findings.

[1] With the exception of the upper Mataura River, fishing the rivers in this study requires a 'backcountry endorsement' and only whole season licence holders qualify for this. Subsequently, shorter period licence holders were excluded from this study.

[2] All 2,482 returned questionnaires were included in the analysis, regardless of whether they were partially or fully completed. Where questionnaires were partially completed they were still deemed to have provided sufficient information with which to provide some baseline data needed to meet the study aims.

[3] Note: Due to the nature of this study (i.e. limited scope, baseline data sought) anglers who did not purchase their 2018/19 licence within the Otago/Southland region (but who may have fished the target rivers at some point) were not included. According to the latest National Angler Survey (Unwin, 2016), approximately 12% of all angling activity in Otago and/or Southland is undertaken by licence holders from outside the Otago/Southland region.

1.2 The nature and scope of angler displacement on and from pressure-sensitive rivers in Otago and Southland

This study found that, for all rivers, anglers have modified their behaviour in response to crowding. Behavioural change is characterised in part by a reduction in, or cessation of, angling activity on one or more or the selected rivers. In certain instances, anglers have considered giving up recreational sport fishing altogether in response to a crowding or related experience. In addition, there is evidence of temporal and spatial displacement occurring on and from all the rivers in this study. The extent of behavioural change, including various forms of displacement, varies for each river. In general, however, the magnitude of behavioural change and displacement is fairly minor. Behavioural change and displacement is most pronounced on the upper Oreti and Caples. Subsequently, in terms of taking steps to address crowding and related issues, it is these rivers that require the most immediate attention.

1.3 The potential effects of alternative management mechanisms on angler displacement

This study identified broad levels of support for the introduction of management mechanisms to control crowding, however the exact level of support varied for each river. The upper Oreti and Caples received the most support for the introduction of such mechanisms, an unsurprising finding given that it was these rivers that appeared to suffer most from crowding. Despite broad levels of support for crowd control mechanisms, most anglers, regardless of the river, appeared unwilling to pay an additional charge on top of the annual licence fee. It should also be noted that non-resident anglers - when compared with New Zealand resident anglers – were proportionately more willing to pay such a charge. Crucially, anywhere between 26% and 37% of anglers currently active on a particular river may be displaced by the introduction of management mechanisms to control crowding.

2 Background

2.1 Rationale

Of all the freshwater catchments in New Zealand, the Otago and Southland catchments are among the most popular for recreational freshwater angling. The rivers of Otago and Southland are highly sought after by both local recreational freshwater anglers and those visiting from further afield and overseas[4]. Leading up to this research, anecdotal reports indicated that a range of social and environmental pressures (e.g. increased crowding, management regulations to increase/decrease access, and changes in resource conditions (e.g. river pollution)) may be impacting upon the quality of the angling experience at a number of pressure-sensitive rivers in Otago and Southland, potentially leading to some form(s) of recreational displacement.

Recreational displacement refers to the ways in which, and the extent to which, recreationalists modify their behaviour in response to various perceived social and environmental pressures, such as those mentioned above. In response to such pressures, anglers may change where they fish. This is called spatial displacement and involves anglers leaving a site (e.g. one that they perceive is crowded) to fish at an alternative site (e.g. one that they perceive is less-crowded). The alternative site may either be within the same area as the existing site (intra-site displacement) or in a new area (inter-site displacement). Anglers may also change when they fish. This is called temporal displacement and involves anglers fishing at different times of the day/season/year than usual. Just as spatial displacement relies on the availability of alternative (and acceptable) substitute sites, temporal displacement can only occur if anglers have the necessary freedom to fish at different times. For an activity such as trout fishing, which is highly seasonal, this may be problematic. Anglers may even stop fishing altogether. This is called absolute displacement and occurs when an angler chooses to cease fishing rather than adopting other problem-focused coping strategies (including spatial and/or temporal displacement[5]).

To date, the nature and scope of recreational angling displacement in Otago and Southland has not been assessed and there is limited understanding of how recreational displacement, if any, is occurring and what effects this may be having on broader patterns of effort across various pressure-sensitive fisheries. Further, regulating user access particularly on public lands is a socially and politically contentious issue and there are concerns that moves to more restrictive management may further add to angler displacement issues, potentially resulting in shifts in the types of users of the fishery or simply displacing the problem to other fisheries. This study, therefore, has two key objectives:

1. **To assess the nature and scope of angler displacement on and from pressure-sensitive rivers in Otago and Southland.**

2. **To evaluate the potential effects of alternative management mechanisms on angler displacement.**

[4] Unwin (2016); Hayes & Lovelock (2016)
[5] For a fuller discussion on recreational displacement, the following are useful: Kearsley & Coughlan (1999); Schneider (2007); Fleishman et al (2007); Greenaway et al (2007); Hall & Cole (2007)

The following is a list of the eight rivers in Otago and Southland that, owing to particular concerns on the part of FGNZ management in relation to issues of possible recreational displacement, are the focus of this research project:

Otago rivers	Southland rivers
Greenstone	upper Oreti (above So Big Creek confluence)
Caples	upper Mataura (above Riversdale)
Hunter	Worsley
Dingle	Clinton

For each river, a contextual overview highlighting specific issues is provided in sections 2.2 and 2.3. The rivers listed above are also highlighted on the maps below (see Fig. 2-1 and Fig 2-2).

2.2 Southland rivers in context

2.2.1 Upper Oreti (above So Big Creek confluence)

To avoid overcrowding, angling on the upper Oreti operates under a voluntary beat system. Despite this, perceived overcrowding remains an issue and this may be contributing to displacement. Further management measures to limit access have also been tabled, including, for example, the introduction of a controlled fishery on the upper Oreti[6]. The inclusion of the upper Oreti in this research is primarily in order to generate empirical insights into possible angler displacement.

2.2.2 Upper Mataura (above Riversdale)

Due to its accessibility and popularity, there are current concerns about overcrowding on the upper Mataura. The upper Mataura does not require a backcountry license endorsement but it is similar in nature to the upper Oreti. As such, the inclusion of the upper Mataura in this research is primarily for comparative purposes and in order to generate baseline data regarding possible angler displacement.

2.2.3 Worsley and Clinton

These rivers (which are very close to each other) are both faced with similar issues. Firstly, they are smaller rivers that can only support a limited number of anglers at a time. At the same time, the remoteness of both rivers requires a significant effort on the part of anglers to access them. Anecdotal reports from anglers have suggested that this effort can at times be in vain when they arrive to find an already crowded river. The inclusion of the Worsley and Clinton

[6] A controlled fishery operates under a booking system that entitles the primary angler and a maximum of three other back country licensed companions to fish in solitude on the river/beat on one given period of the day. Anglers may also have to apply to a ballot to fish the area.

Rivers in this research is done so primarily to generate baseline data regarding possible angler displacement.

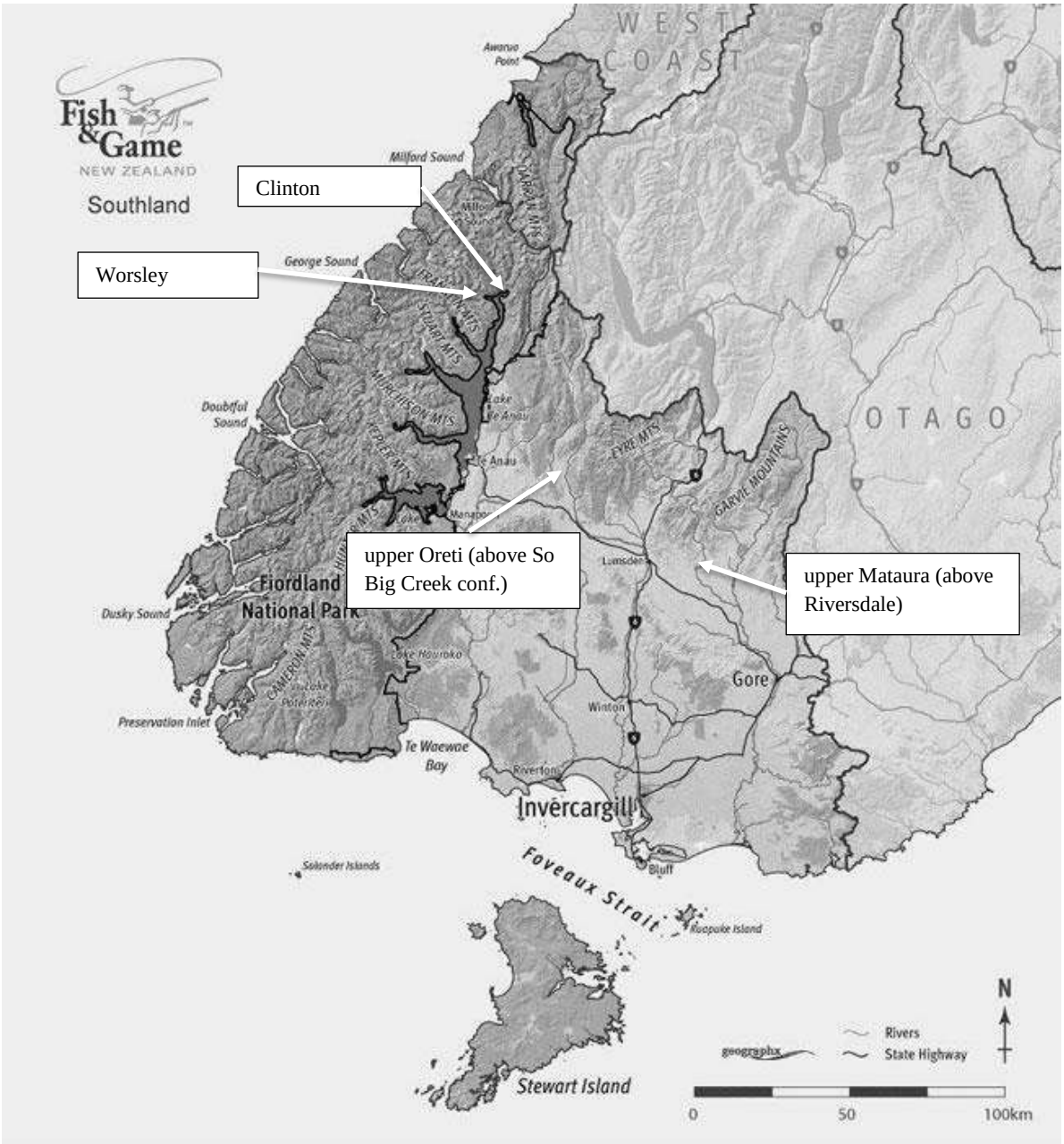

***Figure 2-1**: Location of Southland catchment rivers*

(Source: Fish and Game New Zealand)

2.3 Otago rivers in context

2.3.1 Hunter

This river can be accessed by various methods (e.g. walking, jet boat, aerial access fixed wing plane and helicopter) and 4WD). Consequently, possible over-crowding may be leading to displacement. Farming operations may also limit access at times and displace anglers. On the whole the river is medium sized but occupying a very long valley so it can accommodate many anglers if they are spread out. Baseline data is sought on the nature and scope of displacement.

2.3.2 Dingle

The headwaters of the Dingle River can only support a limited number of anglers as it is a small water. Anecdotal evidence suggests that walk-in anglers may be displaced by finding other anglers' cars parked at key access points (e.g. Ahuriri Valley road end, as this is the main access to the top section of the river and it is a 3-4 hour tramp over the hill into the river). Also, aerial access (fixed wing planes and helicopters) has contributed to conflict between fly-in and walk-in anglers. Baseline data is sought on the nature and scope of displacement.

2.3.3 Caples

The Caples is a small river that can support a couple of parties but can easily become overcrowded. Anecdotal evidence suggests that some anglers may be displaced from the Greenstone to the Caples during the Greenstone Controlled Fishing period (see below), thus increasing pressure on and from the Caples. The Caples is popular with guides and fly-in parties and there is anecdotal evidence that this can lead to displacement of walk in anglers. Baseline data sought on the nature and scope of displacement.

2.3.4 Greenstone

In 2004 controlled fishery regulations were introduced for the upper reaches of the Greenstone River in response to concerns about continuous increases in angling pressure and crowding. A Controlled Fishery Period applies from February 1st to March 31st each season on the Greenstone River, from its source at Lake McKellar to the Sly Burn confluence. The aim of the Greenstone Controlled Fishery is to manage angling pressure on the upper Greenstone River during the peak angling season in order to maintain a high quality angling and wilderness experience. The Controlled Fishery Period requires anglers to make a booking in order to fish the upper Greenstone River and ensures anglers will have exclusive angling access to a determined stretch of river (a beat) for the period of their booking. Whilst such regulations automatically control angler numbers, concerns have been expressed about the extent to which the need to make a booking deters anglers. This study aims to investigate whether, and the extent to which, these concerns are expressed by anglers and also if, and the extent to which, this management mechanism has resulted in displacement.

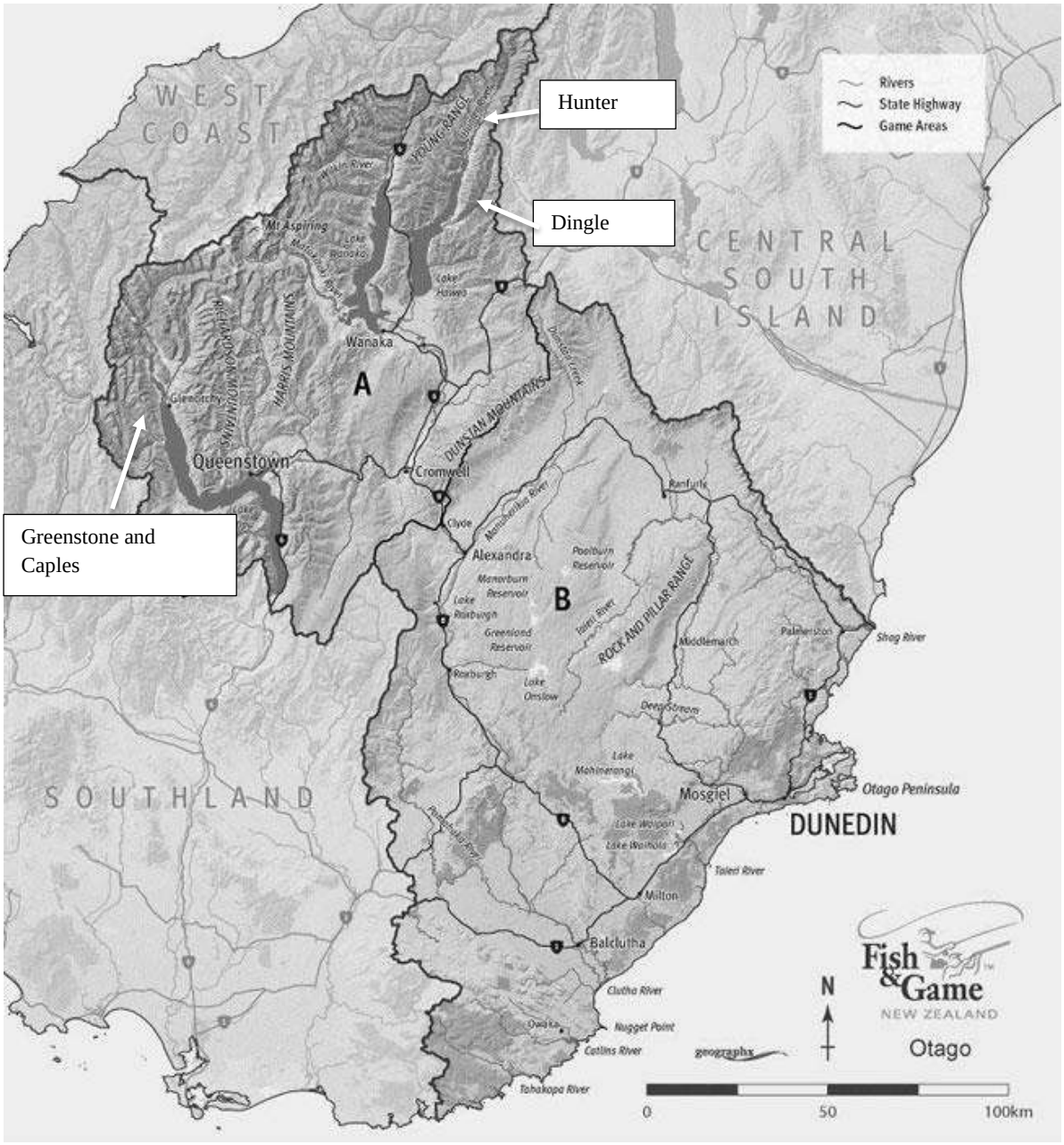

Figure 2-2: Location of Otago catchment rivers

(Source: Fish and Game New Zealand)

3 Methods

3.1 Survey design

The research involved the email distribution of an electronic survey and was facilitated by access to the FGNZ database holding details of all adults who purchased a whole season license in either Otago or Southland during the 2018/19 fishing season[7]. The survey was designed using Qualtrics software and involved several iterative phases. In consultation with FGNZ management and relevant research literature, survey questions were continually modified and refined in order to arrive at the final version of the questionnaire which was pretested by a University of Otago staff member and pilot tested by a small number of staff from FGNZ. The final survey can be viewed in Appendix 1. To summarise, the final survey comprised four main sections:

Introductory questions

Questions in this section related to: angling skill level; length of time spent/commitment to angling in general; and factors that in general contribute to a satisfying fishing experience.

River specific questions

This section is divided into eight sub-sections (to represent the eight target rivers). Questions focus on identifying (changing) patterns of angling behaviour over time and how this relates, if at all, to temporal and/or spatial and/or absolute displacement.

Opinions on possible management mechanisms

In this section, participants were posed three different 'what if' statements relating to the possible introduction of management mechanisms to control crowding; for each of the target rivers, participants were asked to rate the level at which they agree/disagree with each statement.

Demographic information

Questions in this section related to residency status, age, income and gender. In addition, participants were also asked to choose whether they usually use a guide or not and whether they fish alone or as part of group. Participants were also asked to identify whether or not they were a guide.

3.2 Recruitment, data collection and analysis

In total, 19,021 adults purchased a whole season licence in Otago/Southland during the 2018/19 fishing season. Of those, 11,842 were purchased in Otago and 7,179 were purchased in Southland. Of the 11,842 licences sold in Otago, valid email addresses (with duplicates also removed) were available for 8,836 adult anglers (75%). Of the 7,179 licences sold in Southland, however, valid email addresses (with duplicates also removed) were only available for 3,827 adult anglers (53%). The remaining 47% (n = 3,049) of anglers who purchased their licence in the Southland region did not have email addresses recorded on the FGNZ database. Therefore,

[7] The sample included adult license holders in the following categories: 'Local Area', 'Senior Loyal', 'Adult whole season', 'Family' and 'Adult whole season non-resident'.

it was necessary to determine whether these anglers were representative of the main sample (i.e. in this case the 53% of anglers who purchased their licence in Southland and did have an email address recorded on the FGNZ database). This required comparing a sub-sample of those without email addresses with the main sample. A power analysis was conducted in order to calculate the appropriate sub-sample size required for comparison purposes and, in this instance, a minimum of 57 completed, or partially completed, surveys were required. Anticipating a 10% response rate, 591 anglers were contacted by students from the Southern Institute of Technology (SIT), Invercargill, by telephone to request an email address. These 591 anglers were then also sent the survey via email.

In total, then, 13,254 surveys were distributed, representing 70% of the total population of all adults who purchased a whole season licence in Otago or Southland (n = 19, 021). In summary, this comprised the following:

- 8836 surveys sent to adult anglers who purchased a licence in Otago
- 4418 surveys sent to adult anglers who purchased a licence in Southland (including 3827 from the main sample and 591 from the sub-sample; see above).

An email containing a link to the questionnaire (hosted by Qualtrics) was distributed on 15th June 2019 and was accompanied by a covering letter providing participants with key information pertaining to the research (see Appendix 2[8]). The survey remained open for four weeks, during which time weekly reminder emails were sent to all participants who either a) had not started the survey or b) had started the survey but had yet to finish. The survey closed on 15th July 2019. Final response rates are presented in Table 3-1 below.

Table 3-1: *Final response rates*

Licence region	**Surveys sent**	**Surveys completed***	**Response rate %**	**Margin of error (based on 95% confidence level)**
Otago	8836	1485	17%	2%
Southland	4418	997[9]	23%	3%
Total combined	**13,254**	**2482**	**19%**	**2%**

***** includes partial completions/responses[10]

Data analysis was undertaken at the Department of Tourism, University of Otago using mainly Qualtrics' inbuilt analytical tools and other statistical analysis software (Microsoft Xcel and SPSS). A mixture of content and thematic analysis methods were also used to analyse open-

[8] This research was approved by the University of Otago Human Ethics Committee (reference: D19/057).

[9] Comprised of main sample (i.e. those anglers with email addresses recoded on FGNZ database; n = 840) and sub-sample (i.e. those anglers later contacted by students from SIT; n = 157). Note: Comparison of the means between the main sample and the sub-sample revealed no significant differences, and thus the sub-sample was deemed to be representative.

[10] All 2,482 returned questionnaires were included in the analysis, regardless of whether they were partially or fully completed. Where questionnaires were partially completed they were still deemed to have provided sufficient information with which to provide some baseline data needed to meet the study aims.

ended responses. In the next section, key findings are presented in the form of eight case studies, with each representing one particular target river.

Each case study follows the same format, as outlined below:

Overview of angling behaviour on the river
Here, attention is paid to those anglers who have fished the river more than once in the past [11]and, in particular, we consider the reasons why some of those anglers fish the river less than in the past or have stopped fishing the river altogether. Where relevant, particular attention is given to further exploring crowding related issues.

Nature and scope of temporal, spatial and absolute displacement
Here we probe temporal patterns of behaviour in order to better understand whether anglers have changed when they fish during the season, and if so why. We also examine where anglers fish during periods of temporal displacement (i.e. substitution). Finally, we explore any negative experiences on the river that have made anglers want to give up the sport of angling altogether. Again, where relevant, particular attention is given to further exploring crowding related issues.

Future intentions of anglers who have previously fished the river
In this section we examine the future intentions of all those anglers who have, at some point, fished the river. As in other sections, and only where relevant, particular attention is given to further exploring crowding related issues.

Why have some anglers never fished the river and what are their future intentions?
Here, consideration is given to explaining why some anglers have never chosen to fish the river. We also examine whether these anglers intend to fish the river in the future, paying particular attention to those who do not. Once again, and only where relevant, (perceived) crowding related issues come under close scrutiny.

Management mechanisms and potential implications[12]
In this section anglers' opinions about the need for management mechanisms to control crowding, along with their willingness to pay more for such mechanisms, are examined. In terms of forecasting possible future displacement, the potential implications of introducing management mechanisms to control crowding are also discussed[13].

Summary points
Each case study concludes with a list of key findings.

[11] The main reason for concentrating on these anglers is that they are likely to have some concrete experiences of issues such as crowding.
[12] This section is excluded from the Greenstone case study as management mechanisms are already in place to control crowding.
[13] In order to determine the characteristics of those anglers most likely to be displaced by the introduction of management mechanisms to control/limit angler numbers, findings in this section are limited to anglers who provided details of their residency status.

4 Findings

4.1 Upper Oreti

4.1.1 Overview

Overall, 700 anglers stated that they had fished the upper Oreti River once or more in the past. Most of those (n = 414) had purchased their license in the Southland region during the 2018/19 season, with the remainder (n = 286) purchasing theirs in the Otago region. Of those who responded to the question *'Thinking about the upper Oreti, which statement best reflects your fishing activity?'* (n = 692), just over a quarter (n= 193) had only fished there once. Around a further 50% fished the upper Oreti less often than in the past or had stopped fishing this particular river altogether (Table 4-1).

***Table 4-1**: Fishing activity on the upper Oreti*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	12%	33	19%	77	16%	110
I fish here, and more often than I did in the past	5%	13	7%	28	6%	41
I fish here, but less often than I did in the past	24%	67	27%	109	25%	176
I fished here in the past but don't fish here anymore	27%	75	24%	97	25%	172
I have only fished here once in my life	33%	93	24%	100	28%	193
Total	**100%**	**281**	**100%**	**411**	**100%**	**692**

Of the 692 anglers who stated they had fished the Upper Oreti at least once in the past, 56% (n = 390) were New Zealand residents and 26% (n = 178) were non-residents (NR's). The remaining 18% (n = 124) of anglers did not supply sufficient residency information[14].

4.1.2 Why do some anglers fish the upper Oreti less often than they used to?

Of the 176 anglers who fished the upper Oreti less often than in the past, most were experienced and committed anglers[15] (see Appendix 3). Figure 4-1 illustrates the main reasons why these

[14] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[15] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

anglers now fished the upper Oreti less (Note: n = greater than 176 as anglers could choose multiple options).

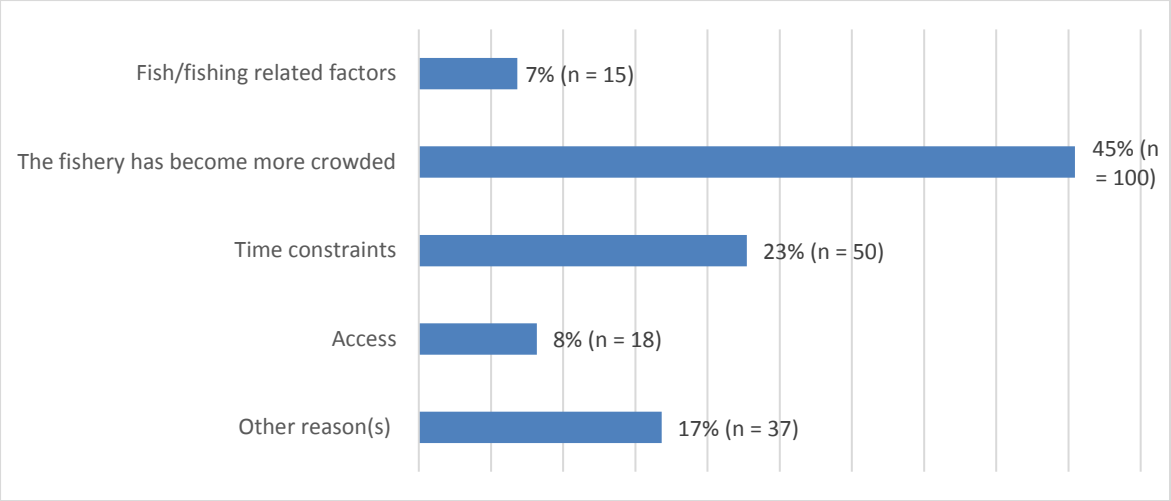

***Figure 4-1**: Reasons for anglers fishing the upper Oreti less often*

For the anglers participating in this study, crowding appeared to be the main reason for fishing the upper Oreti less often than in the past. Given FGNZ's concerns about the effects of angling pressure on displacement, this finding is particular relevant. Of the 100 anglers who cited crowding as a reason for fishing the upper Oreti less often, just over half (54%, n = 54) were New Zealand residents, with 32 coming Southland, 21 from Otago and one other from outside the Southland/Otago region. Of the remaining anglers, a quarter (25%, n = 25) were non-residents and the rest (21%, n = 21) did not provide sufficient residency information. A lack of time also appeared to be another main reason why some anglers fished the upper Oreti less often than in the past. In general, crowding, as well as issues to do with access (e.g. age/health, moved away), were also some of the main 'Other reasons' anglers gave for fishing the upper Oreti less often.

4.1.3 Why have some anglers stopped fishing the upper Oreti?

Of the 172 anglers who had stopped fishing the upper Oreti, most (55%) were experienced and committed anglers (see Appendix 3). Figure 4-2 illustrates the main reasons why some anglers who used to fish the river had stopped (Note: n = greater than 172 as anglers could choose multiple options).

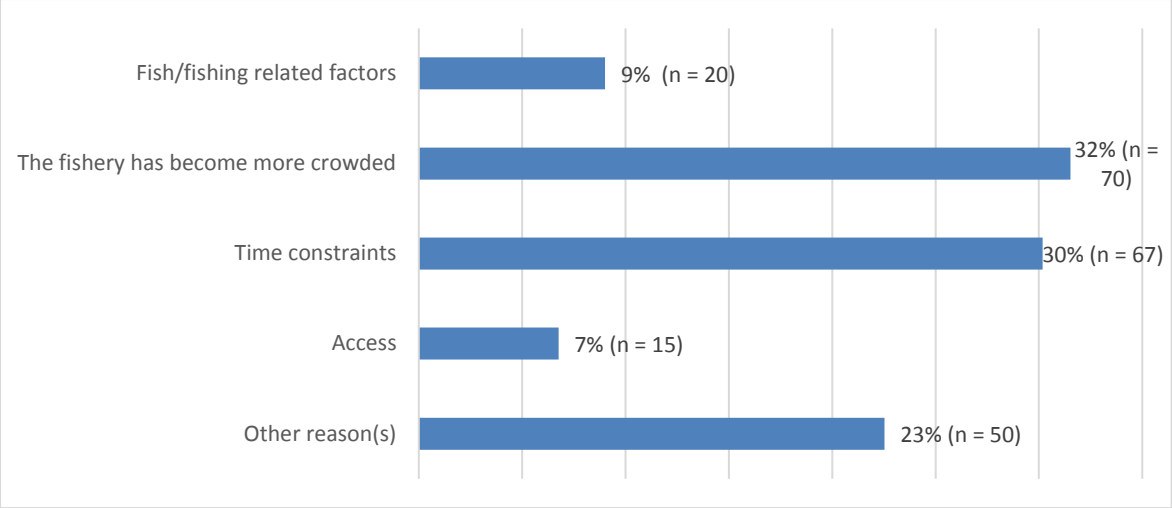

Figure 4-2: *Reasons for stopping fishing the upper Oreti*

Here, again, the issue of crowding appeared problematic in that it had caused some anglers to stop fishing the upper Oreti. Of the 70 anglers who cited crowding as a reason for stopping fishing the river, most (62%, n = 43) were New Zealand residents, with 20 each coming from Otago and/or Southland and the remaining three coming from outside the Otago/Southland region. Of the remaining anglers, 27% (n = 19) were non-residents and the rest (11%, n = 8) did not provide sufficient residency information. Time constraints also appeared to be another major issue that had caused anglers to stop fishing the upper Oreti. Issues to do with crowding (for Otago and Southland residents in particular) and time constraints were further reiterated in open-text responses for 'Other reasons'.

4.1.4 Nature and scope of temporal and spatial displacement on/from the upper Oreti

4.1.4.1 Temporal displacement

For those anglers who had fished and continued to fish the upper Oreti, whether to a greater, lesser or similar extent as in the past (n = 327)[16], there was evidence of temporal displacement occurring in a quarter of this group. Table 4-2 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the upper Oreti.

[16] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 110) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 41) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 176).

Table 4-2 *Temporal patterns of behaviour on the upper Oreti*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	30%	31	27%	55	28%	86
I've always done most of my fishing here in the mid-season	34%	35	38%	78	37%	113
I've always done most of my fishing here in the late season	12%	12	10%	20	10%	32
I used to mostly fish here in the early season but now avoid this period	9%	9	5%	11	6%	20
I used to mostly fish here in the mid-season but now avoid this period	15%	16	16%	33	16%	49
I used to mostly fish here in the late season but now avoid this period	1%	1	3%	7	3%	8
Total	**100%**	**104**	**100%**	**204**	**100%**	**308***

*does not total 327 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the upper Oreti, approximately 75% (n = 231) regularly fished at the same time of year. However, the remaining 25% (n = 77) of anglers changed when they fish during the season, with most choosing to avoid the popular mid-season (December-February) period. Of the 49 anglers who avoided the mid-season period, 27 were New Zealand residents (13 each from Otago and/or Southland, one from outside Otago/Southland region), nine were non-residents and 13 did not provide sufficient residency information. For New Zealand resident and non-resident anglers alike, crowding was cited as the main reason for avoiding the mid-season period. Similarly, crowding was also the main reason given by anglers for avoiding the early and late season periods.

4.1.4.2 Spatial displacement

Of all 77 anglers temporally displaced, 62 (81%) have substituted an alternative river for the upper Oreti during the period of displacement. Stated alternative rivers/water include (popular rivers are bolded and numbers in brackets = no. of mentions):

- **Mataura (16)**
- **Aparima (10)**
- **Mararoa (8)**
- **Pomahaka (5)**
- Lower/mid Oreti (3)
- Waiau (3)
- Waitaki (3)
- Upukerora (2)
- Waikaia (2)
- Greenstone (1)
- Lochy (1)
- Manuherikia (1)
- Whitestone (1)
- Irthing (1)
- Waikaka (1)
- Waipahu (1)
- Mimihau (1)
- Wyndham (1)
- Tahakopa (1)
- Kaiwera (1)
- Otamea (1)
- Upper Nevis (1)
- Hamilton Burn (1)
- Hollyford (1)
- Routeburn (1)

Substituting lower or middle sections for the upper section of the Oreti River is evidence of *intra*-site spatial displacement (i.e. anglers shifting to a different part of the same river). However, when any of the other rivers listed above are substituted for the upper Oreti, this can be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different geographical areas to fish). In terms of inter-site spatial displacement, the Mataura is a particularly popular alternative for New Zealand resident anglers and non-resident anglers alike. More specifically, Southland residents tended to also favour the lower/mid Oreti, Mararoa or Waiau, and Otago residents tended to favour the Pomahaka or Mararoa. For non-residents the Pomahaka, Aparima or Mararoa were popular alternatives.

4.1.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the upper Oreti once or more in the past (n = 700) were asked to reflect on whether any experience(s) on the upper Oreti had been so bad as to encourage them to consider giving up the sport of angling altogether. Of the 649 anglers who answered the question, only 6% (n = 40) stated that they had experienced such a situation. Of those 40 anglers, 28 were New Zealand residents (18 from Otago, nine from Southland and one from outside the Otago/Southland region) and four were non-residents. The remaining eight did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4-3 below (Note: n = greater than 40 as anglers could choose multiple options).

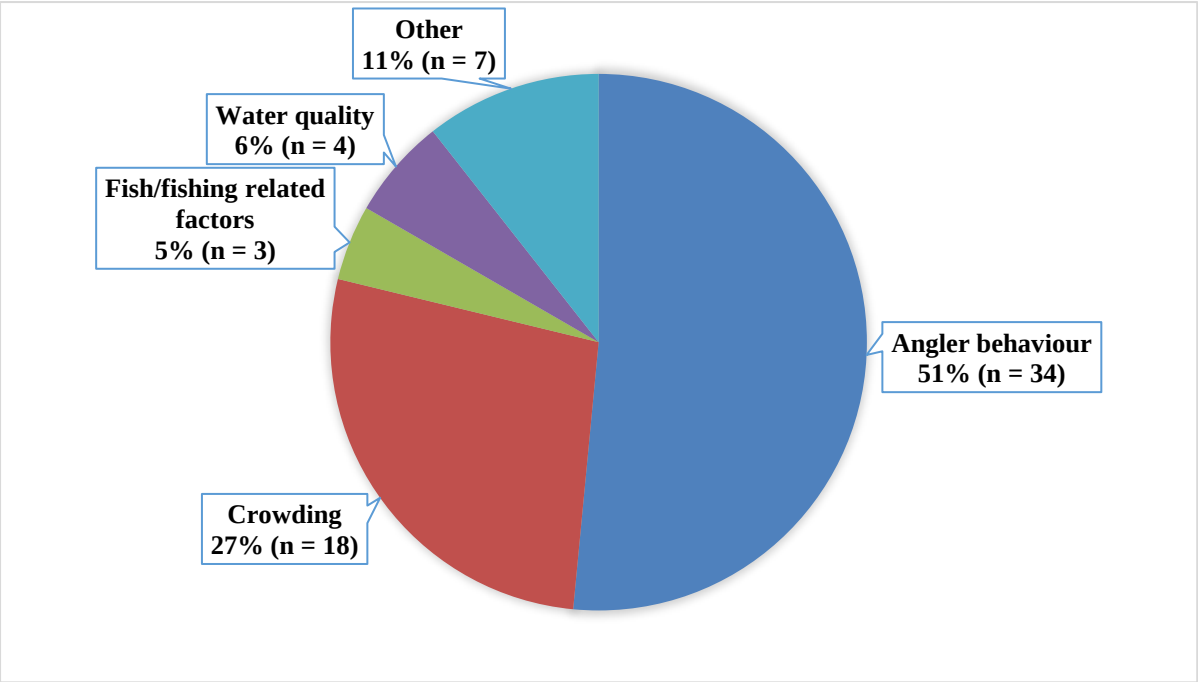

***Figure 4-3**: Factors contributing to potential absolute displacement (upper Oreti)*

It is clear from Figure 4-3 above that angler behaviour – presumably poor angler behaviour - is the main factor contributing to potential absolute displacement (i.e. anglers giving up the sport completely). Indeed, of the 40 anglers who had considered giving up fishing because of

a bad experience on the upper Oreti, 85% (n = 34) cited angler behaviour as one of the reasons for this (including 23 New Zealand residents but only three non-residents). Some anglers used the open-text 'Other' option as a means to further elaborate on their experiences of poor behaviour/etiquette in general. In particular, poor etiquette on the part of guides seemed to be an issue that had led some anglers, mostly Otago/Southland residents, to consider abandoning the sport of fishing altogether. This issue is illustrated well in the extract below, wherein a perceived sense of entitlement is also highlighted:

> *Guides demonstrating a 'perceived ownership of the river and the experience* (Otago resident).

In addition to the issue of poor angler/guide behaviour, crowding on the upper Oreti was another main reason why some anglers had considered giving up fishing as a sport. It must of course be noted, though, that despite the issues mentioned, the vast majority of anglers (94%) had not been discouraged from the sport of angling by any one specific bad experience on the upper Oreti.

4.1.6 Future intentions of all anglers who have previously fished the upper Oreti

Anglers who identified as having visited the upper Oreti once or more in the past (n = 700) were also asked to a) consider whether they intend to fish the river in the future and b) explain the main reason why/why not. Of the 652 anglers who responded to the question, overall 47% (n = 307) did intend to return and 14% (n = 93) do not. The remaining 39% (n = 252) were unsure if they would return or not in the future. As can be seen in Figure 4-4 below, these proportions are generally similar for New Zealand resident (as indicated in charts for Otago residents, Southland residents and Other NZ residents) and non-resident anglers, although non-resident anglers do appear to be slightly more certain about returning to the upper Oreti.

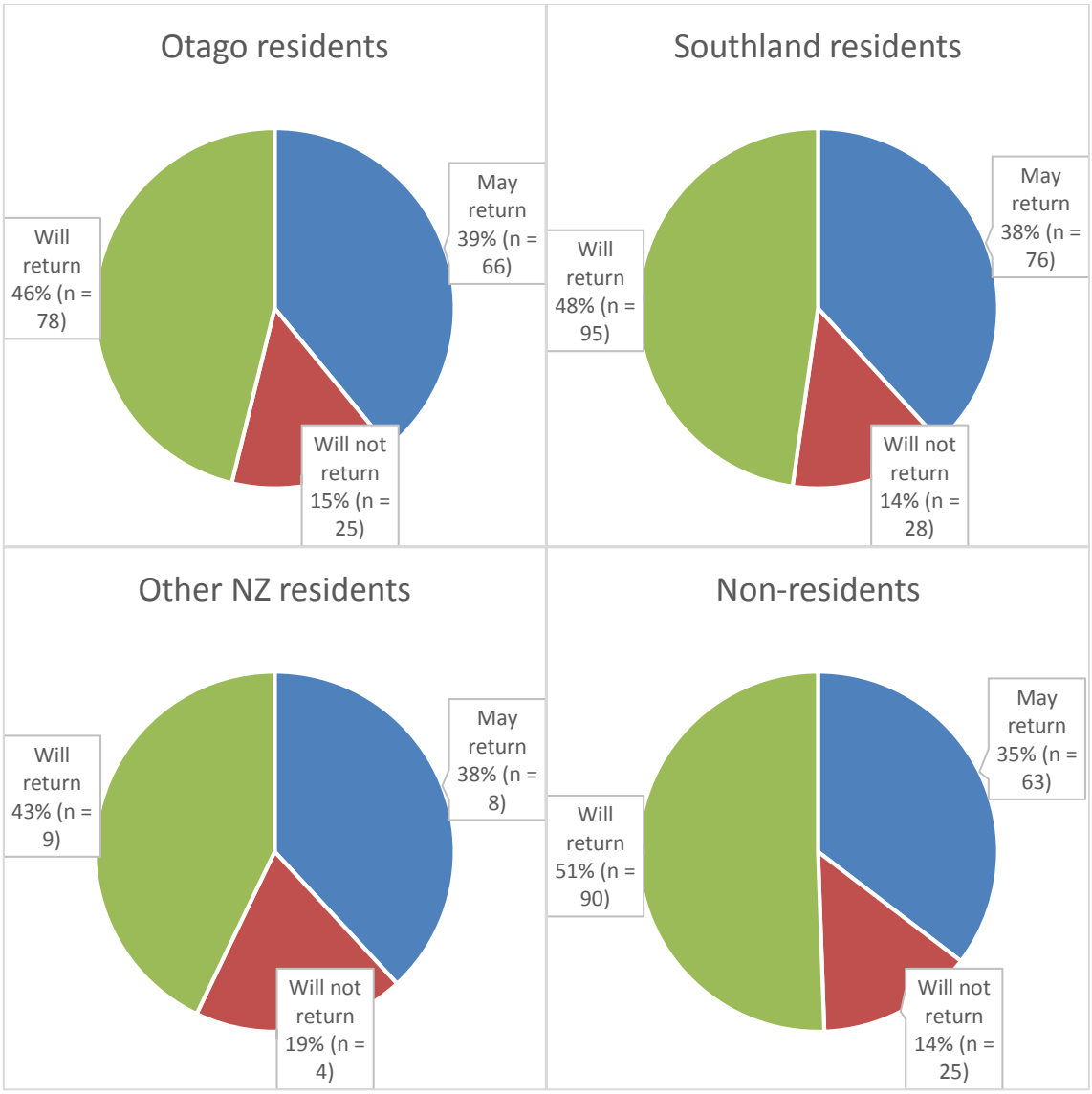

Figure 4-4: *Resident vs. non-resident future intentions to return to the upper Oreti*

Open-text data explaining the main reasons why anglers planned to return to the upper Oreti or not was analysed for themes. For those who did intend to return to the upper Oreti in the future, their motivations can be encapsulated in the theme 'Scenery/general experience'. This theme refers to the idea that, for New Zealand residents and non-residents alike, the upper Oreti continues to provide an excellent backcountry fishing experience, rich with beautiful scenery, a sense of solitude and excellent fishing opportunities. For example as this Otago resident summarised:

> *It is still a pristine fishery that challenges your angling skills and provides awesome scenery.*

Importantly, however, it is worth noting that the word 'still' in the extract above also captures a sense of impending loss conveyed by some anglers (both resident and non-resident) who planned to return to the upper Oreti. Here, there are concerns that crowding and/or poor angler/guide behaviour could spoil the very things (e.g. solitude) that make the upper Oreti special. As this Otago resident pointed out, for example:

> *I think it is still a great experience BUT a Plan B is needed due to the number of fishermen and more importantly the number of Guided parties who think they own the place.*

In this extract, the sentiment is clear: if issues such as crowding and poor angler/guide behaviour persist, it will be time to find somewhere different to fish in the future.

Indeed, the issue of crowding also appeared to be the main reason why some anglers, again New Zealand residents and non-residents alike, had already made the decision not to return to the upper Oreti in the future. As this Southland resident explained, for example:

> *It's getting thrashed, commercialised and quite frankly, ruined as the sports-fishing area it was.*

The sentiment is, again, clear: crowding, and implicitly that brought about by guided operations, has ruined the upper Oreti.

Of those anglers who were unsure if they would return to the upper Oreti or not in the future, open-text responses revealed that most appeared unlikely to return. There were a number of reasons for this, one being access and the practicalities involved with fishing the upper Oreti (e.g. potentially not being fit enough or having insufficient time). Again, though, the issue of crowding was prominent for New Zealand resident and non-resident anglers alike, as exemplified in the extract below:

> *It gets fished so hard. It's hard to find water to yourself. Guides seem to have no problem jumping above you* (Otago resident).

Perhaps linked to this, some anglers also seemed prepared to search for and fish alternative rivers in the future in order to avoid crowds. Such moves may add to the spatial displacement that is already occurring from the upper Oreti (see sub-section 4.1.4.2).

4.1.7 Why have some anglers never fished the upper Oreti?

Around 70% of anglers who participated in the survey had never fished the upper Oreti before (n = approx. 1,782[17]) and, of those, 69% (n = 1,231) provided an explanation for this. Figure 4-5 illustrates the main reasons why these anglers had never fished the upper Oreti (Note: n = greater than 1,231 as anglers could choose multiple options).

[17] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Upper Oreti in the past (n = 700) from the total number of surveys completed (n = 2,482).

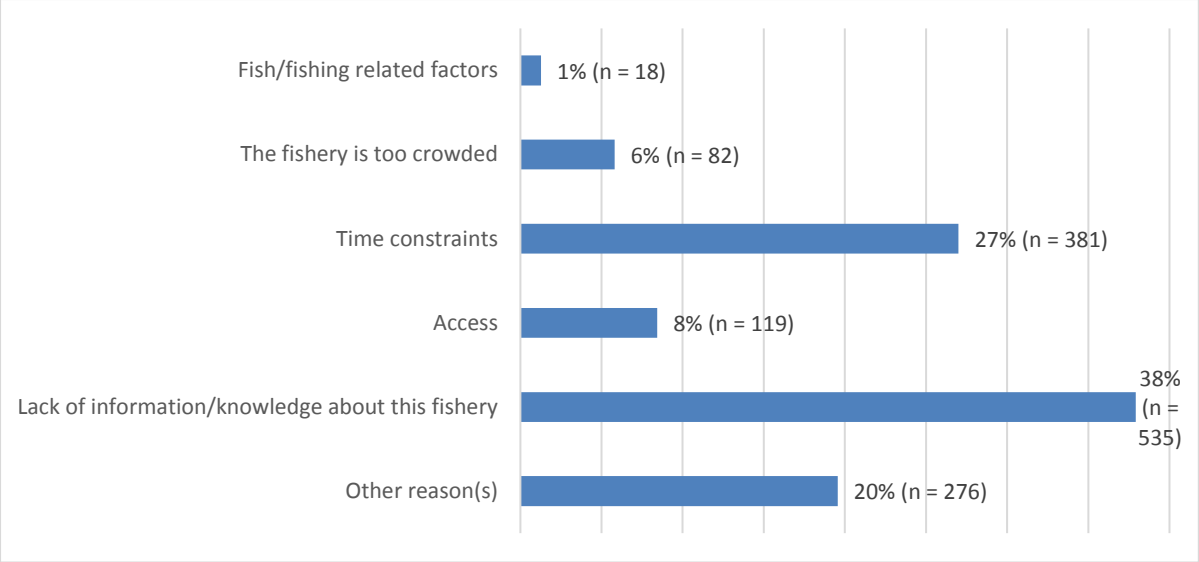

Figure 4-5*: *Reasons for never fishing the upper Oreti

Crowding appeared to be much less of an issue for those anglers who had never fished the upper Oreti compared to those who had. This may indicate that the upper Oreti is not *perceived* to be a crowded river. Instead, time constraints and a lack of information/knowledge about the fishery were the main reasons why many anglers had never fished the upper Oreti. Open-text responses for 'Other reason(s)' provided further evidence that time constraints, as part of broader access-related issues (e.g. age-related, distance from home etc.), were the main barriers to visiting the upper Oreti.

4.1.8 Future intentions of anglers who have never previously fished the upper Oreti

Those anglers who had never fished the upper Oreti before were also asked to consider whether they intended to fish the river in the future. Of the 1,332 anglers who responded, only 18% (n = 242) indicated they do intend to fish the upper Oreti in the future; 42% (n = 557) stated they did not intend to fish the upper Oreti in the future; the remaining 40% (n = 533) were unsure whether they would fish the upper Oreti or not in the future.

Those answering 'no' (n = 557) were further prompted to explain the reason(s) why they did not intend to fish the upper Oreti in the future; 79% (n= 441) responded. Analysis of open-ended responses revealed that issues related to access (age/health, time constraints etc.) strongly underpin anglers lack of willingness to fish this particular river. A general lack of interest was also noted. Issues to do with perceived crowding (e.g. "*Crowded and overrated*") were mentioned by only 16 anglers.

4.1.9 Management mechanisms and potential implications

4.1.9.1 Does the upper Oreti need management mechanisms to control crowding?

Of the 1,739 anglers who responded to the question asking about the need for management mechanisms to control crowding on the upper Oreti[18], 575 (33%) had fished the upper Oreti at least once in the past and 1,164 (67%) had not. Of the 575 anglers who had fished the river, 58% (n = 332) agreed that the upper Oreti needs management mechanisms to control crowding, and 19% (n = 109) disagreed; only 23% (n = 134) were neutral. However, anglers who had not fished the upper Oreti (n = 1,164) were much more likely to be neutral, with 60% (n = 704) neither agreeing nor disagreeing with the statement. Of the remaining 40%, 326 anglers (28%) agreed and 134 (12%) disagreed that the upper Oreti needs management mechanisms to control crowding. These findings are represented in Figure 4-6 below.

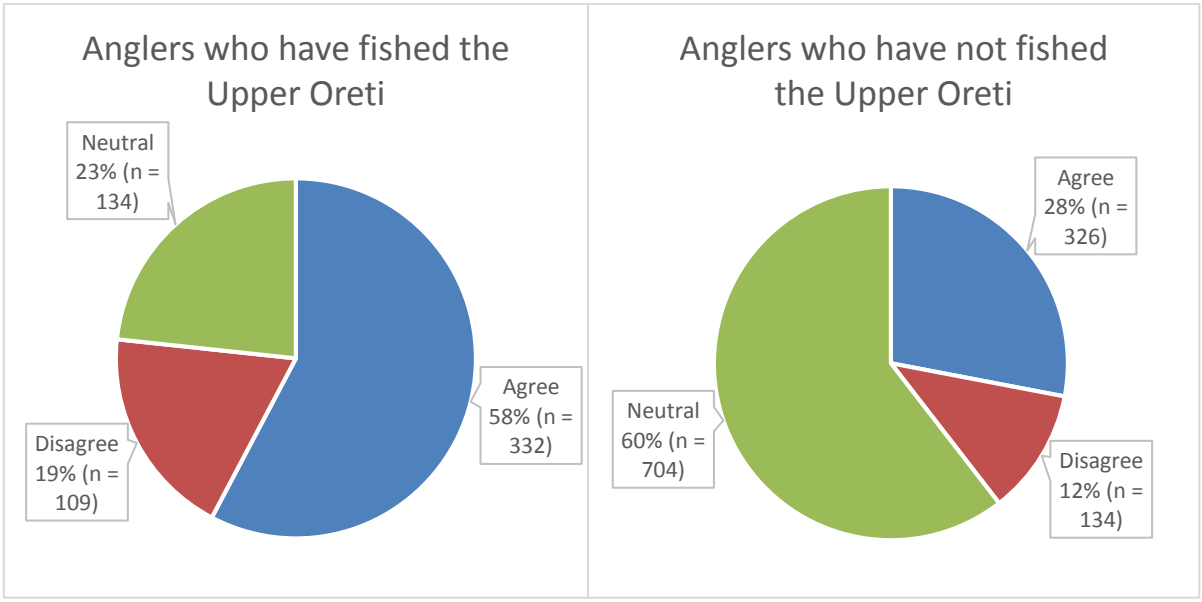

Figure 4-6: *The upper Oreti needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the upper Oreti, comparisons between different groups based on residency status (Figure 4-7 below) revealed that Southland residents seemed slightly less inclined than other groups to support the introduction of management mechanisms to control crowding on the upper Oreti. This is perhaps unsurprising given that the upper Oreti is likely to be a local river for many of these anglers and management mechanisms would likely inhibit spontaneous trip planning.

[18] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).

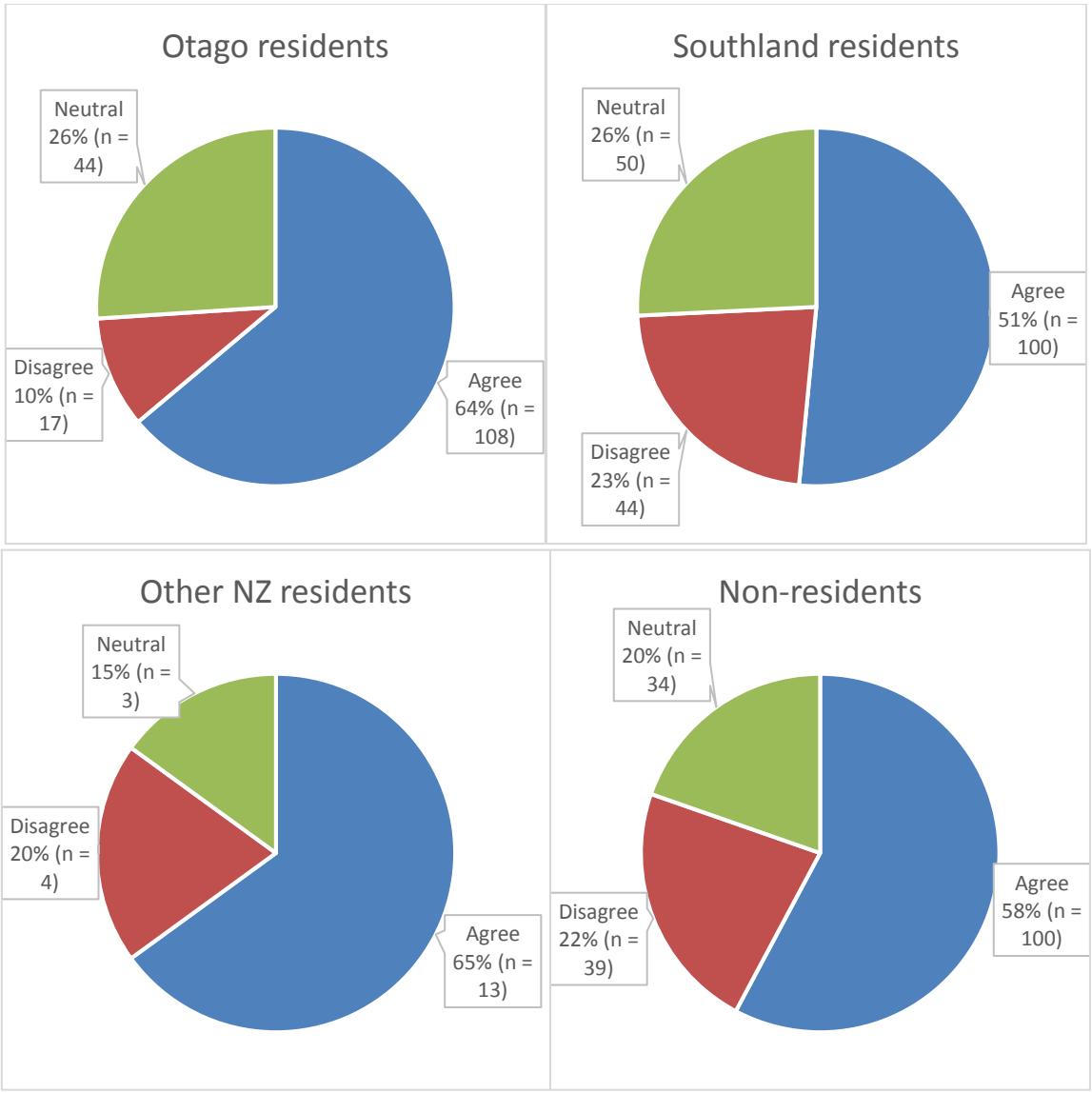

***Figure 4-7**: Resident vs. non-resident opinions: The upper Oreti needs management mechanisms to control crowding*

New Zealand residents from Otago and further afield were also slightly more inclined to support the introduction of management mechanisms to control crowding on the upper Oreti. One potential reason for this could be that non-local anglers may wish to have some guarantee of a crowd-free experience, thereby justifying efforts to plan and execute a visit to the upper Oreti.

4.1.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the upper Oreti at some point in the past and who also responded to question 159[19] (n = 571), 35% (n = 198) stated that they would be prepared to pay such a charge and 50% (n = 287) would not. Of the remaining anglers, 86 (15%) are neutral. This data is graphically represented in Figure 4-8.

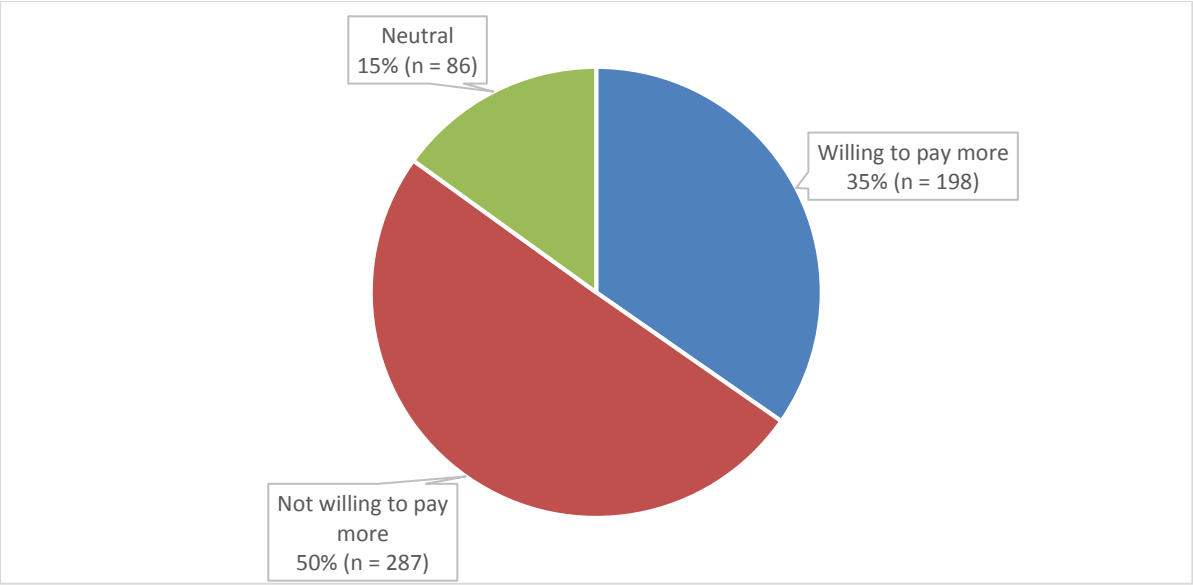

Figure 4-8: *Willingness of anglers who have fished the upper Oreti to pay an increased administration fee for management mechanisms*

Comparisons between different groups based on residency status (Figure 4-9) again reveals that Southland residents were slightly less willing than other groups to pay an additional administration charge for any management mechanisms introduced on the upper Oreti.

[19] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

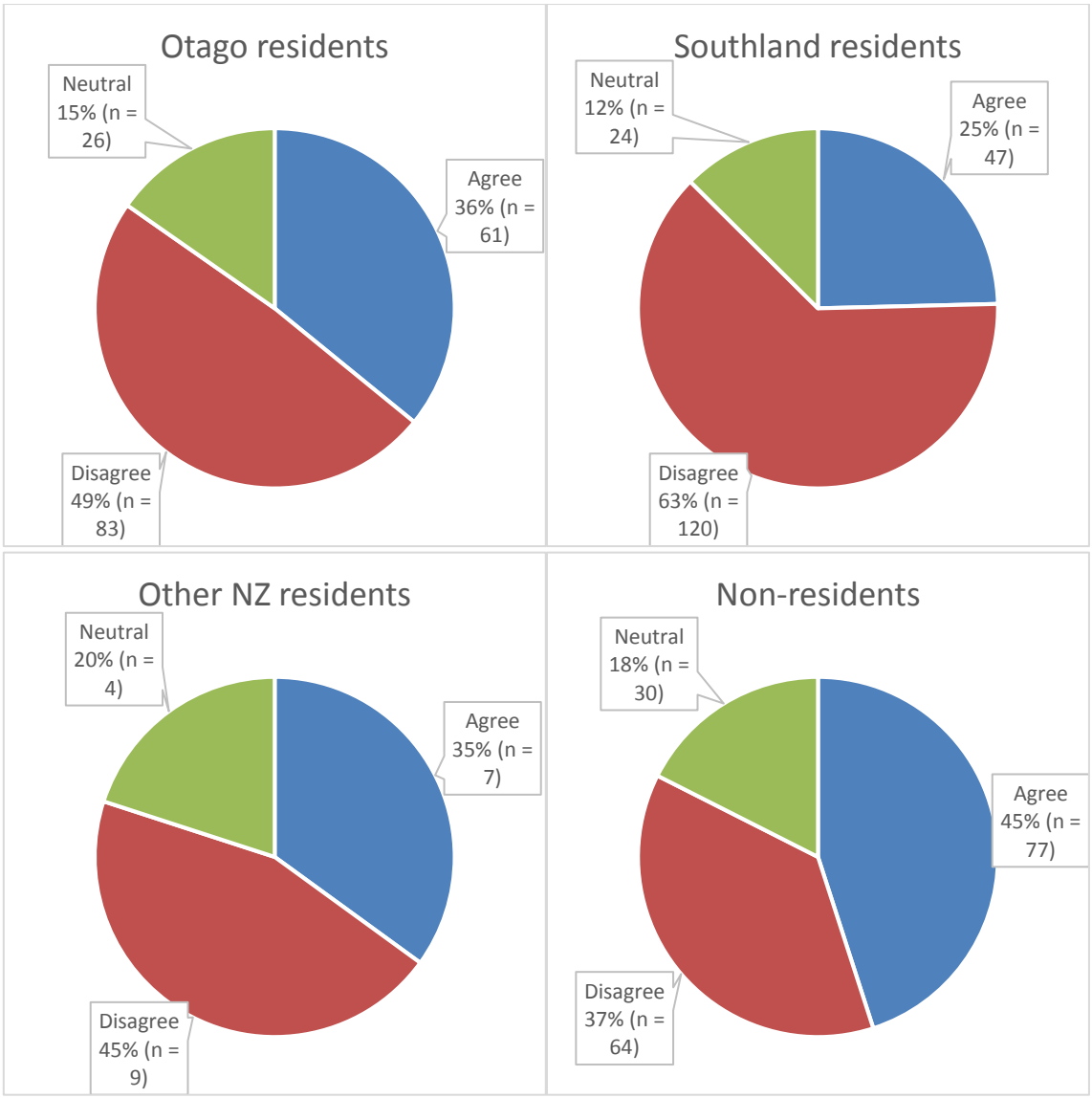

***Figure 4-9**: Resident vs. non-resident willingness to pay more for management mechanisms on the upper Oreti*

Non-residents appeared to be the most prepared to pay an additional administration fee if management mechanisms to control crowding were introduced on the upper Oreti. One reason could be that such a fee could be justifiably absorbed within the overall cost of a fishing trip to New Zealand, particularly if such a fee helps to guarantee an uncrowded, backcountry experience.

4.1.9.3 Potential displacement resulting from the introduction of management mechanisms to control crowding

Crucially, if management mechanisms were to be introduced on the upper Oreti, some anglers who currently fish the river may be displaced. Figure 4-10 shows the proportion of those anglers who stated that they would stop fishing the river if management mechanisms were to be introduced.

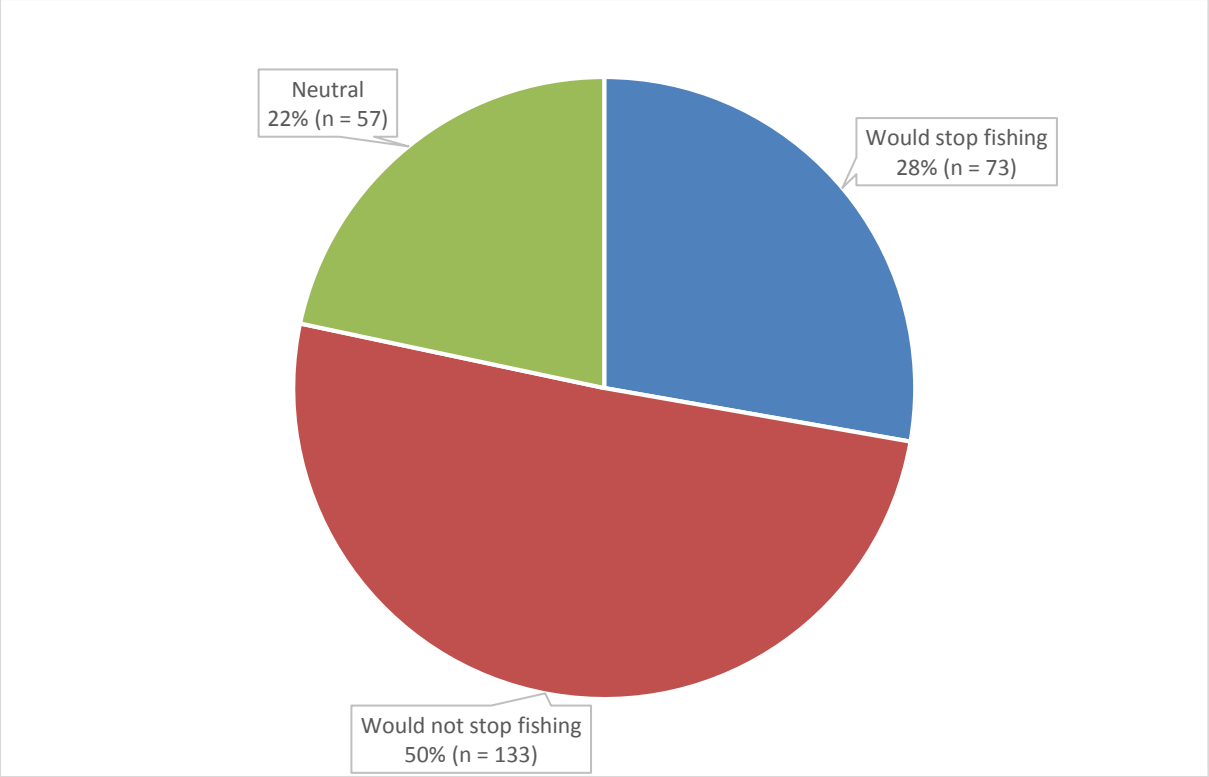

Figure 4-10: *Proportion of active anglers on the upper Oreti who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-10, of those anglers currently active on the river[20], and who also provided an answer to question 160[21] (n = 263), 50% (n = 133) said they would not stop fishing the upper Oreti if management mechanisms were introduced and 22% (n = 57) were neutral. Of most importance in the context of this study, however, were the 73 (28%) anglers who stated that they would stop fishing the upper Oreti if management mechanisms were introduced; it is this group that seems most likely to be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this relatively small group were:

- Mostly NZ residents (72%), predominantly from Southland (46%)
- Proportionately high number of non-resident anglers (24%)
- Almost all were intermediate/advanced anglers (97%), and most had over 20 years angling experience (78%)
- 81% (n= 58) did plan to continue fishing the upper Oreti in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention.

[20] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 13, options 1, 2, 3 (see Appendix 1).
[21] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

4.1.10 Summary points

- The issue of crowding is the main reason why anglers had chosen to a) fish the upper Oreti less often than in the past or b) stop fishing the upper Oreti completely.
- A quarter of anglers currently active on the upper Oreti had been temporally displaced, mainly due to crowding.
- Most temporally displaced anglers sought alternative rivers, with many substituting the already popular Mataura for the upper Oreti.
- A slight majority of resident anglers participating in the study seemed unlikely to return to the upper Oreti in the future, partly because of crowding but also because of access-related issues (e.g. lack of time, distance to travel); conversely, a very slight majority on non-resident anglers did plan to return.
- A small proportion of anglers who had chosen not to fish the upper Oreti in the past had done so because of perceived crowding.
- Regardless of whether they are New Zealand residents or non-residents, most anglers with experience of the upper Oreti (i.e. those who had fished the river before) agreed that the river needs management mechanisms to control crowding; most, however, were unwilling to pay more for such mechanisms.
- Just over a quarter of active anglers on the upper Oreti indicated that they may stop fishing the river if management mechanisms to control crowding were introduced; mostly New Zealand resident anglers but also a high proportion of non-resident anglers.

4.2 Worsley

4.2.1 Overview

Overall, 295 anglers stated that they had fished the Worsley River once or more in the past. Most of those (n = 190) had purchased their license in the Southland area during the 2018/19 season, with the remainder (n = 105) purchasing theirs in the Otago area. Of those who responded to the question *'Thinking about the Worsley, which statement best reflects your fishing activity?'* (n = 261), a large proportion of anglers (34%, n = 88) had only fished there once. A further 50% (n = 130) of anglers fished the Worsley less often than in the past or had stopped fishing this particular river altogether (Table 4-3).

***Table 4-3**: Fishing activity on the Worsley*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	10%	9	16%	28	14%	37
I fish here, and more often than I did in the past	1%	1	3%	5	2%	6
I fish here, but less often than I did in the past	17%	15	25%	43	22%	58
I fished here in the past but don't fish here anymore	28%	25	27%	47	28%	72
I have only fished here once in my life	44%	39	28%	49	34%	88
Total	**100%**	**89**	**100%**	**172**	**100%**	**261**

The Worsley is very popular with New Zealand residents. Of the 261 anglers who stated they had fished the Worsley at least once in the past, 70% (n = 184) were New Zealand residents and 14% (n = 36) were non-residents (NR's). The remaining 16% (n = 41) of anglers did not supply sufficient residency information[22].

4.2.2 Why do some anglers fish the Worsley less often than they used to?

Of the 58 anglers who fished the Worsley less often than in the past, most were experienced and committed anglers[23](see Appendix 3). Figure 4-11 illustrates the main reasons why these anglers fished the Worsley less often than in the past (Note: n = greater than 58 as anglers could choose multiple options).

[22] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[23] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

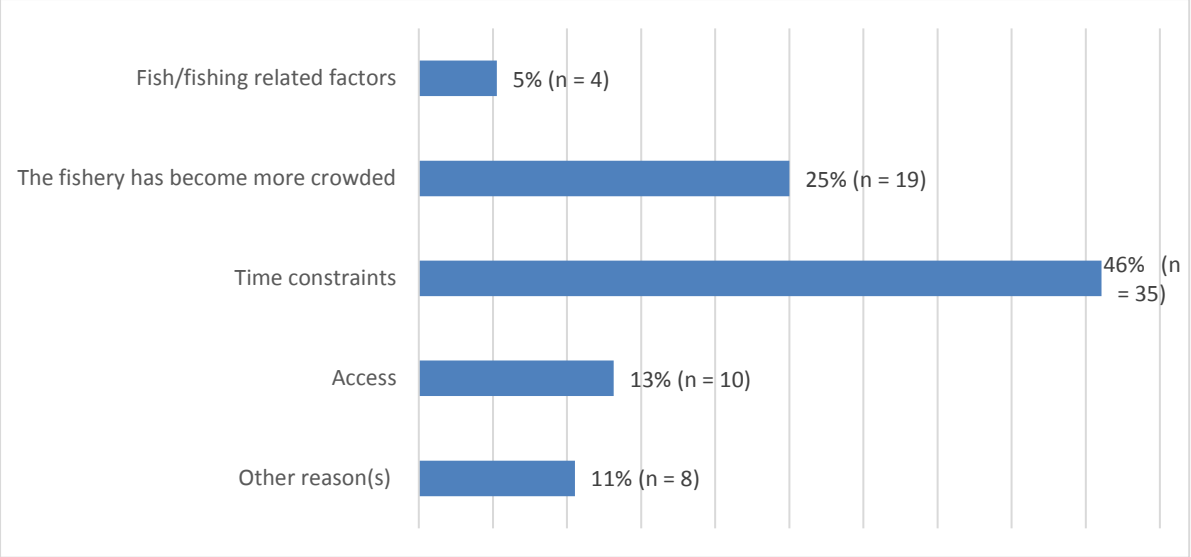

***Figure 4-11**: Reasons for anglers fishing the Worsley less often*

For the anglers participating in this study, a lack of time appeared to be the main reason for fishing the Worsley less often than in the past. Crowding was also an issue; of the 19 anglers who cited crowding as a reason for fishing the Worsley less often, most were New Zealand residents (68%, n = 13), with four from Otago and nine coming from Southland. Of the remaining anglers, 3 (13%) were non-residents and three (13%) did not provide sufficient residency information. In general, issues to do with access (e.g. age/health, expanding family), were also some of the main 'Other reasons' anglers gave for fishing the Worsley less often.

4.2.3 Why have some anglers stopped fishing the Worsley?

Of the 72 anglers who had stopped fishing the Worsley, most, again, were experienced and committed anglers (see Appendix 3). Figure 4-12 illustrates the main reasons why some anglers who used to fish the river had now stopped (Note: n = greater than 72 as anglers could choose multiple options).

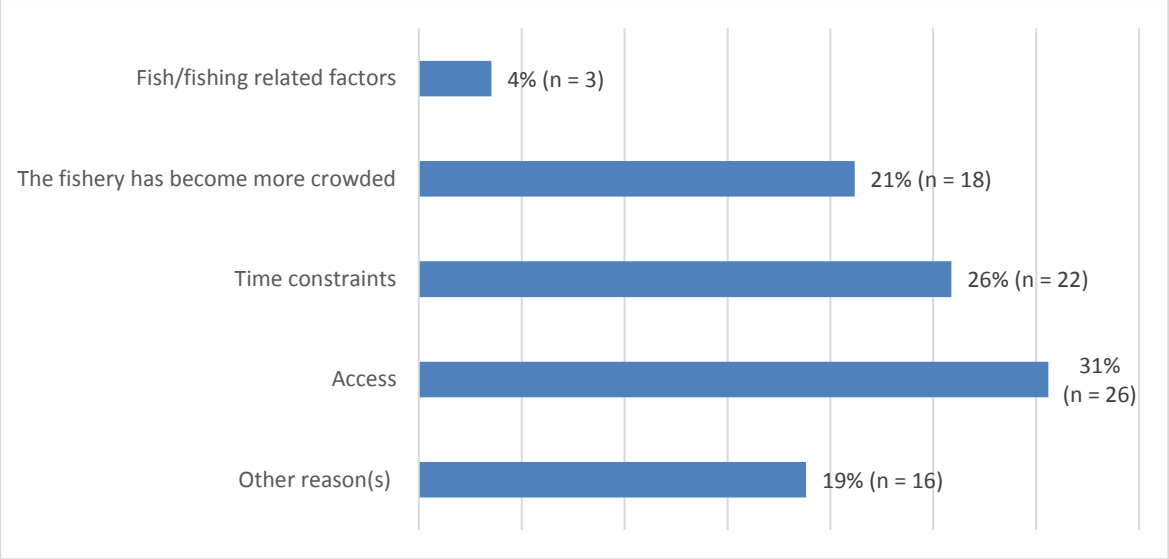

Figure 4-12: *Reasons for stopping fishing the Worsley*

Access issues and time constraints appear to be the main reasons why some anglers stopped fishing the Worsley. Further, the majority of open-text responses for 'Other reasons' also point to access issues/time constraints (e.g. "*too hard, old age*"). Again, though, crowding was also somewhat problematic; of the 18 anglers who cited crowding as a reason for stopping fishing the river, most (72%, n = 13) were New Zealand residents, with six coming from Otago and seven from Southland. Of the remaining anglers, three (16%) are non-residents and two (11%) did not provide sufficient residency information.

4.2.4 Nature and scope of temporal and spatial displacement on/from the Worsley

4.2.4.1 Temporal displacement

For those anglers who had fished and continued to fish the Worsley, whether to a greater, lesser or similar extent as in the past (n = 101)[24], there is some, albeit limited, evidence of temporal displacement occurring. Table 4-2 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the Worsley.

[24] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 37) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 6) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 58).

Table 4-4 *Temporal patterns of behaviour on the Worsley*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	38%	8	31%	22	33%	30
I've always done most of my fishing here in the mid-season	29%	6	41%	29	38%	35
I've always done most of my fishing here in the late season	14%	3	10%	7	11%	10
I used to mostly fish here in the early season but now avoid this period	0%	0	1%	1	1%	1
I used to mostly fish here in the mid-season but now avoid this period	5%	1	14%	10	12%	11
I used to mostly fish here in the late season but now avoid this period	14%	3	3%	2	5%	5
Total	**100%**	**21**	**100%**	**71**	**100%**	**92***

*does not total 101 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the Worsley, the vast majority (82%, n = 75) regularly fished at the same time of year. However, the remaining 18% (n = 17) of anglers had changed when they fish during the season, with most choosing to avoid the popular mid-season (January-March) period. Of the 11 anglers who avoided the mid-season period, eight are New Zealand residents (three from Otago and five from Southland), one is a non-resident and two did not provide sufficient residency information. For New Zealand residents, crowding was the main reason cited for avoiding the mid-season period, whilst for the non-residents time and access were the issues. In terms of early or late season avoidance, reasons given included poor weather, crowding and time constraints.

4.2.4.2 Spatial displacement

Of the 18 anglers temporally displaced, most (61%, n =11) had substituted an alternative river for the Worsley during the period of displacement. Stated alternative rivers/waters include (number in brackets = no. of mentions):

- Waiau (2)
- Mataura (1)
- Eglington (1)
- Clinton (1)
- Glaisnock (1)
- Manapouri (1)

When any of the rivers listed above are substituted for the Worsley, this might reasonably be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different

geographical areas to fish). In terms of inter-site spatial displacement, no one river stands out as being particularly favoured.

4.2.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the Worsley once or more in the past (n = 295) were asked to reflect on whether any experience(s) on the Worsley had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 250 anglers who answered the question, only 4% (n = 9) stated that they had experienced such a situation. Of those nine anglers, seven were New Zealand residents (three each from Otago/Southland and one from outside the Otago/Southland region) and two did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4-13 below (Note: n = greater than 9 as anglers could choose multiple options).

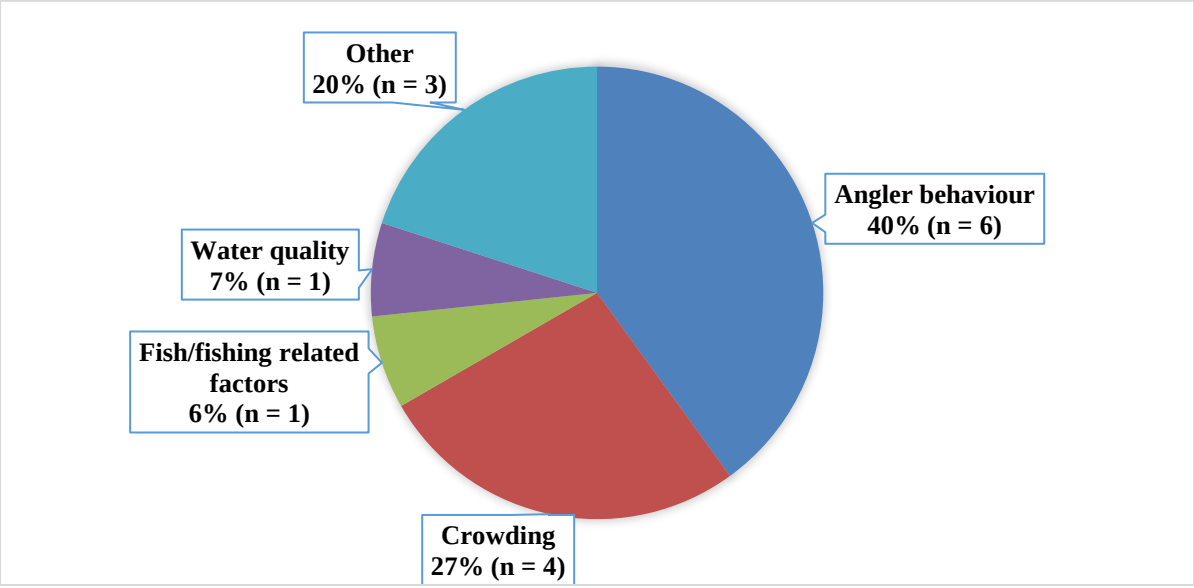

***Figure 4-13**: Factors contributing to potential absolute displacement (Worsley)*

Angler behaviour was the main factor contributing to potential absolute displacement as a result of a bad experience on the Worsley. Indeed, 67% (n = 6) of anglers who had considered giving up fishing because of a bad experience on the Worsley cited angler behaviour as a reason (four New Zealand residents and two did not provide residency information). Crowding on the Worsley was another main reason why some anglers had considered giving up fishing as a sport. The few anglers who provided open-text responses for 'Other' used this opportunity to further explain their experiences related to angler behaviour/crowding (e.g. *"Guide thinking he owns the river", "crowded hut"*). As was the case with the upper Oreti, though, it must again be noted that despite the issues mentioned, the overwhelming majority of anglers (96%) had not been discouraged from the sport of angling by any one specific bad experience on the Worsley.

4.2.6 Future intentions of all anglers who have previously fished the Worsley

Anglers who identified as having visited the Worsley once or more in the past (n = 295) were also asked to a) consider whether they intended to fish the river in the future and b) to explain the main reason why/why not. Of the 251 anglers who responded to the question, overall 45% (n = 114) did intend to return and 19% (n = 47) did not. The remaining 36% (n = 90) were unsure if they would return or not in the future. As can be seen in Figure 4-14 below, these proportions are broadly similar for Otago and Southland residents and non-resident anglers[25], although in comparison to the other sub-groups a slightly greater proportion of Otago anglers did not plan to return to the Worsley.

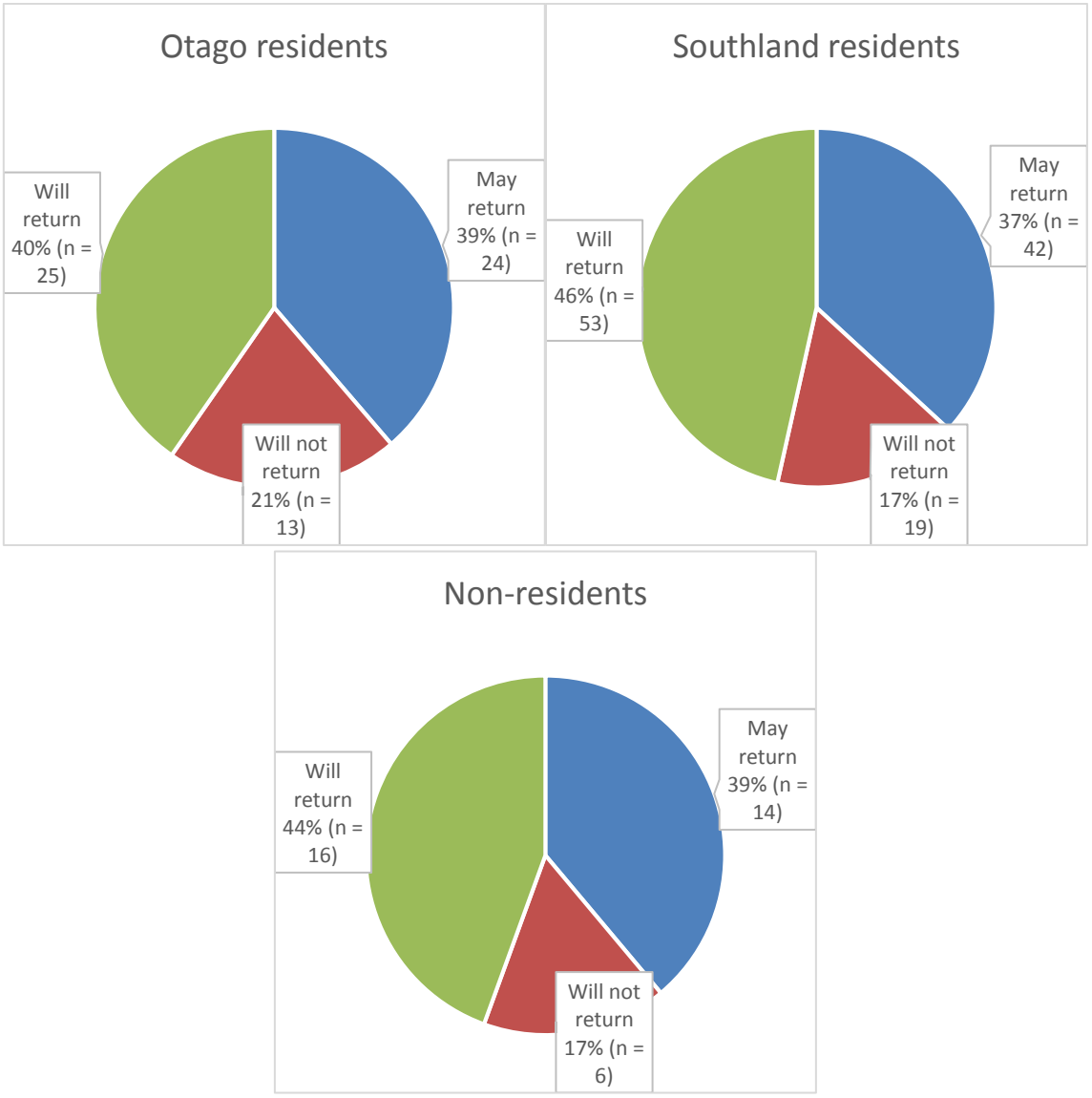

Figure 4-14: *Resident vs. non-resident future intentions to return to the Worsley*

[25] Chart for Other NZ resident not provided due to very low numbers of anglers in this sub-group.

Open-text data explaining the main reasons why anglers planned to return to the Worsley or not was analysed for themes. Similarly as was the case with the upper Oreti, for those that did intend to return to the Worsley in the future, anglers' motivations can be encapsulated in the theme 'Scenery/general experience' Whether from New Zealand or overseas, the Worsley offers something of a backcountry paradise, best summed up by this non-resident angler: *"Incredible back country fishing"*. However, for some anglers who planned to return to the Worsley, paradise is becoming increasingly elusive due to crowding. For example, as this Southland resident explained:

> *It is one of the very best trout rivers in the world. I love the sublime landscape, the gin clear water, the large trout and all the animals that call the valley home. It is like my fishing cathedral. I cope with the overseas anglers by walking past them to the more remote upper reaches. This involves a loss because the largest fish are generally in the lower and mid stretches.*

In this example the angler adopts a coping mechanism in order to deal with crowding (intra-site substitution by moving to the upper reaches). The concern, though, is what happens when an angler exhausts all coping mechanisms. Other comments related to the potentially negative impacts of crowding came exclusively from New Zealand resident anglers, and serve to further illustrate how crowding may threaten to impact this fishery in the future.

The issue of crowding is also one of the reasons why some, again almost all New Zealand resident anglers, had already made the decision not to return to the Worsley in the future. As this Southland resident explained, for example:

> *[The Worsley is] crawling with tourist anglers … My one trip was very disappointing*.

It should be noted, though, that amongst those anglers not intending to return to the Worsley, comments related to crowding were infrequent (around five mentions). Instead, the main reasons why some anglers did not intend to return to the Worsley were access-related (e.g. anglers not having a boat, too far to travel etc.).

Of those anglers who were unsure if they would return to the Worsley or not in the future, access-related issues and the practicalities involved with planning/executing a trip were to be the key considerations. Concern about crowding was also noted by a few anglers (four), but on the whole this does not appear to be a major consideration at this stage.

4.2.7 Why have some anglers never fished the Worsley?

Around 88% of anglers who participated in the survey had never fished the Worsley before (n = 2187[26]) and, of those, 56% (n = 1231) provided an explanation for this. Figure 4-15 illustrates the main reasons why these anglers had never fished the Worsley (Note: n = greater than 1231 as anglers could choose multiple options).

[26] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Worsley in the past (n = 295) from the total number of surveys completed (n = 2482).

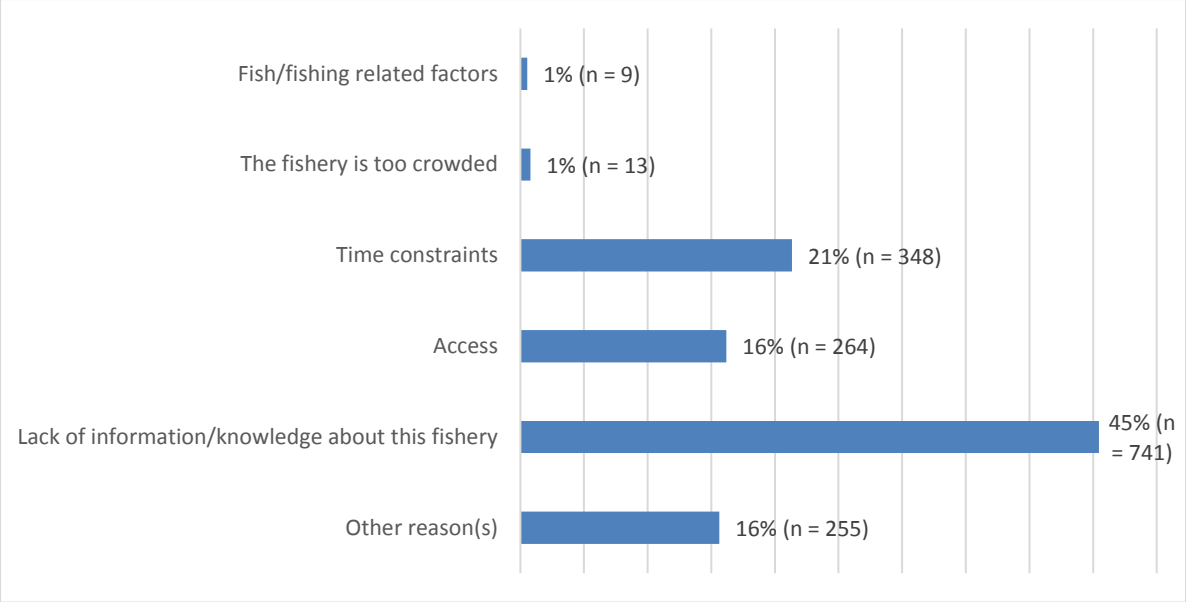

Figure 4-15**:** *Reasons for never fishing the Worsley*

For anglers who had never fished the Worsley there appears to be almost no issue with potential crowding, indicating perhaps that the river is perceived to be largely uncrowded. Instead, a lack of information/knowledge about the fishery, together with access-related issues (including time constraints), were the main reasons why most anglers had chosen not to fish the Worsley in the past. Open-text responses for 'Other reason(s)' provide further evidence that time constraints, as part of broader access-related issues (e.g. age-related, distance from home etc.), were the main reasons that some anglers did not fish the Worsley. In addition, many anglers simply had little or no interest in fishing the Worsley and preferred to fish other rivers.

4.2.8 Future intentions of anglers who have never previously fished the Worsley

Those anglers who had never fished the Worsley before were also asked to consider whether they intended to fish the river in the future. Of the 1609 anglers who responded, only 11% (n = 172) indicated that they did intend to fish the Worsley in the future; 47% (n = 757) stated they did not intend to fish the Worsley in the future; the remaining 42% (n = 680) were unsure whether they would fish the Worsley or not in the future.

Those answering 'no' (n = 757) were further prompted to explain the reason(s) why they did not intend to fish the Worsley in the future; 72% (n= 545) responded. Analysis of open-ended responses revealed a general lack of interest in fishing the Worsley. Added to that, issues related to access (distance from home, age/health etc.) also underpinned anglers' lack of willingness to fish this particular river. Issues to do with perceived crowding were only mentioned by a few anglers, mainly Otago residents (e.g. *"Overseas angling pressure"*) or non-residents (e.g. *"Too many anglers"*).

4.2.9 Management mechanisms and potential implications

4.2.9.1 Does the Worsley need management mechanisms to control crowding?

Of the 1,693 anglers who responded to the question asking about the need for management mechanisms to control crowding on the Worsley[27], 219 (13%) had fished the Worsley at least once in the past and 1,474 (87%) had not. Of the 219 anglers who had fished the river, 51% (n = 112) agreed that the Worsley needed management mechanisms to control crowding, and 17% (n = 38) disagreed; 32% (n = 69) were neutral. Anglers who had not fished the Worsley (n = 1474) were, again, much more neutral, with 66% (n = 974) neither agreeing nor disagreeing with the statement. Of the remaining anglers, 333 (23%) agreed and 167 (11%) disagreed that the Worsley needed management mechanisms to control crowding. These findings are represented in Figure 4-16 below.

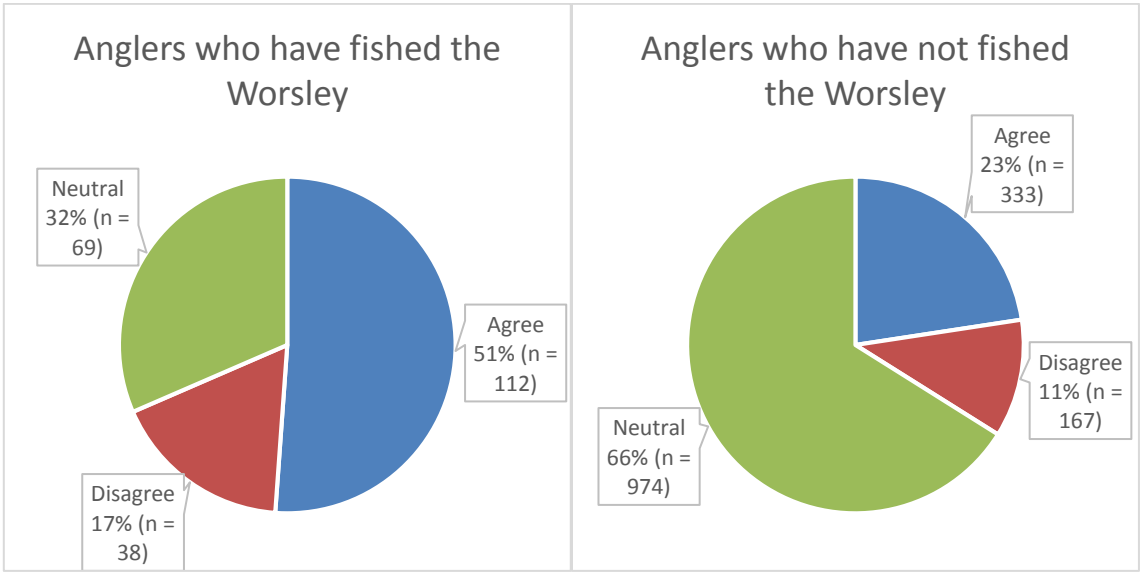

Figure 4-16: *The Worsley needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the Worsley, comparisons between different groups based on residency status (Figure 4-17 below[28]) reveals that Southland residents were slightly more opposed to the introduction of management mechanisms to control crowding on the Worsley (as was the case for the upper Oreti). This is perhaps unsurprising given that, like the upper Oreti, the Worsley maybe closer to home for many of these anglers and management mechanisms would likely inhibit spontaneous trip planning.

[27] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).
[28] Chart for Other NZ resident not provided due to very low numbers of anglers in this sub-group.

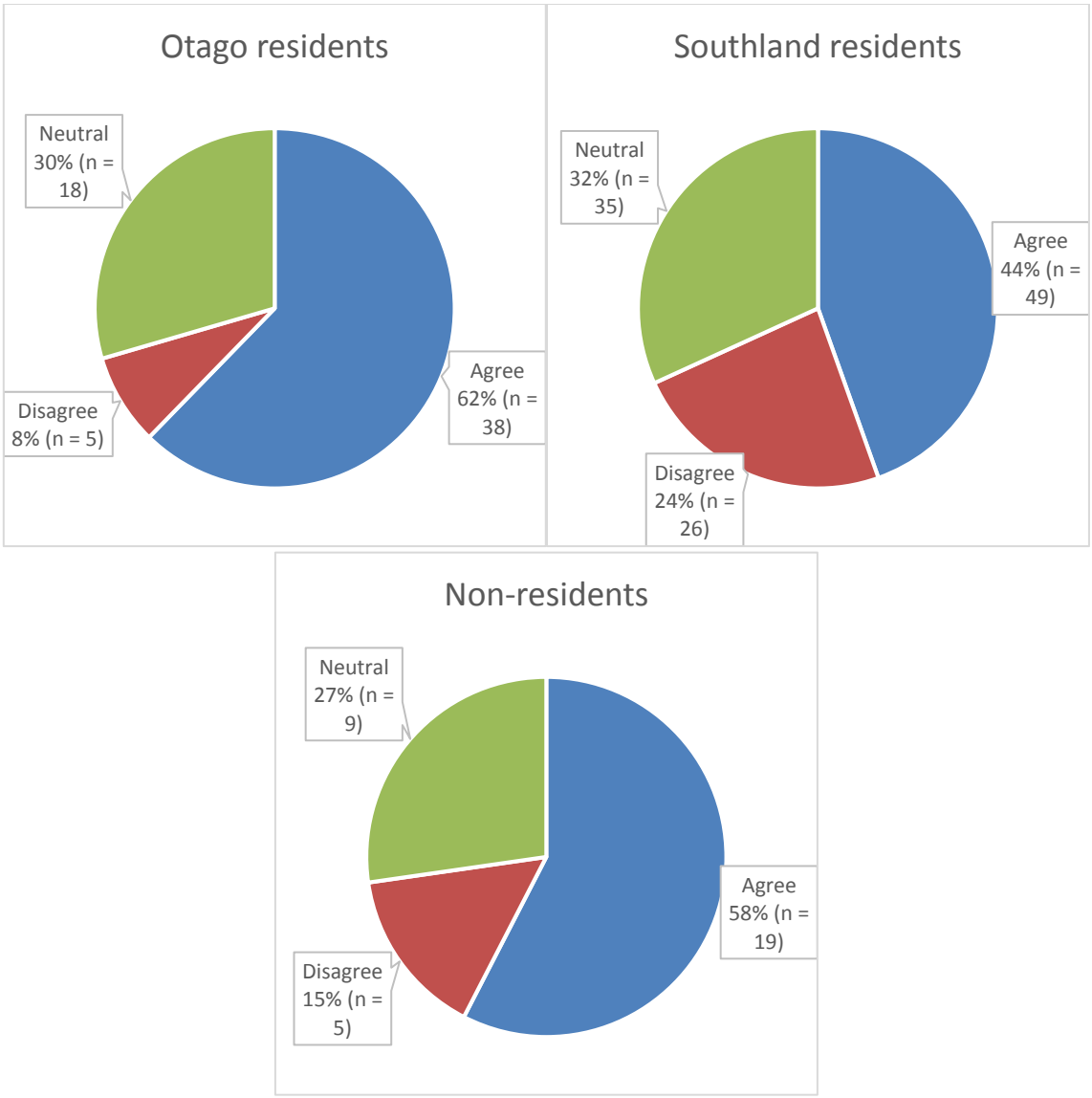

***Figure 4-17**: Resident vs. non-resident opinions: The Worsley needs management mechanisms to control crowding*

New Zealand residents from Otago appeared most in favour of the introduction of management mechanisms to control crowding on the Worsley. Again, one potential reason for this could be that non-local anglers may wish to have some guarantee of a crowd-free experience, thereby justifying efforts to plan and execute a visit to the Worsley. Or, simply, it could be that Otago residents are more affected by their experiences of crowding and therefore feel more inclined to support management mechanisms.

4.2.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the Worsley at some point in the past and who also responded to question 159[29] (n = 222), 31% (n = 69) stated that they would be prepared to pay such a charge and 51% (n = 114) would not. The remaining 18% of anglers (n = 39) were neutral in their responses. This data is represented in Figure 4-18.

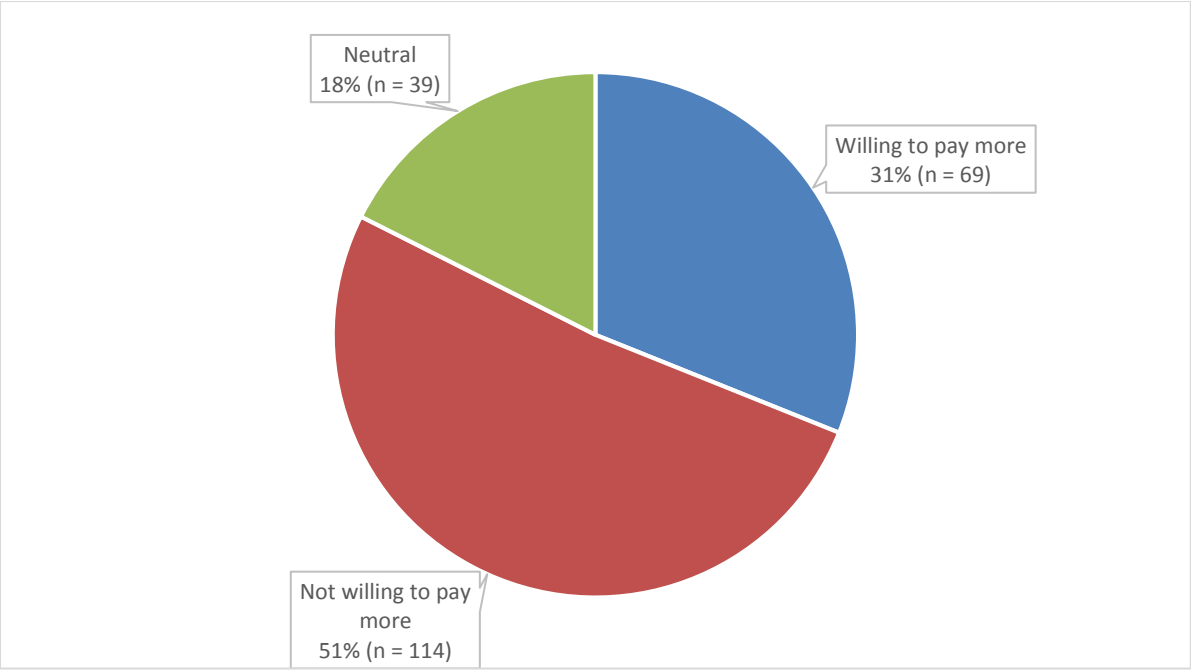

Figure 4-18: *Willingness of anglers who have fished the Worsley to pay an increased administration fee for management mechanisms*

Comparing different groups based on residency status (Figure 4-19 below) reveals some interesting insights in relation to anglers' willingness to pay more for management mechanisms to control crowding on the Worsley. For example, Southland residents were much less willing than other groups to pay an additional administration charge. One could postulate whether a degree of parochialism or a sense of ownership comes into play, especially given that the Worsley sits within the Southland region. Understanding why Southland anglers are so against paying an additional charge certainly warrants closer investigation, in the future.

[29] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

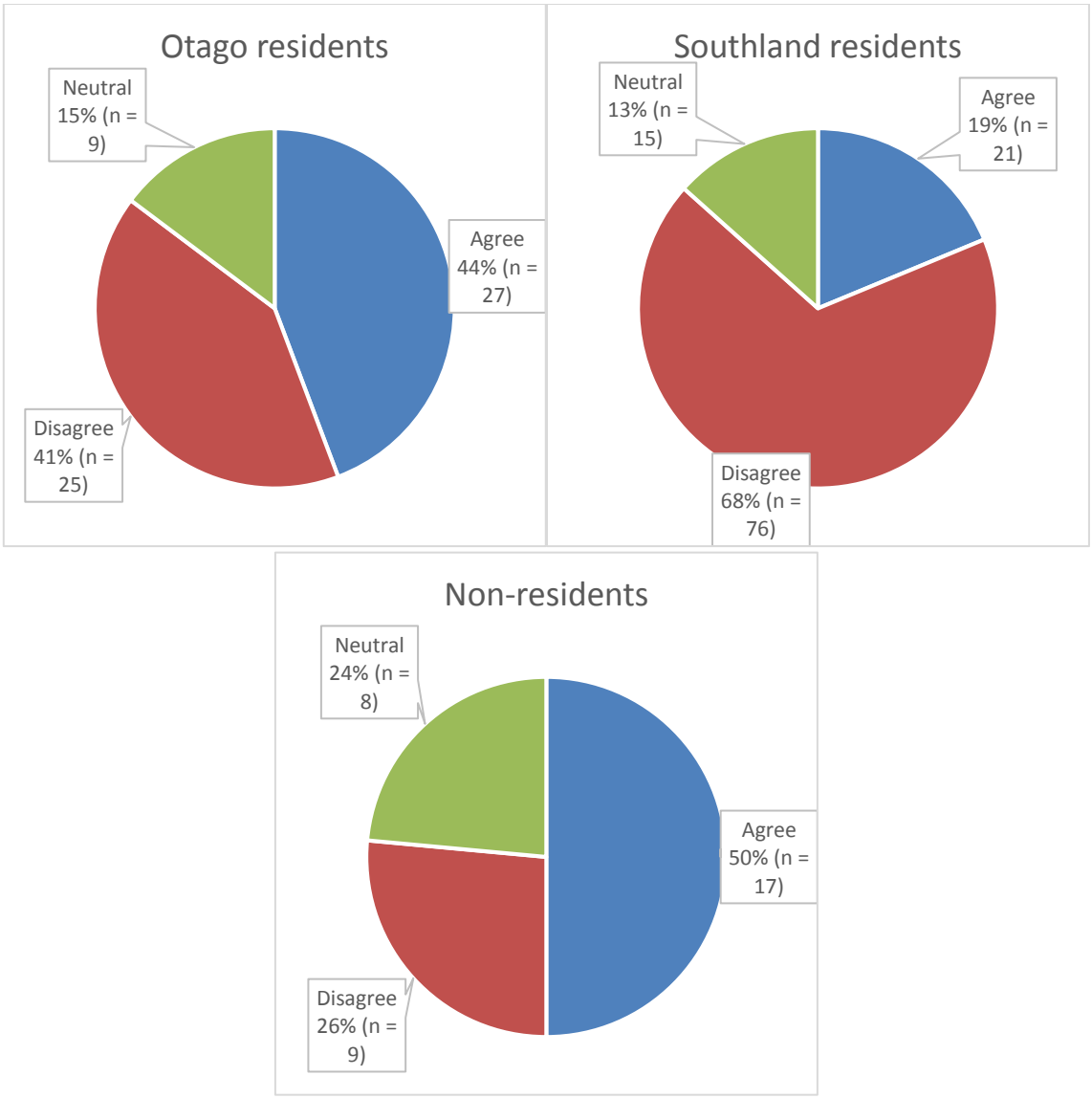

***Figure 4-19**: Resident vs. non-resident willingness to pay more for management mechanisms on the Worsley*

Non-residents appeared to be the most prepared to pay an additional administration fee if management mechanisms to control crowding were introduced on the Worsley. As mentioned in the upper Oreti case study, one reason could be that such a fee could be justifiably absorbed within the overall cost of a fishing trip to New Zealand, particularly if such a fee helps guarantee an uncrowded backcountry experience.

4.2.9.3 Potential displacement resulting from the introduction of management mechanisms to control crowding

Crucially, if management mechanisms were to be introduced on the Worsley, some anglers who currently fish the river may be displaced. Figure 4-20 shows the proportion of those anglers who stated they would stop fishing the river if management mechanisms were to be introduced.

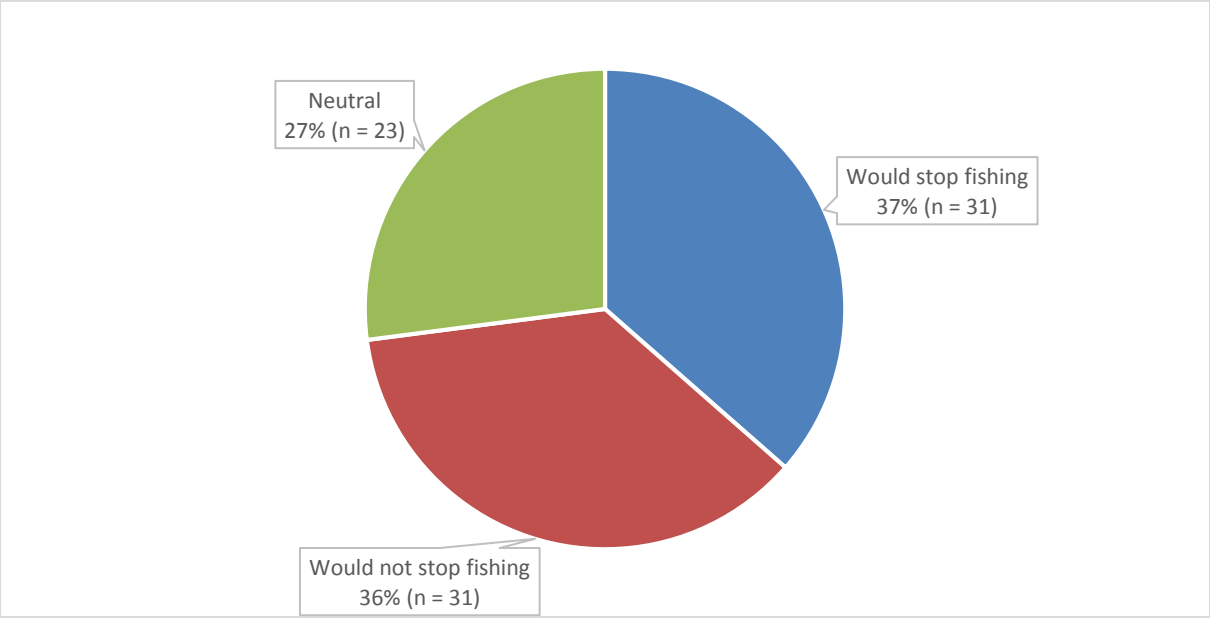

Figure 4-20: *Proportion of active anglers on the Worsley who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-20, of those anglers currently active on the river[30] and who also provided an answer to question 160[31] (n = 85), 36% (n = 31) said they would not stop fishing the Worsley if management mechanisms were introduced and 27% (n = 23) were neutral. Of most importance in the context of this study, however, is the considerable proportion (37%) of anglers (n = 31) who stated that they would stop fishing the Worsley if management mechanisms were introduced; it is this group that seems most likely to be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this group are:

- Mostly NZ residents (90%); majority are from Southland (65%)
- Almost all were intermediate/advanced anglers (97%), and most had over 20 years angling experience (84%)

[30] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 49, options 1, 2, 3 (see Appendix 1).
[31] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

- 84% (n = 26) did plan to continue fishing the Worsley in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention.

4.2.10 Summary points

- The issue of crowding is only partly to blame for why anglers have chosen to a) fish the Worsley less often than in the past or b) stop fishing the Worsley completely.
- A small proportion (around 18%) of anglers currently active on the Worsley have been temporally displaced, mainly avoiding the mid-season period because of crowding.
- Most temporally displaced anglers sought alternative rivers and substituted a range of different rivers/waters located in the Southland catchment, including the already popular Mataura, for the Worsley.
- For New Zealand residents and non-residents alike, a slight majority of anglers participating in the study seemed unlikely to return to the Worsley in the future, but this was mainly due to access-related issues rather than crowding.
- A very small proportion of anglers who had chosen not to fish the Worsley in the past had done so because of perceived crowding.
- Of those anglers who had experience of the Worsley (i.e. those who have fished the river before), most Otago resident and non-resident anglers agreed that the river needs management mechanisms to control crowding; in contrast, though, most Southland resident anglers did not think the Worsley needed such mechanisms.
- Most New Zealand resident anglers, especially those from Southland, were unwilling to pay an additional fee for management mechanisms to control crowding; half of non-resident anglers were willing to pay such a fee.
- Just over a third of active anglers on the Worsley may stop fishing the river if management mechanisms to control crowding were introduced; the vast majority are New Zealand resident anglers.

4.3 Clinton

4.3.1 Overview

Overall, 310 anglers stated that they had fished the Clinton once or more in the past. Of those, just over half (56%, n = 173) had purchased their license in the Southland area during the 2018/19 season, with the remaining 44% (n = 146) purchasing theirs in the Otago area. Of those who responded to the question *'Thinking about the Clinton, which statement best reflects your fishing activity?'* (n = 251, see Table 4-5), 42% (n = 105) fished the Clinton less often than in the past or had stopped fishing this particular river completely. A far smaller proportion of anglers (18%, n = 44) fished the Clinton as often or more often as they used to in the past.

***Table 4-5**: Fishing activity on the Clinton*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	12%	13	17%	25	15%	38
I fish here, and more often than I did in the past	2%	2	3%	4	2%	6
I fish here, but less often than I did in the past	9%	10	17%	25	14%	35
I fished here in the past but don't fish here anymore	33%	36	24%	34	28%	70
I have only fished here once in my life	44%	47	38%	55	41%	102
Total	**100%**	**108**	**100%**	**143**	**100%**	**251**

Of the 251 anglers comprised in the Table above, the vast majority were New Zealand residents (76%, n = 192), with the largest proportion coming from Otago (39% of sample, n = 97). Of the remaining New Zealand residents, 88 (35% of sample) were from Southland and 7 (3% of sample) were from outside the Otago/Southland region. In addition, 15% (n = 38) were non-resident angers and 8% (n = 21) did not supply sufficient residency information[32]

4.3.2 Why do some anglers fish the Clinton less often than they used to?

Of the 35 anglers who stated they fished the Clinton less often than in the past, most were experienced and committed anglers[33] (see Appendix 3). Figure 4-21 illustrates the main reasons why these anglers fished the Clinton less often than in the past (Note: n = greater than 35 as anglers could choose multiple options).

[32] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[33] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

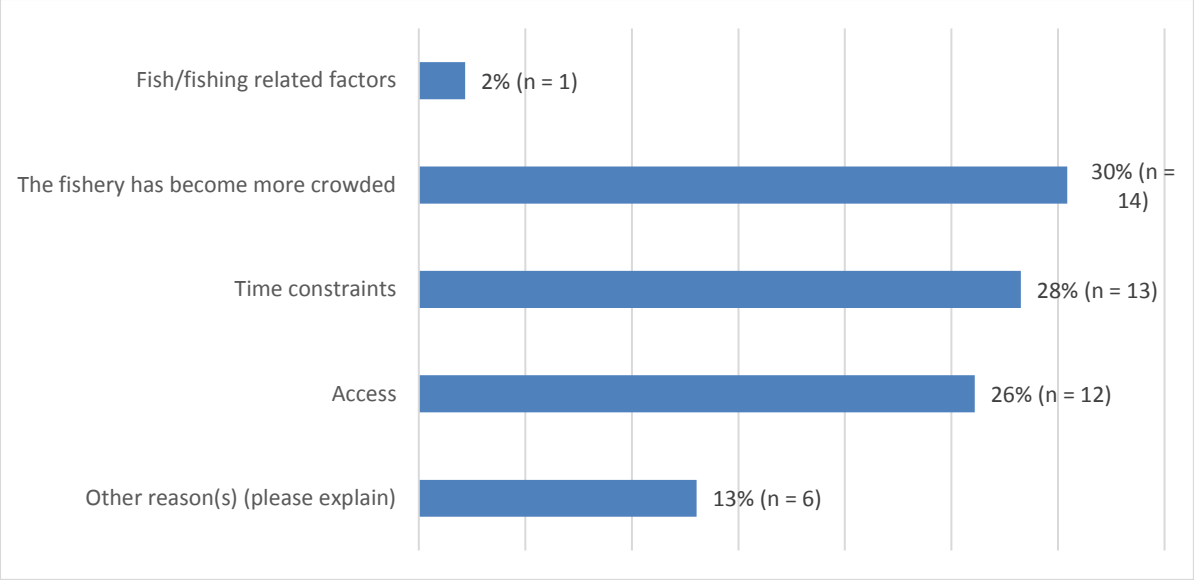

***Figure 4-21**: Reasons for anglers fishing the Clinton less often*

For the anglers participating in this study, crowding, together with a lack of time and difficulties with access, were the main reasons given for fishing the Clinton less often than in the past. Of the 14 anglers who cited crowding as a reason for fishing the Clinton less often, most were New Zealand residents (79%, n = 11), with three coming from Otago and seven from Southland. Of the remaining anglers, two (14%) were non-residents and one (7%) did not provide sufficient residency information. There were a number of different 'Other reasons' anglers gave for fishing the Clinton less, but most also related in some way or other to access issues (e.g. health, moved away) or crowding (e.g. "*Severely overcrowded!!!*"). It should also be noted that the issue of crowding was mentioned only by Southland anglers (n = 2).

4.3.3 Why have some anglers stopped fishing the Clinton?

Of the 70 anglers who stated that they had stopped fishing the Clinton, most, again, were experienced and committed anglers (see Appendix 3). Figure 4-22 illustrates the main reasons why some anglers who used to fish the river had stopped (Note: n = greater than 70 as anglers could choose multiple options).

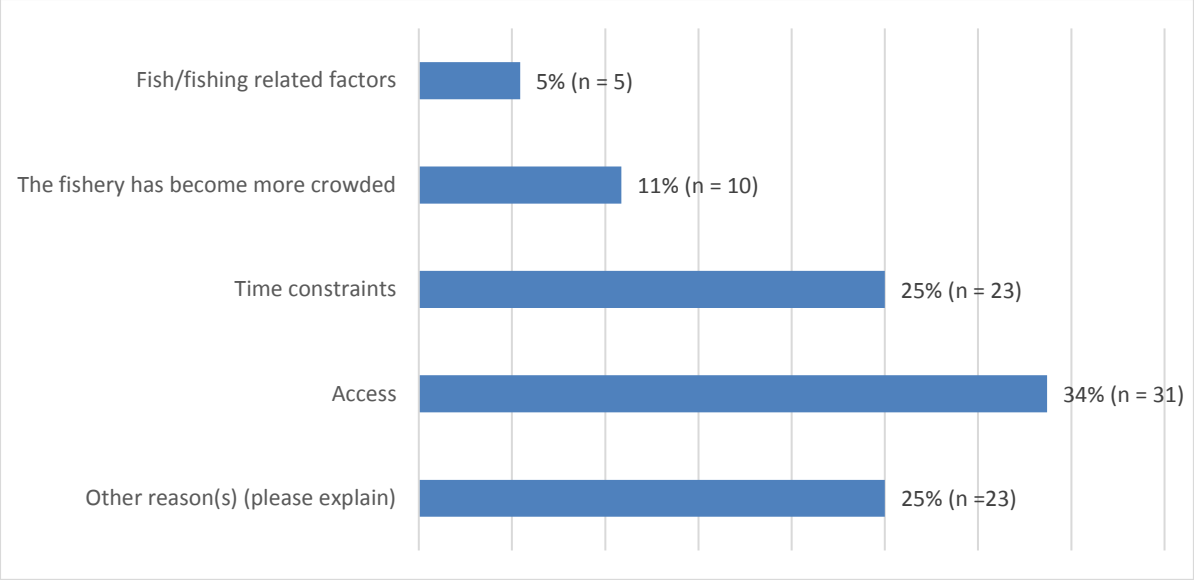

***Figure 4-22**: Reasons for stopping fishing the Clinton*

Access-related issues and time constraints were the main reasons given for why some anglers no longer fished the Clinton. Analysis of open-text responses for 'Other reasons' further revealed that many had stopped fishing the Clinton because, simply, they had moved away from the area. Only 11% (n = 10) of anglers selected the option '*The fishery has become more crowded',* suggesting that crowding was not a major contributing factor in anglers stopping fishing the Clinton. It should be noted, though, that a few anglers (n = 3) did mention crowding-related issues in their responses to 'Other reasons' (e.g. *"Too many people generally"*), with such responses coming exclusively from Otago or Southland residents.

4.3.4 Nature and scope of temporal and spatial displacement on/from the Clinton

4.3.4.1 Temporal displacement

For those anglers who had fished and continued to fish the Clinton, whether to a greater, lesser or similar extent as in the past (n = 79)[34], there is some evidence of temporal displacement occurring. Table 4-6 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the Clinton.

[34] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 38) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 6) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 35).

Table 4-6 *Temporal patterns of behaviour on the Clinton*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	16%	4	40%	19	32%	23
I've always done most of my fishing here in the mid-season	48%	12	40%	19	42%	31
I've always done most of my fishing here in the late season	20%	5	4%	2	10%	7
I used to mostly fish here in the early season but now avoid this period	8%	2	6%	3	7%	5
I used to mostly fish here in the mid-season but now avoid this period	8%	2	6%	3	7%	5
I used to mostly fish here in the late season but now avoid this period	0%	0	4%	2	3%	2
Total	**100%**	**25**	**100%**	**48**	**100%**	**73**

*does not total 79 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the Clinton, the vast majority (84%, n = 61) regularly fished at the same time of year. However, the remaining 16% (n = 12) of anglers had been temporally displaced and had changed when they fished during the season, with most choosing to avoid either the early (November – December) or mid-season period (January - March). Of the five anglers who stated that they avoid the early season period, most were New Zealand residents (80%, n = 4), with two coming from Otago and two from Southland. The remaining angler did not provide sufficient residency information. Of those avoiding the early season period, two made reference to crowding issues (e.g. *"Too many guided fishers"*). Similarly, of the five anglers who stated they avoid the mid-season period, 80% (n = 4) were New Zealand residents (three from Otago and one from Southland). The remaining angler did not provide sufficient residency information. Of those avoiding the mid-season period, two made reference to crowding issues (e.g. *"Extreme over-crowding by international anglers"*). Other comments related, broadly, to access (e.g. too time consuming).

4.3.4.2 Spatial displacement

Of the small group of 12 anglers temporally displaced, just over half (58%, n = 7) had substituted an alternative river for the Clinton during the period of displacement. All these anglers were New Zealand residents, with five coming from Otago and two from Southland. Stated alternative rivers/waters include (number in brackets = no. of mentions):

- Clutha (2)
- Mararoa (1)
- Waikaia (1)
- Tributaries of Lake Manapouri (1)

Substituting any of the rivers listed above for the Clinton might reasonably be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different geographical areas to fish). Based on the limited data available, the Clutha appeared to be the favoured alternatives.

4.3.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the Clinton once or more in the past (n = 251) were asked to reflect on whether any experience(s) on the Clinton had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 247 anglers who answered the question, only 4% (n = 9) stated that they had experienced such a situation. Most of those (78%, n = 9) were New Zealand residents (five from Otago and two from Southland). Of the remainder, one angler was a non-resident and the other angler did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4-23 below (Note: n = greater than 9 as anglers could choose multiple options).

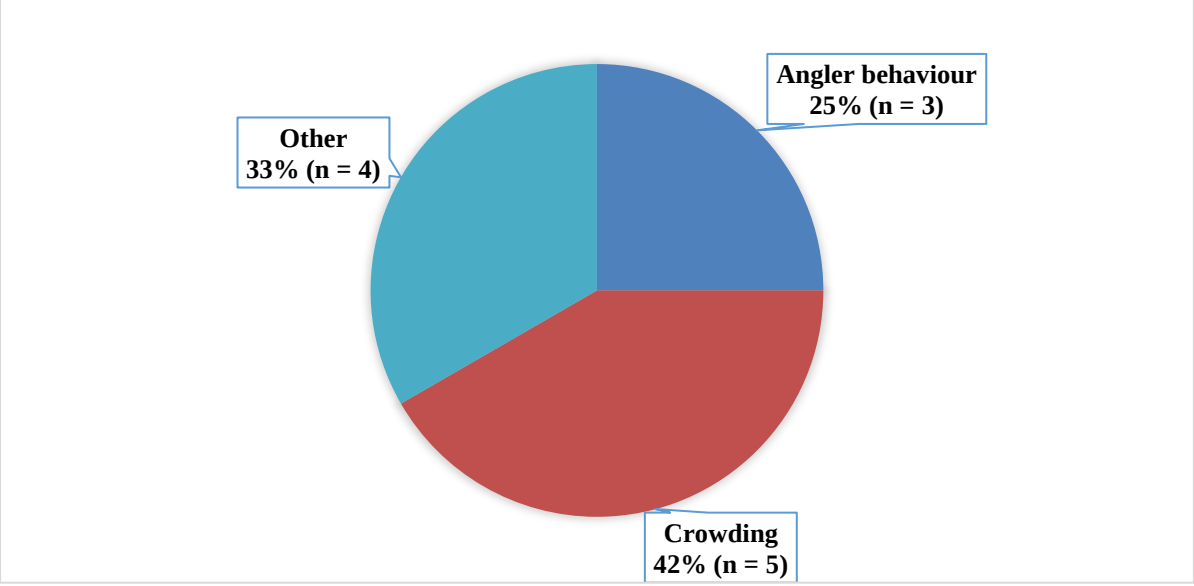

***Figure 4-23**: Factors contributing to potential absolute displacement (Clinton)*

Crowding was the main factor contributing to potential absolute displacement as a result of a bad experience on the Clinton. The five anglers who chose 'Crowding' from the list of possible options were all New Zealand residents (three from Otago and two from Southland). One angler who selected 'Other' also used this as an opportunity to further comment on the issue of crowding:

> *It is like the United Nations and I end up fishing the very difficult to access sections to avoid other anglers. This involves serious bush bashing. This annoys me when overseas anglers are enjoying the very best sections of the river* (Southland resident).

Other issues included sandflies and trampers throwing rocks into the water (presumably disturbing the fish). Despite such issues, though, it should be reiterated that the vast majority

of anglers (96%) had not been put off the sport of angling as a result of any bad experience on the Clinton.

4.3.6 Future intentions of all anglers who have previously fished the Clinton

Anglers who identified as having visited the Clinton once or more in the past (n = 251) were also asked to a) consider whether they intended to fish the river in the future and b) explain the main reason why/why not. Of the 246 anglers who responded to the question, overall just 35% (n = 87) did intend to return and 20% (n = 50) did not. The remaining 44% (n = 109) were unsure if they would return or not in the future. As can be seen in Figure 4-24 below, compared with Otago resident anglers, somewhat greater proportions of Southland and non-resident anglers did intend to return to the Clinton. Non-resident anglers, in particular, appeared the most likely of all groups to return to the Clinton on the future.

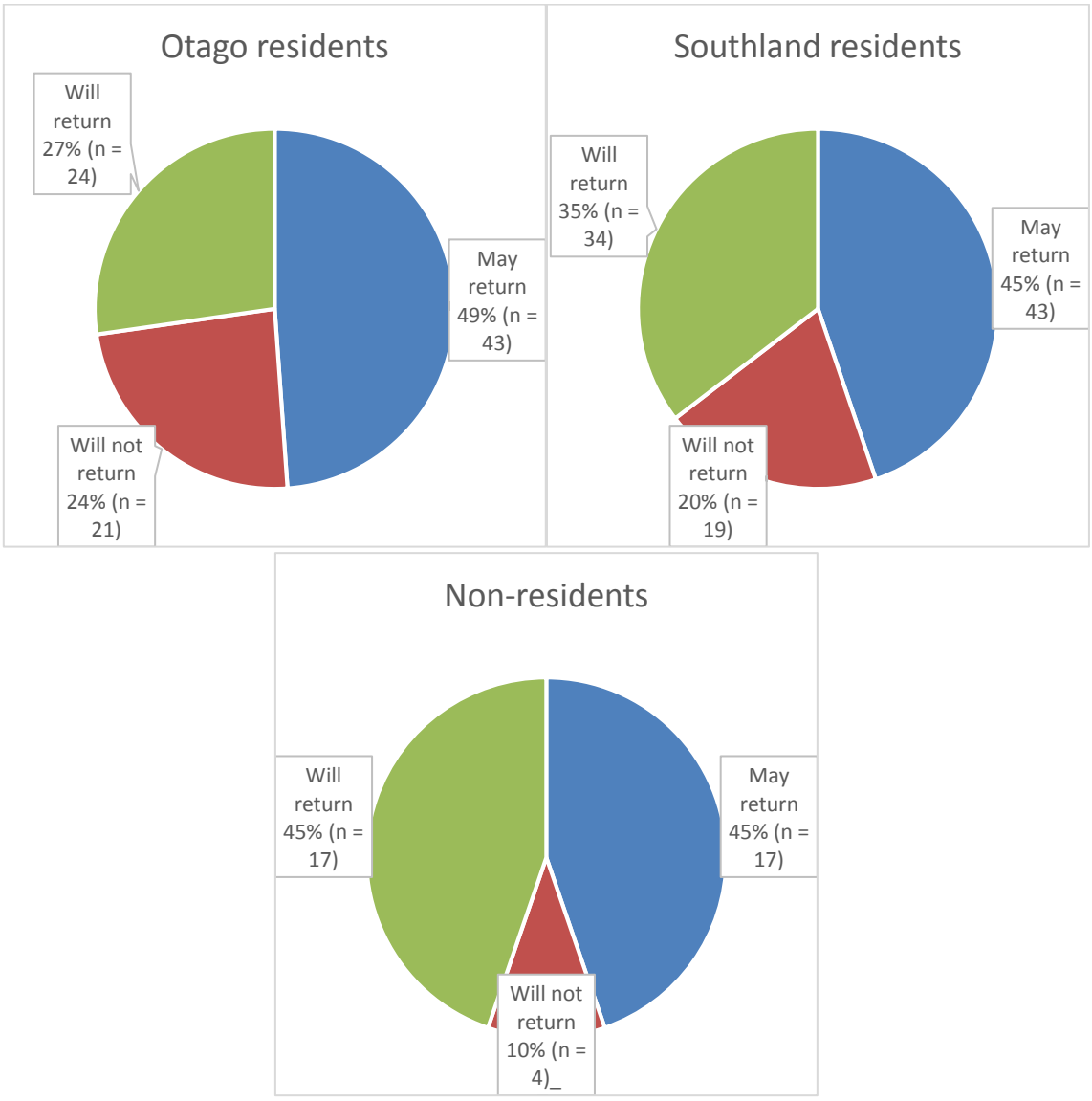

Figure 4-24: *Resident vs. non-resident future intentions to return to the Clinton*[35]

[35] Chart for Other NZ resident not provided due to low numbers of anglers in this sub-group.

Open-text data explaining the main reasons why anglers planned to return to the Clinton or not was analysed for themes. In general, for those who did intend to return to the Clinton in the future, anglers' motivations can, once again, be encapsulated in the theme 'Scenery/general experience'. This theme, which was common amongst all residency sub-groups, relates to the ways in which anglers described their positive experiences of the Clinton, as illustrated in the following extracts:

> *Spectacular scenery, great access, great fighting rainbows, abundant fishery* (Otago resident angler)
>
> *I love the area and it's an amazing fishery* (Southland resident angler)
>
> *Magnificent fishery in gorgeous inspiring pristine environment, you can feel the serenity!* (Non-resident angler).

As these extracts illustrate, the Clinton continues to provide an excellent backcountry experience, rich in scenery and with abundant fishing opportunities. Of concern, though, amongst such positive comments were a small number of other, more negative comments (n = 6), related to crowding, all of which came from Otago or Southland residents. As this Southland resident angler pointed out, for example:

> *Absolutely over-fished, itinerant guides (the fishing equivalent of freedom campers), lack of angler etiquette … crowding* (Southland resident).

Similar sentiments were shared by some of those anglers (n = 8) who stated that they did not intend to return to the Clinton in the future:

> *Just too many people up there* (Southland resident)
>
> *Over crowed. I've heard of guides setting up camps and clients getting flown in on a daily basis. Horrible* (Otago resident).

Again, comments such as these came mostly from Otago or Southland residents. In most cases, however, access-related issues (e.g. age/health, distance) were to blame for anglers, residents and non-residents alike, choosing not to return to the Clinton in the future. Similar access-related issues were also noted by most of those anglers who were as yet undecided about returning in the future. In addition, though, crowding was also mentioned by small number of undecided anglers (n = 7; almost all Southland residents).

4.3.7 Why have some anglers never fished the Clinton?

Around 90% of anglers who participated in the survey had never fished the Clinton before (n = 2,231[36]) and, of those, 63% (n = 1,414) provided an explanation for this. Figure 4-25 illustrates the main reasons why these anglers had never fished the Clinton (Note: n = greater than 1,414 as anglers could choose multiple options).

[36] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Clinton in the past (n = 251) from the total number of surveys completed (n = 2,482).

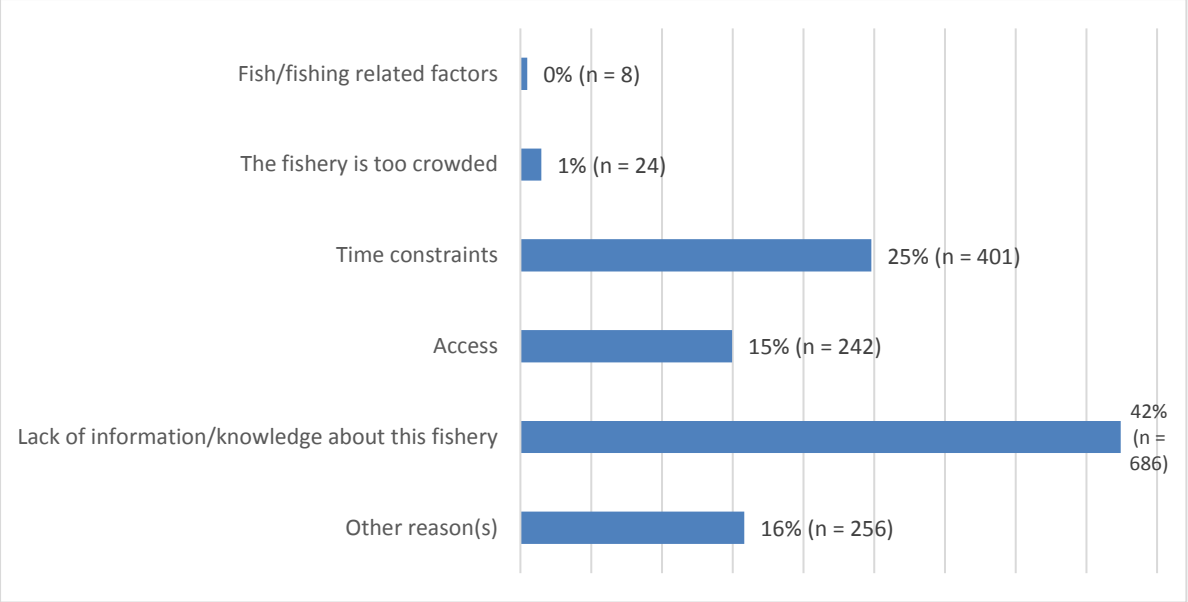

Figure 4-25: *Reasons for never fishing the Clinton*

For anglers who had never fished the Clinton before, there appears to be little issue with potential crowding. Instead, a lack of information/knowledge about the fishery, together with time constraints and other access-related issues, were the main reasons given by these anglers for not fishing the Clinton in the past. Analysis of open-text responses for 'Other reason(s)' indicated that time constraints, as part of broader access-related issues (e.g. age-related, distance from home etc.), and a general lack of interest and/or preference for other rivers, were the main reasons why many anglers had never fished Clinton.

4.3.8 Future intentions of anglers who have never previously fished the Clinton

Those anglers who had never fished the Clinton before were also asked to consider whether they intended to fish the river in the future. Of the 1,615 anglers who responded, only 12% (n = 198) indicated that they did intend to fish the Clinton in the future; 43% (n = 694) stated they did not intend to fish the Clinton in the future; the remaining 45% (n = 723) were unsure whether they would fish the Clinton or not in the future.

Those answering 'no' (n = 694) were further prompted to explain the reason(s) why they did not intend to fish the Clinton in the future; 69% (n = 481) responded. Analysis of open-ended responses revealed that issues related to access (e.g. distance from home, lack of time, age/health etc.) underpinned anglers' lack of willingness to fish the Clinton. Issues to do with perceived crowding were only mentioned by a few anglers (ten), mainly Otago residents (e.g. *"too much angling pressure").*

4.3.9 Management mechanisms and potential implications

4.3.9.1 Does the Clinton need management mechanisms to control crowding?

Of the 1,679 anglers who responded to the question asking about the need for management mechanisms to control crowding on the Clinton[37], 227 (14%) had fished the Clinton at least once in the past and 1,452 (86%) had not. Of the 227 anglers who had fished the river, 45% (n = 101) agreed that the Clinton needed management mechanisms to control crowding and 17% (n = 39) disagreed; 38% (n = 87) were neutral. As with other Southland rivers in this study, anglers who had not fished the Clinton (n = 1,452) were much more neutral, with 66% (n = 959) neither agreeing nor disagreeing with the statement. Of the remaining anglers, 329 (23%) agreed and 164 (11%) disagreed that the Clinton needed management mechanisms to control crowding. These findings are represented in Figure 4-26 below.

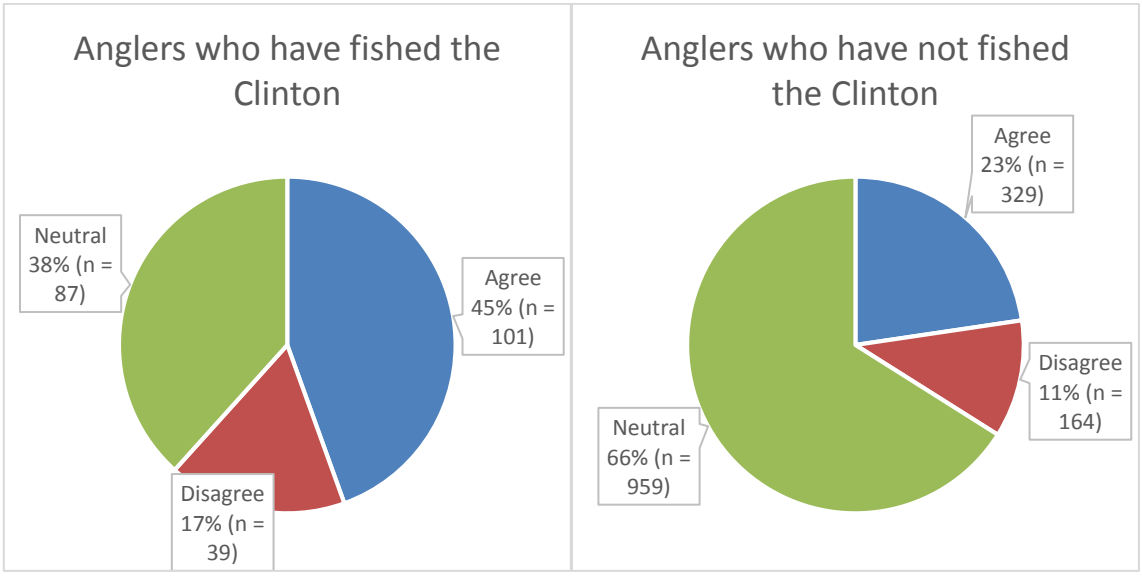

Figure 4-26: *The Clinton needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the Clinton, comparisons between different groups based on residency status (Figure 4-27 below) revealed that, proportionately, Otago residents were most in favour of the introduction of some form of management mechanisms to control crowding on the Clinton.

[37] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).

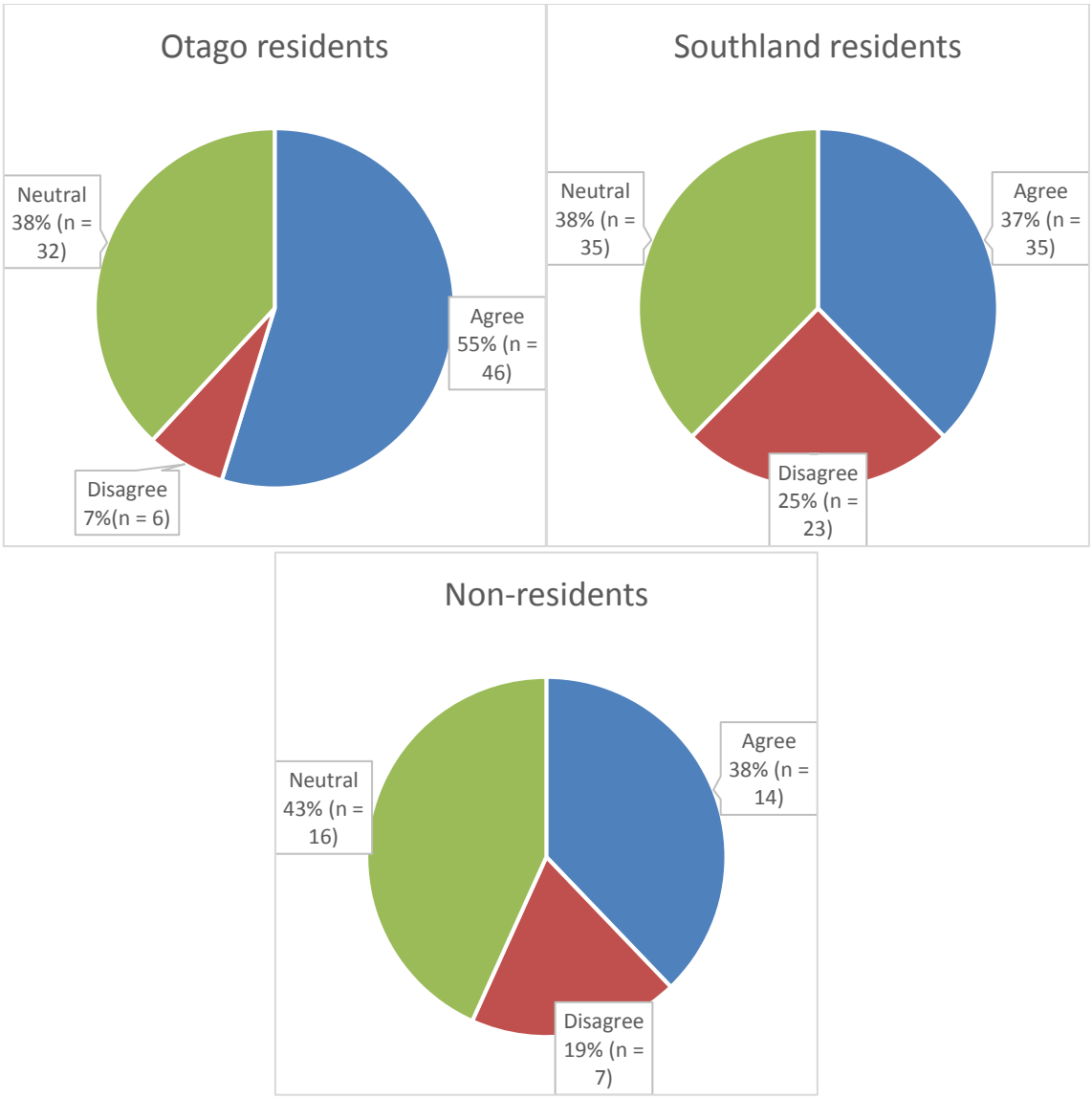

***Figure 4-27**: Resident vs. non-resident opinions: The Clinton needs management mechanisms to control crowding*

New Zealand residents from Southland and non-residents appeared least in favour of the introduction of management mechanisms to control crowding on the Clinton.

4.3.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the Clinton at some point in the past and who also responded to question 159[38] (n = 226), only 28% (n = 64) stated that they would be prepared to pay such a charge and 51% (n = 114) would not. The remaining 21% of anglers (n = 48) were neutral in their responses. This data is represented in Figure 4-28.

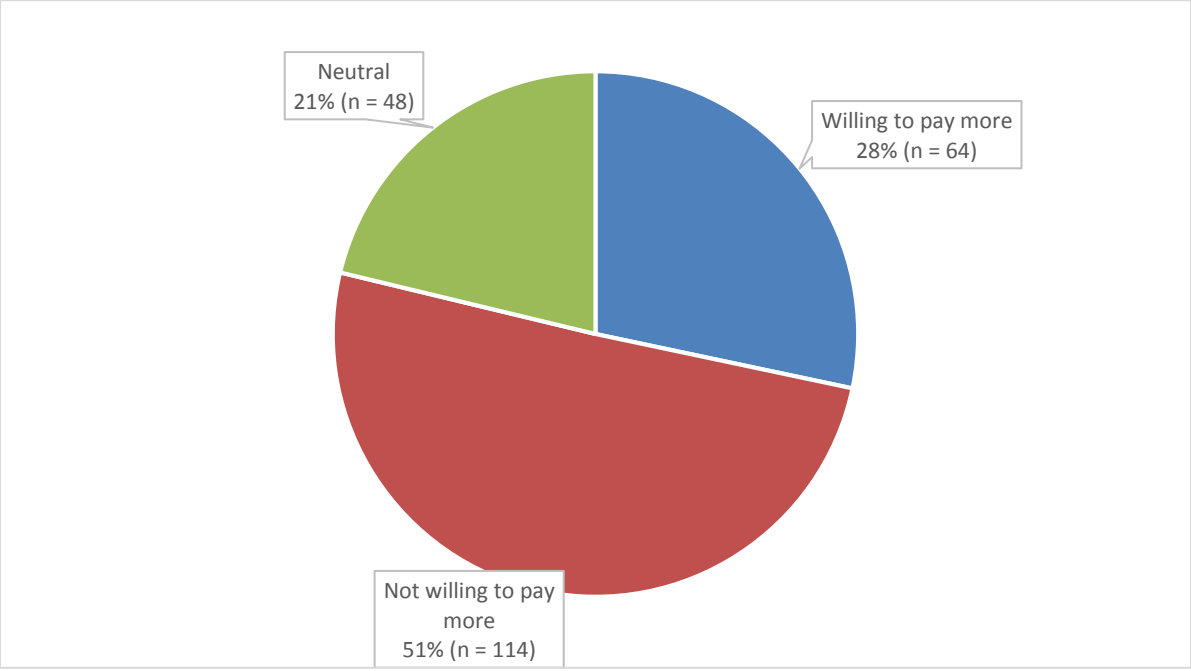

Figure 4-28: *Willingness of anglers who have fished the Clinton to pay an increased administration fee for management mechanisms*

From comparison of different groups based on residency status (see Figure 4-29 below), it is clear that non-residents were considerably more willing than other groups to pay an additional administration charge for management mechanisms to control crowding on the Clinton.

[38] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

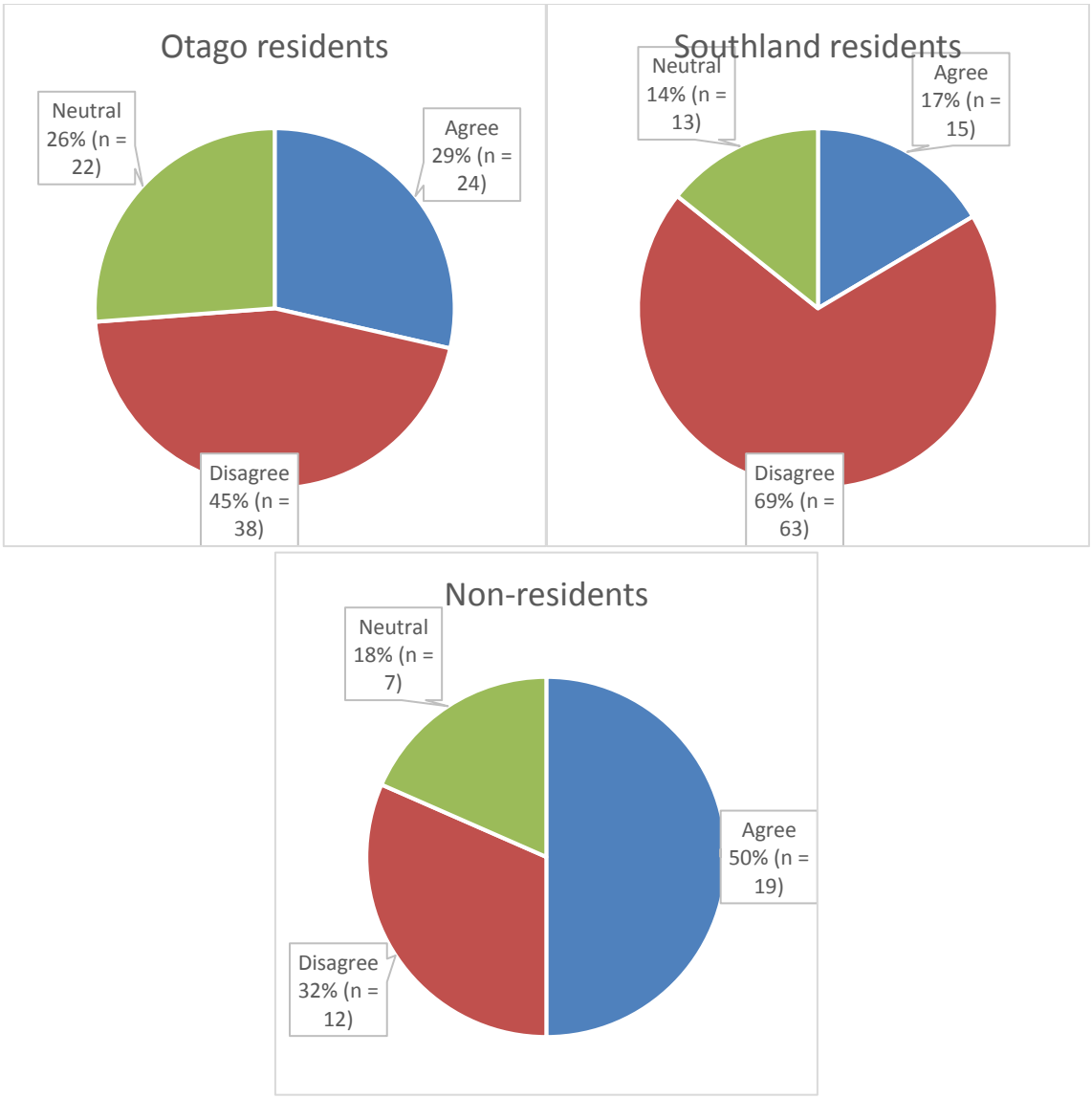

***Figure 4-29**: Resident vs. non-resident willingness to pay more for management mechanisms on the Clinton*

As was the case with the Worsley, Southland residents were most against paying an additional fee for management mechanisms to control crowding.

4.3.9.3 *Potential displacement resulting from the introduction of management mechanisms to control crowding*

If management mechanisms were to be introduced on the Clinton, some anglers who currently fish the river may be displaced. Figure 4-30 shows the proportion of anglers who stated that they would stop fishing the river if management mechanisms were to be introduced.

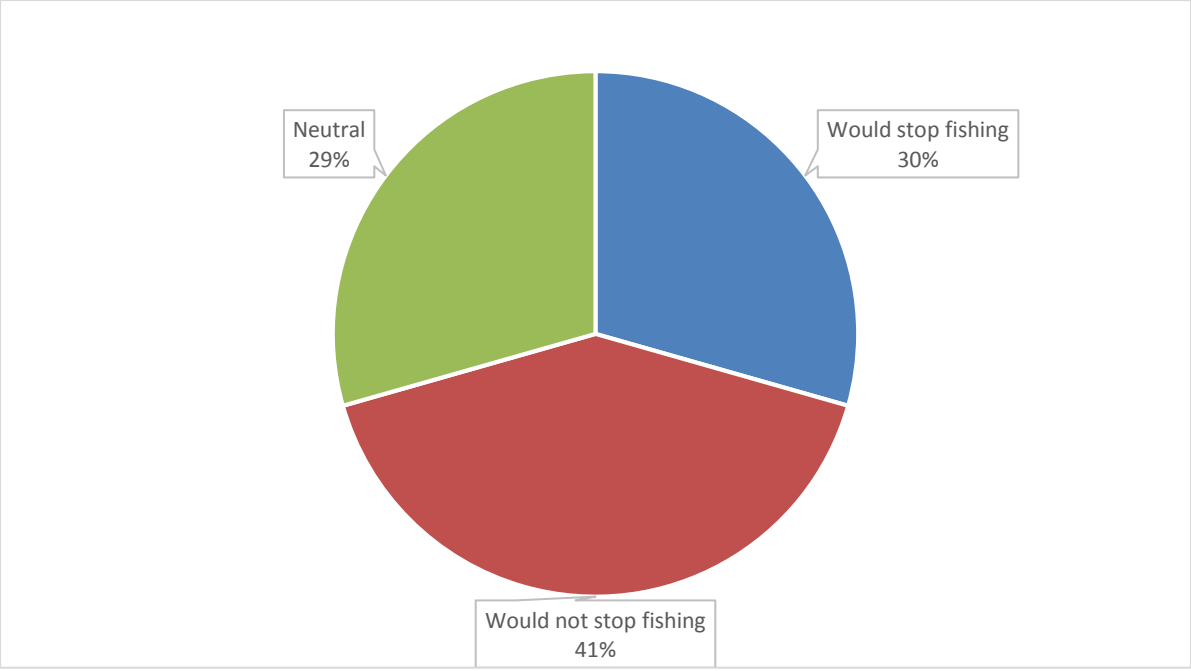

Figure 4-30: *Proportion of active anglers on the Clinton who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-30, of those anglers currently active on the river[39] and who also provided an answer to question 160[40] (n = 68), 41% (n = 28) said they would not stop fishing the Clinton if management mechanisms were introduced and 29% (n = 20) were neutral. Of critical importance in the context of this study, however, is the 30% of anglers (n = 20) who stated that they would stop fishing the Clinton if management mechanisms were introduced; it is this group that may be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this group are:

- Mostly NZ residents (95%) with largest proportion Southland residents (50%); only 5% were non-residents
- Almost all (90%) were intermediate/advanced anglers and, of those, most had over 20 years angling experience
- 80% (n = 16) did plan to continue fishing the Clinton in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention.

[39] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 83, options 1, 2, 3 (see Appendix 1).
[40] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

4.3.10 Summary points

- The issue of crowding is the main reason why anglers fish the Clinton less often than in the past; crowding, however, does not appear to have stopped many anglers from fishing the Clinton.
- A small proportion (around 16%) of anglers currently active on the Clinton have been temporally displaced; those that have mainly avoid the early or mid-season periods partly, but not solely, because of crowding.
- Around half of temporally displaced anglers have substituted different rivers/waters for the Clinton.
- Non-resident anglers appeared much more likely than New Zealand resident anglers to return to the Clinton in the future.
- An extremely small proportion of anglers who had chosen not to fish the Clinton in the past had done so because of perceived crowding.
- Just under half of all anglers who had experience of the Clinton (i.e. those who have fished the river before) agreed that the river needs management mechanisms to control crowding; Otago residents represented the bulk of those supporting such mechanisms, yet at the same time they, along with Southland residents, were among the least willing to pay extra for this.
- Around a third of active anglers on the Clinton may stop fishing the river if management mechanisms to control crowding were introduced; most are Southland residents.

4.4 Upper Mataura

4.4.1 Overview

Overall, 1,156 anglers stated that they had fished the upper Mataura once or more in the past. Of those, just over half (53%, n = 610) had purchased their license in the Southland area during the 2018/19 season, with the remaining 47% (n = 546) purchasing theirs in the Otago area. Of those who responded to the question *'Thinking about the upper Mataura, which statement best reflects your fishing activity?'* (n = 1,035, see Table 4-7), a large proportion of anglers (81%, n = 842) had fished the river more than once. A considerable proportion of these anglers fished the upper Mataura less often than in the past (25%) or had stopped fishing this particular river altogether (18%). Only 19% (n = 193) had fished the river just once.

***Table 4-7**: Fishing activity on the upper Mataura*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	23%	109	33%	184	28%	293
I fish here, and more often than I did in the past	8%	39	12%	66	10%	105
I fish here, but less often than I did in the past	24%	118	25%	138	25%	256
I fished here in the past but don't fish here anymore	24%	114	13%	74	18%	188
I have only fished here once in my life	21%	103	16%	90	19%	193
Total	**100%**	**483**	**100%**	**552**	**100%**	**1035**

Of the 1,035 anglers comprised in the Table above, most were New Zealand residents (66%, n = 684) from Otago (n = 337) or Southland (n = 312). In addition, 23% (n = 240) were non-resident angers and 11% (n = 111) did not supply sufficient residency information[41]

4.4.2 Why do some anglers fish the upper Mataura less often than they used to?

Of the 256 anglers who fished the upper Mataura less often than in the past, most were experienced and committed anglers[42] (see Appendix 3). Figure 4-31 illustrates the main reasons why these anglers fished the upper Mataura less often than in the past (Note: n = greater than 256 as anglers could choose multiple options).

[41] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[42] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

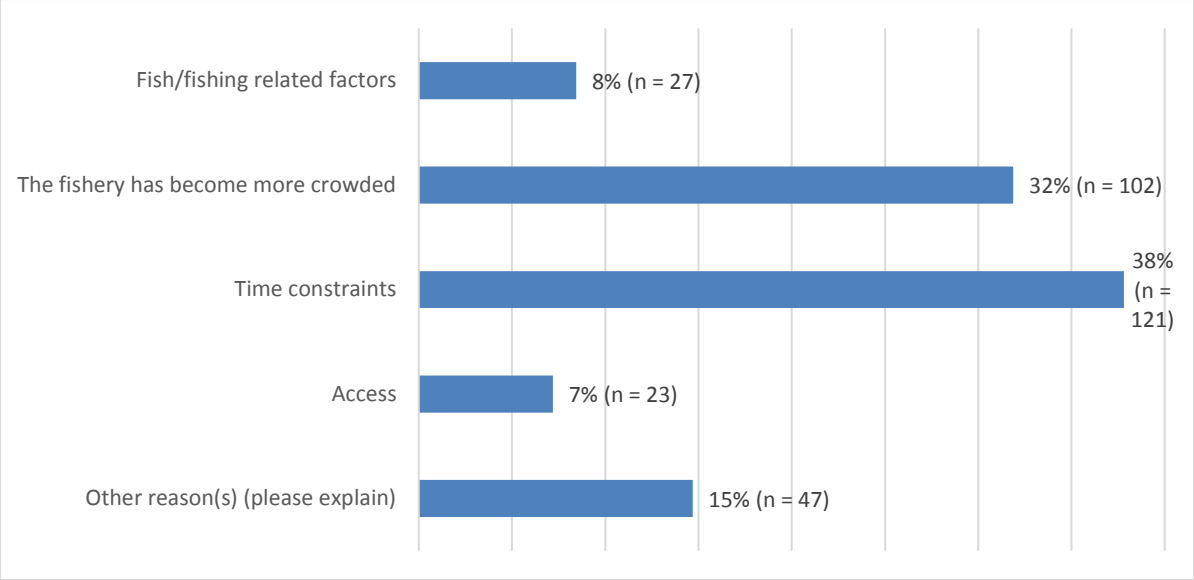

***Figure 4-31**: Reasons for anglers fishing the upper Mataura less often*

For the anglers participating in this study, a lack of time appeared to be the main reason for fishing the upper Mataura less often than in the past. Crowding, however, was another major issue; of the 102 anglers who cited crowding as a reason for fishing the upper Mataura less often, most were New Zealand residents (65%, n = 66), with 39 coming from Otago, 25 from Southland and 2 from outside the Otago/Southland region. Of the remaining anglers, 25 (24%) were non-residents and 11 (11%) did not provide sufficient residency information. In general, issues to do with access (e.g. age/health, moved away from area), were some of the main 'Other reasons' anglers gave for fishing the upper Mataura less often.

4.4.3 Why have some anglers stopped fishing the upper Mataura?

Of the 188 anglers who had stopped fishing the upper Mataura, most, again, were experienced and committed anglers (see Appendix 3). Figure 4-32 illustrates the main reasons why some anglers who used to fish the river had now stopped (Note: n = greater than 188 as anglers could choose multiple options).

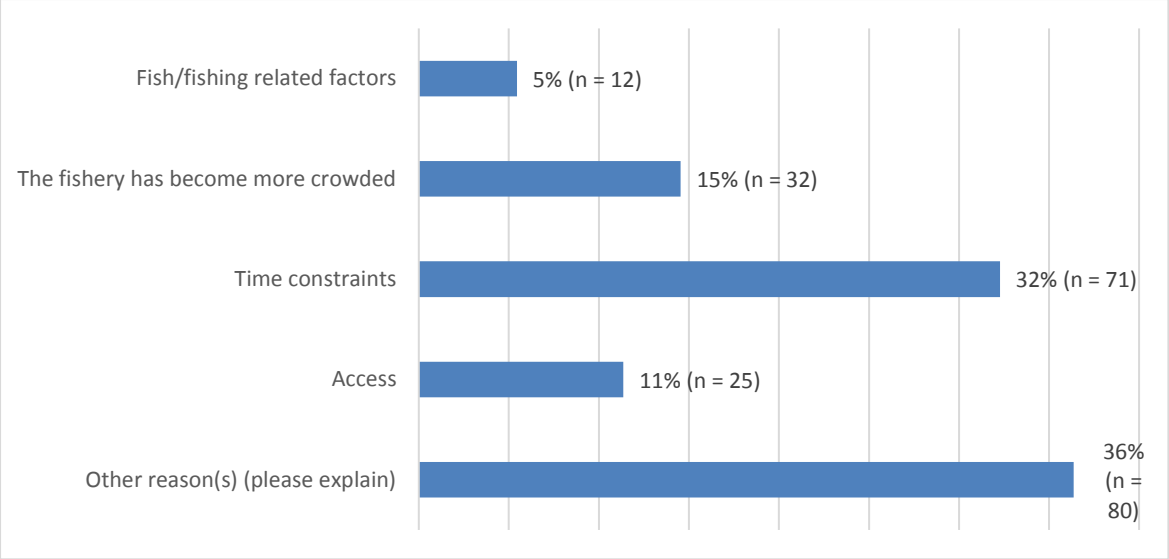

Figure 4-32: *Reasons for stopping fishing the upper Mataura*

Crowding was not the main reason why some anglers had stopped fishing the upper Mataura, certainly when compared with those who simply fished the river less often (see Figure 4-31). Of note, however, of the 32 anglers that did cite crowding as a reason for stopping fishing the upper Mataura, a disproportionately high proportion were from Southland (44%, n = 14). On the whole, though, despite some issues to do with crowding, time constraints and other access-related issues appeared to the main reasons why some anglers had stopped fishing the upper Mataura. Indeed, the majority of open-text responses for 'Other reasons' relate to access issues/time constraints (e.g. moved away, deteriorating fitness). It is perhaps also worth noting that the ill-effects of dairy farming was also mentioned by a couple anglers as a reason for stopping fishing the upper Mataura (e.g. *"Dirty dairying ruining the river"*).

4.4.4 Nature and scope of temporal and spatial displacement on/from the upper Mataura

4.4.4.1 Temporal displacement

For those anglers who had fished and continued to fish the upper Mataura, whether to a greater, lesser or similar extent as in the past (n = 654)[43], there is some, albeit very limited, evidence of temporal displacement occurring. Table 4-8 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the upper Mataura.

[43] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 293) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 105) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 256).

Table 4-8 *Temporal patterns of behaviour on the upper Mataura*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	23%	56	23%	83	23%	139
I've always done most of my fishing here in the mid-season	48%	118	48%	174	48%	292
I've always done most of my fishing here in the late season	18%	43	17%	63	17%	106
I used to mostly fish here in the early season but now avoid this period	4%	9	4%	15	4%	24
I used to mostly fish here in the mid-season but now avoid this period	5%	13	6%	22	6%	35
I used to mostly fish here in the late season but now avoid this period	2%	6	2%	6	2%	12
Total	**100%**	**245**	**100%**	**363**	**100%**	**608***

*does not total 654 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the upper Mataura, the vast majority (88%, n = 537) regularly fished at the same time of year. However, the remaining 12% (n = 71) of anglers had been temporally displaced, and most avoided the popular mid-season period (December - February). Of the 35 anglers who avoided the mid-season period, most were New Zealand residents (69%, n = 24), with 10 coming from Otago, 13 from Southland and one from outside the Otago/Southland region). The remainder comprised nine non-resident anglers and two who did not provide sufficient residency information. For New Zealand residents and non-residents alike, crowding was the main and virtually only reason cited for avoiding the mid-season period. Crowding was also one of the main reasons why some anglers, in this instance exclusively New Zealand residents, avoided the early season. In addition, poor weather and time constraints/access-related issues were also given as reasons for avoiding the early season. For residents and non-residents alike, crowding and time constraints were the main reasons given for avoiding the late season.

4.4.4.2 Spatial displacement

Of the 71 anglers temporally displaced, most (76%, n = 54) had substituted an alternative river for the upper Mataura for during the period of displacement. Stated alternative rivers/waters include (popular rivers are bolded and number in brackets = no. of mentions):

- **Waikaia (9)**
- **Aparima (8)**
- **Oreti (6)**
- **Mataura (lower reaches) (5)**
- **Clutha (5)**
- Lake Wakatipu (2)
- Hamilton Burn (2)
- Waiau (2)
- Pomahaka (1)
- Foveaux Strait (1)
- Ahuriri (1)
- Caples (1)
- Lake Dunstan (1)
- Taieri (1)
- Irthing (1)
- Wairaki (1)
- Lake Onslow (1)
- Waitaki (1)
- Otamita (1)
- Waituna (1)

Any shift from the upper to lower reaches of the Mataura is evidence of *intra*-site spatial displacement, as is, arguably, substituting the Waikaia for upper Mataura. However, when any of the other rivers listed above is substituted for the upper Mataura, this might reasonably be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different geographical areas to fish). In terms of inter-site spatial displacement, the Clutha and Aparima appeared to be the most favoured alternatives. A closer look at residency sub-groups reveals that Southland residents tended to favour the lower reaches of the Mataura and the Aparima, whereas Otago residents and non-residents favoured the Waikaia.

4.4.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the upper Mataura once or more in the past (n = 1,156) were asked to reflect on whether any experience(s) on the upper Mataura had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 1001 anglers who answered the question, 7% (n = 68) stated that they had experienced such a situation. Most of those (72%, n = 49) were New Zealand residents (25 from Otago, 22 from Southland and two from outside the Otago/Southland region). In addition, 13 were non-residents and six did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4-33 below (Note: n = greater than 68 as anglers could choose multiple options).

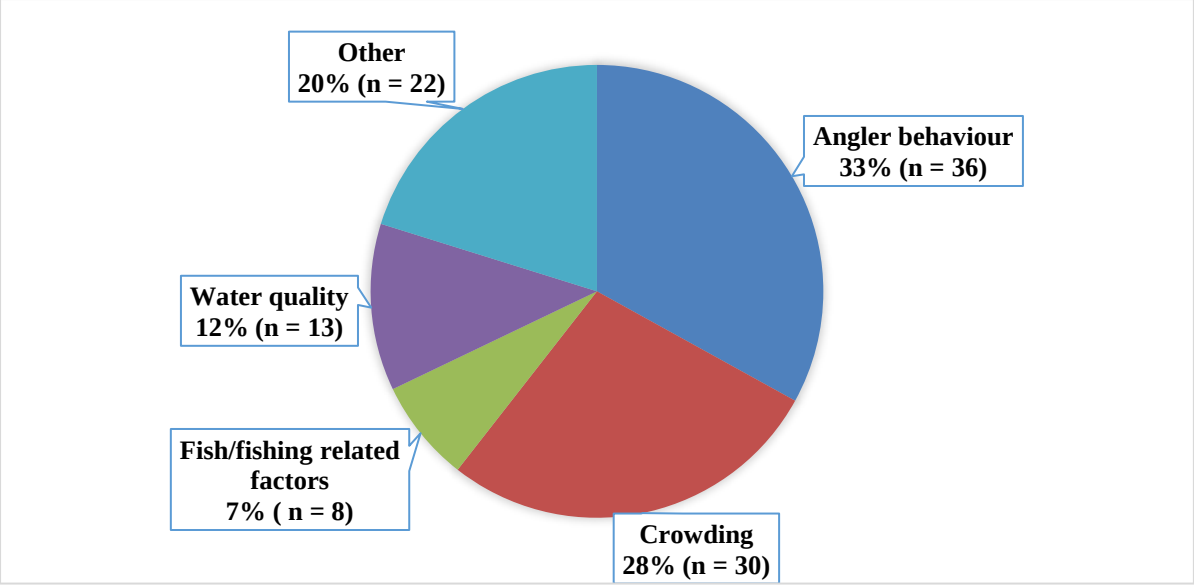

***Figure 4-33**: Factors contributing to potential absolute displacement (upper Mataura)*

Angler behaviour and crowding were the main factors contributing to potential absolute displacement as a result of a bad experience on the upper Mataura. The issue of angler behaviour, presumably poor behaviour, was selected by anglers from all residency sub-groups. Open-text responses for 'Other' reveals that anglers' disgruntlement may to some degree be proportioned to poor guide behaviour as well as, or instead of, poor angler behaviour (e.g. *"Rude guides", "Guide … thinks it's their right"*). Whereas angler behaviour was an issue for anglers from all residency sub-groups, crowding appeared to be more of an issue for Otago/Southland residents (77% of anglers who selected this option were from Otago or Southland). Interestingly, in terms of potential absolute displacement, water quality also appeared to be more of an issue for the upper Mataura than it is for the other Southland rivers in this study. Some of this may be linked to broader concerns about the effects of dairy farming on upper Mataura water quality (see, for example, section 4.4.3). In addition to the issues mentioned, there was also evidence that a few anglers had considered giving up the sport of angling due to landowner-enforced restrictions that limit access to some parts of the upper Mataura (e.g. *"Crazed landholder at … a marked F&G access point who indicated we could only access the water by jumping off the bridge and could not cross any gates/fences, despite the gate not being on his land"*).

4.4.6 Future intentions of all anglers who have previously fished the upper Mataura

Anglers who identified as having visited the upper Mataura once or more in the past (n = 1,156) were also asked to a) consider whether they intended to fish the river in the future and b) explain the main reason why/why not. Of the 1003 anglers who responded to the question, overall 63% (n = 636) did intended to return and only 9% (n = 88) did not. The remaining 28% (n = 279) were unsure if they would return or not in the future. As can be seen in Figure 4-34 below, greater proportions of Southland and non-resident anglers planned to return to the upper Mataura compared to Otago residents and other NZ residents from further afield.

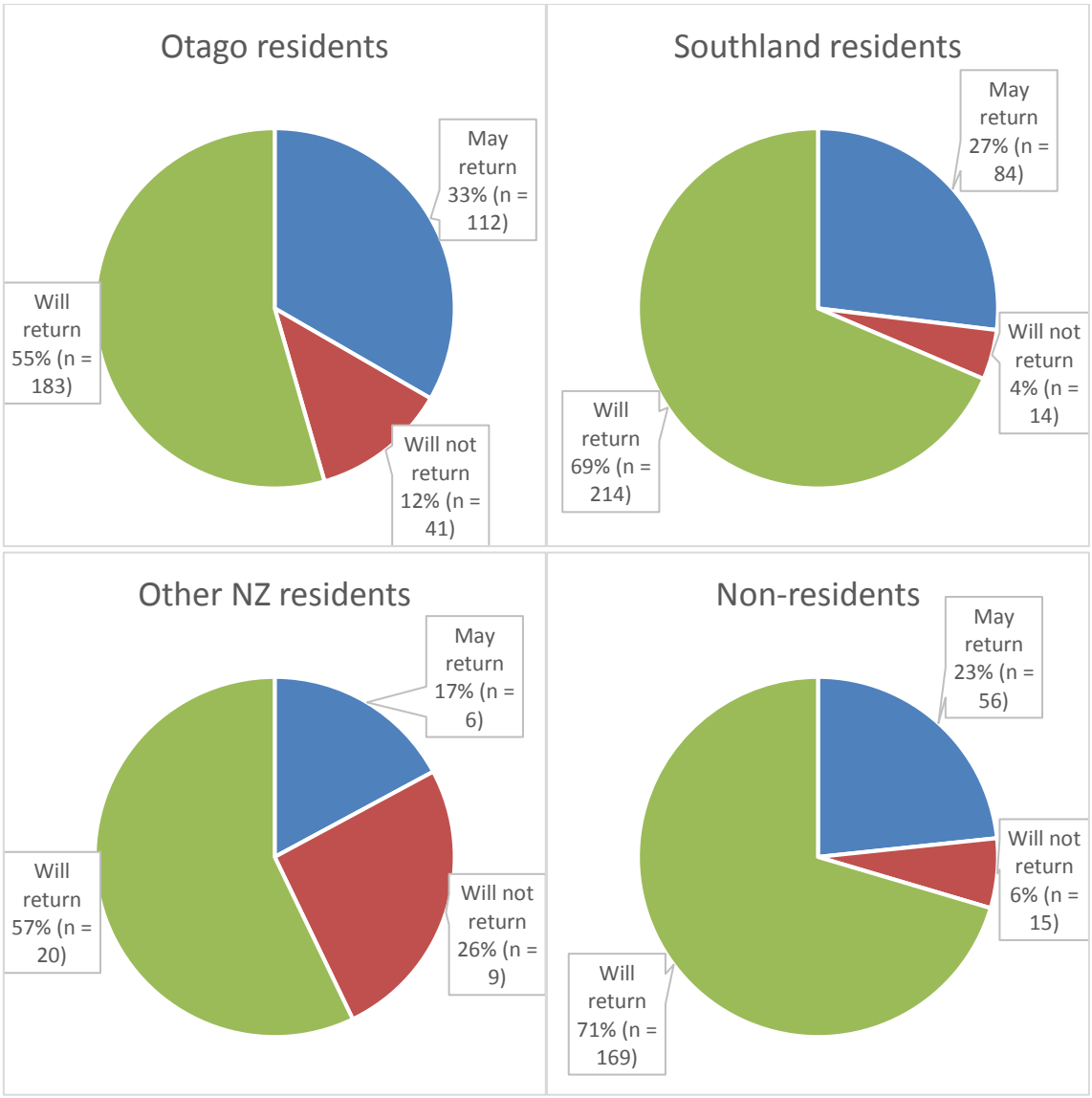

Figure 4-34: *Resident vs. non-resident future intentions to return to the upper Mataura*

Open-text data explaining the main reasons why anglers planned to return to the upper Mataura or not was analysed for themes. As per the other Southland rivers in this study, in general for those who did intend to return to the upper Mataura in the future anglers' motivations can be encapsulated in the theme 'Scenery/general experience'. As this non-resident angler put it, quite simply *"It's the Mataura. Possibly one of the best fisheries in the world"*. Similar sentiments were shared by Otago and Southland residents, for example *"The Mataura is one of the finest rivers in the world"* and *"One of the greatest … fisheries of (sic) the world!!"* Added to this, for Southland anglers the upper Mataura also represented a particularly convenient option. Interestingly, amongst those anglers that did plan to return to the upper Mataura, there was also sense that the river still had the capacity to cope with increased angling pressure, so much so that crowding, whilst inevitable, was yet to spoil the experience. As this Otago angler explained, for example, *"Its high number of trout makes it a worthwhile experience even though the river receives … intense angling pressure"*. Or, as this non-resident angler noted, the upper Mataura is an

Utterly unique river that is worth persevering with despite the increased angling pressure. You just have to pick your times, avoid weekends and public holidays if possible and get in early.

The question remains though, exactly how much increased angling pressure can the upper Mataura cope with before these anglers decide not to return in the future? For residents and non-resident anglers alike who did not plan to return, or were uncertain about returning, in the future, crowding was certainly one of the reasons for this (e.g. *"Guides hammering it"* and *"Too many cars/anglers in this area now"*). Crowding, however, was just one of the reasons why some anglers did not plan to return to the upper Mataura, and other issues to do with access (e.g. lack of time, age/health, moved away) were more prevalent. Accordingly, the question of how much angling pressure is too much remains open at this stage.

4.4.7 Why have some anglers never fished the upper Mataura?

Around 53% of anglers who participated in the survey had never fished the upper Mataura before (n = 1,326[44]) and, of those, 59% (n = 782) provided an explanation for this. Figure 4-35 illustrates the main reasons why these anglers had never fished the upper Mataura (Note: n = greater than 782 as anglers could choose multiple options).

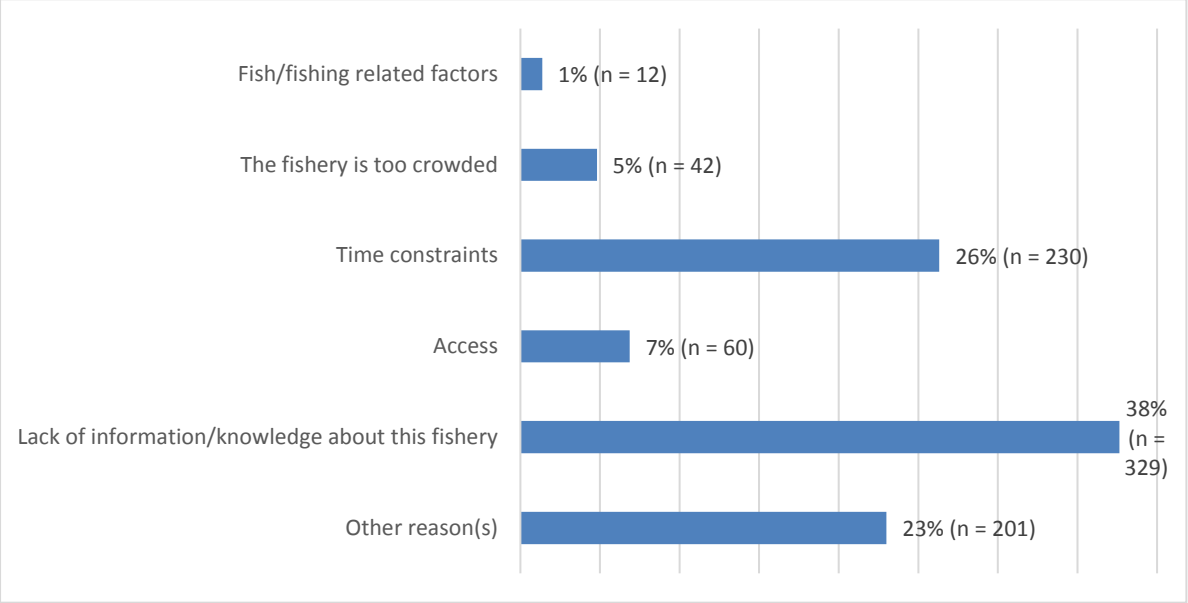

***Figure 4-35**: Reasons for never fishing the upper Mataura*

For anglers who had never fished the upper Mataura there appeared to be little issue with potential crowding. Instead, a lack of information/knowledge about the fishery, together with time constraints, were the main reasons why most anglers had chosen not to fish the upper Mataura in the past. As was the case with the Worsley, open-text responses for 'Other reason(s)' indicate that time constraints, as part of broader access-related issues (e.g. age-related, distance

[44] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Upper Mataura in the past (n = 1156) from the total number of surveys completed (n = 2482).

from home etc.), were the main barriers to visiting the upper Mataura. In addition, many anglers simply had little or no interest in fishing the upper Mataura and preferred to fish other rivers.

4.4.8 Future intentions of anglers who have never previously fished the upper Mataura

Those anglers who had never fished the upper Mataura before were also asked to consider whether they intended to fish the river in the future. Of the 979 anglers who responded, 20% (n = 200) indicated that they did intend to fish the upper Mataura in the future; 37% (n = 358) stated they did not intend to fish the upper Mataura in the future; the remaining 43% (n = 421) were unsure whether they would fish the upper Mataura or not in the future.

Those answering 'no' (n = 358) were further prompted to explain the reason(s) why they did not intend to fish the upper Mataura in the future; 63% (n= 226) responded. Analysis of open-ended responses revealed a general lack of interest in fishing the upper Mataura. Added to that, issues related to access (distance from home, age/health etc.) also underpinned anglers' lack of willingness to fish this particular river. Issues to do with perceived crowding were only mentioned by a few anglers, mainly Otago residents (e.g. *"very popular with other anglers"*).

4.4.9 Management mechanisms and potential implications

4.4.9.1 Does the upper Mataura need management mechanisms to control crowding?

Of the 1,714 anglers who responded to the question asking about the need for management mechanisms to control crowding on the upper Mataura[45], 908 (53%) had fished the upper Mataura at least once in the past and 806 (47%) had not. Of the 908 anglers who had fished the river, 43% (n = 388) agreed that the upper Mataura needed management mechanisms to control crowding and 25% (n = 223) disagreed; 33% (n = 297) were neutral. As with the other Southland rivers in this study, anglers who had not fished the upper Mataura (n = 806) were more neutral, with 63% (n = 511) neither agreeing nor disagreeing with the statement. Of the remaining anglers, 208 (26%) agreed and 87 (11%) disagreed that the upper Mataura needed management mechanisms to control crowding. These findings are represented in Figure 4-36 below.

[45] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).

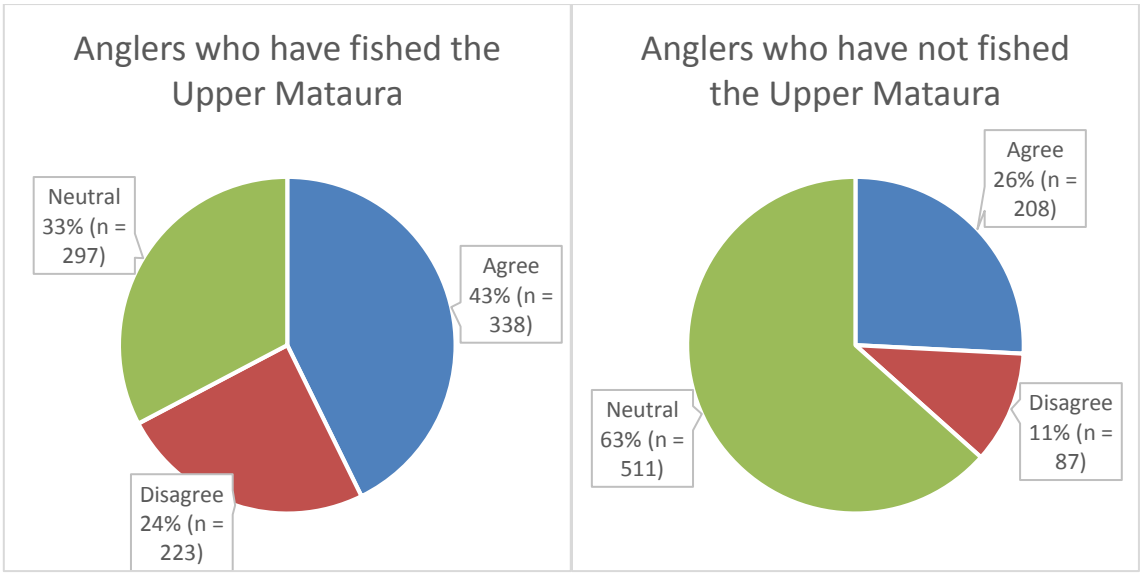

Figure 4-36: *The upper Mataura needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the upper Mataura, comparisons between different groups based on residency status (Figure 4-37 below[46]) reveals that Southland residents were slightly more opposed to the introduction of management mechanisms to control crowding on the upper Mataura (as was the case for the upper Oreti and Worsley). This is perhaps unsurprising given that, like the upper Oreti and Worsley, the upper Mataura maybe closer to home for many of these anglers and management mechanisms would likely inhibit spontaneous trip planning.

[46] Chart for Other NZ resident not provided due to the low numbers of anglers in this sub-group.

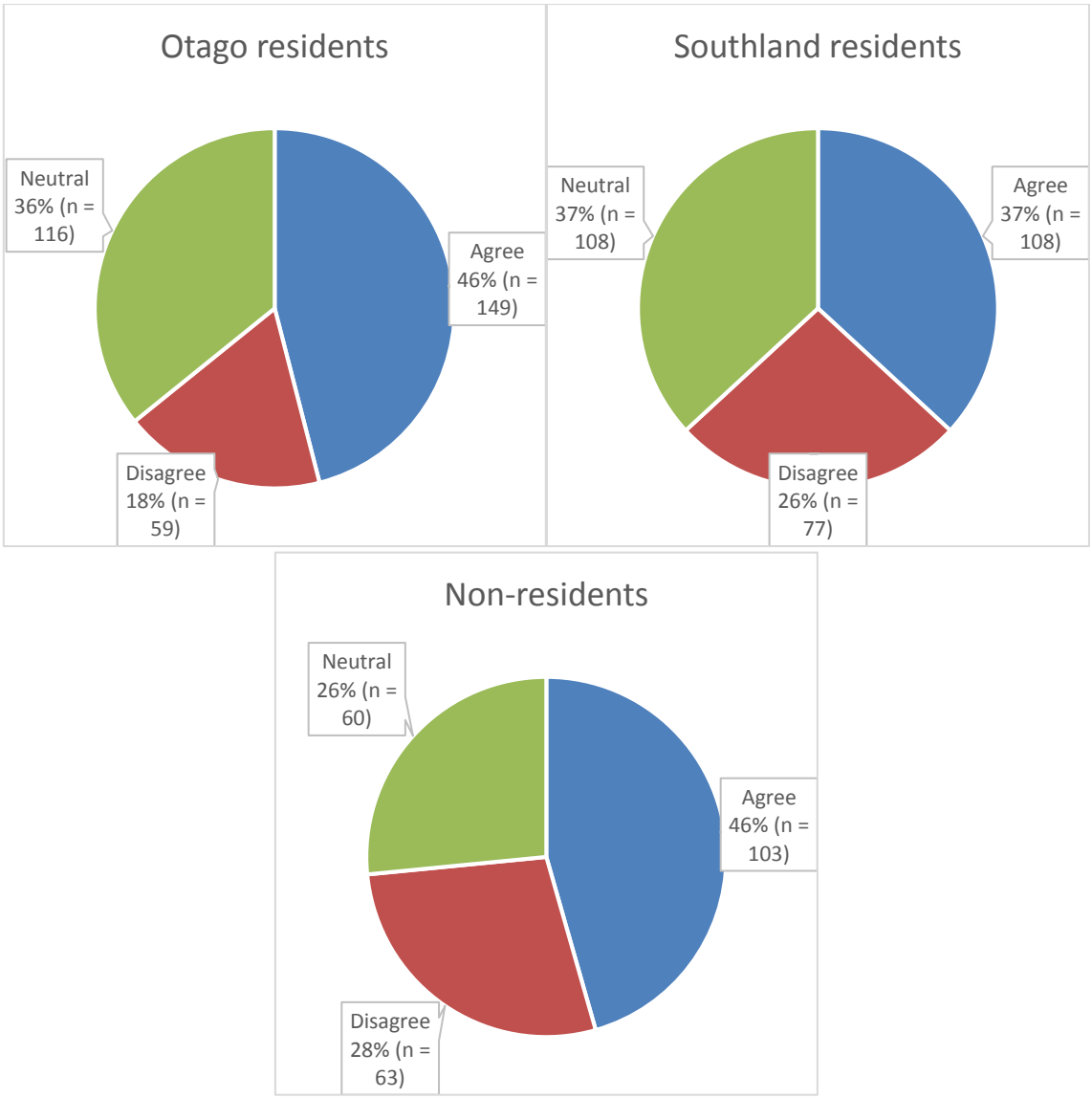

***Figure 4-37**: Resident vs. non-resident opinions: The upper Mataura needs management mechanisms to control crowding*

New Zealand residents from Otago and non-residents appeared most in favour of the introduction of management mechanisms to control crowding on the upper Mataura. Again, one potential reason for this could be that non-local anglers and overseas visitors may wish to have some guarantee of a crowd-free experience, thereby justifying efforts to plan and execute a visit to the upper Mataura.

4.4.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the upper Mataura at some point in the past and who also responded to question 159[47] (n = 897), 26% (n = 236) stated that they would be prepared to pay such a charge and 56% (n = 498) would not. The remaining 18% of anglers (n = 163) were neutral in their responses. This data is represented in Figure 4-38.

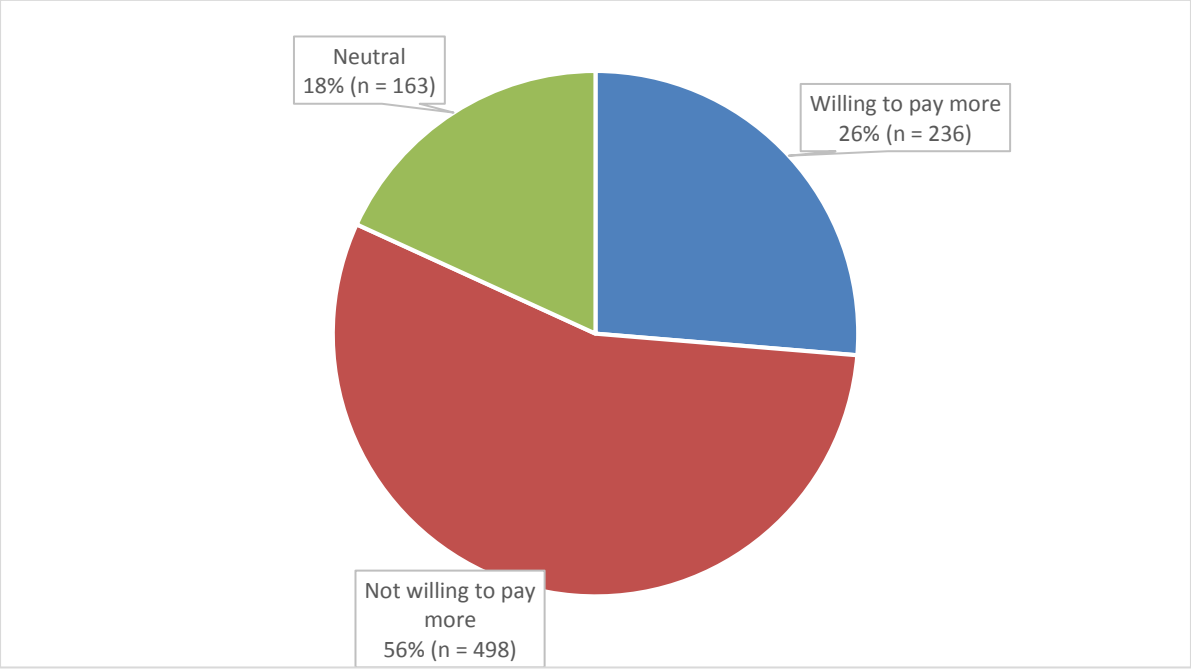

Figure 4-38: *Willingness of anglers who have fished the upper Mataura to pay an increased administration fee for management mechanisms*

When compared with other residency sub-groups (see Figure 4-39 below), it is clear that Southland residents were considerably less willing than other groups to pay an additional administration charge for management mechanisms to control crowding on the upper Mataura.

[47] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

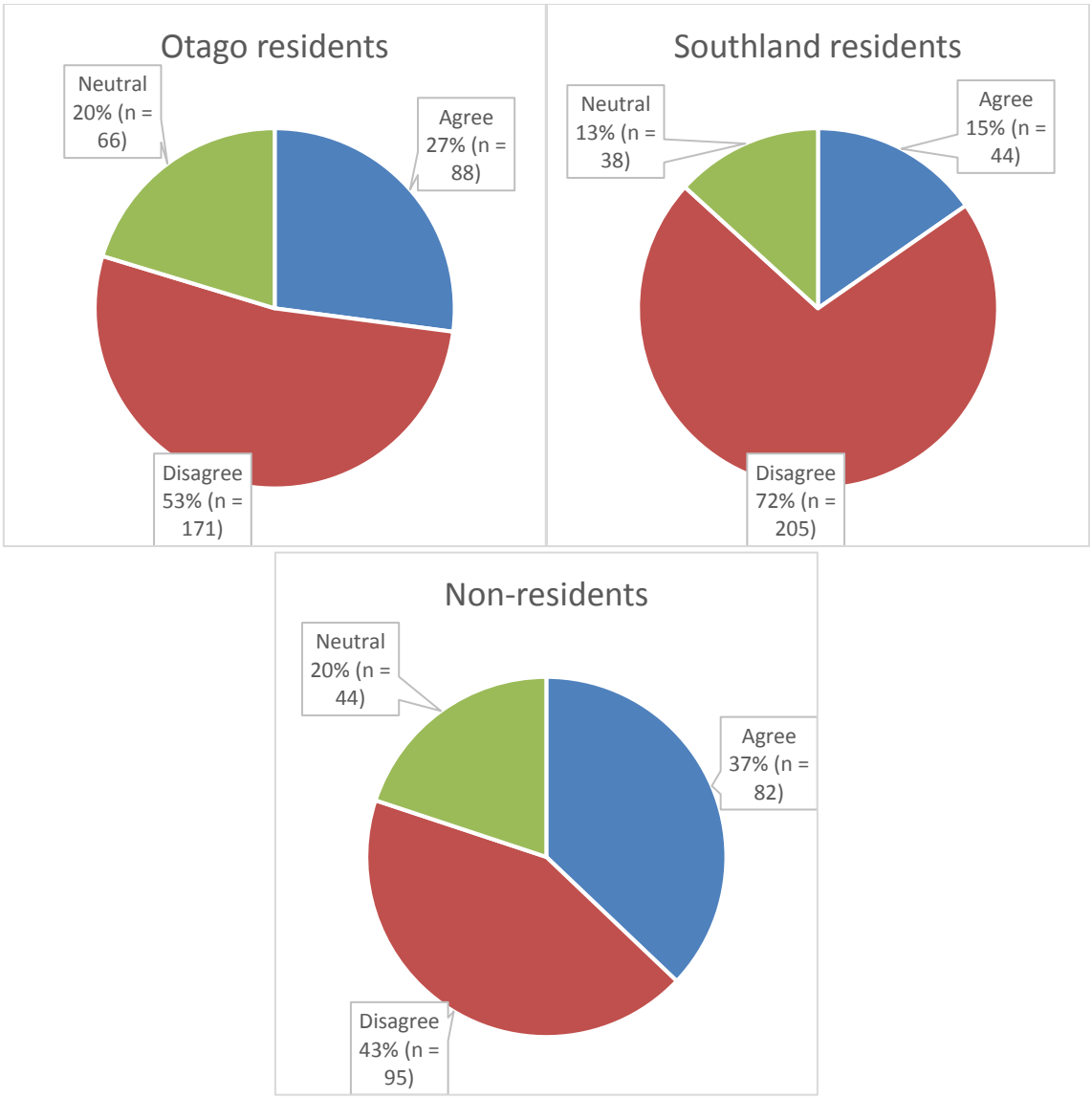

***Figure 4-39**: Resident vs. non-resident willingness to pay more for management mechanisms on the upper Mataura*

Again, non-residents appeared to be the most prepared to pay an additional administration fee if management mechanisms to control crowding were introduced on the upper Mataura. As mentioned in the previous case studies, one reason could be that such a fee could be justifiably absorbed within the overall cost of a fishing trip to New Zealand, particularly if such a fee helps guarantee an uncrowded, backcountry experience.

4.4.9.3 Potential displacement resulting from the introduction of management mechanisms to control crowding

As with the other Southland rivers in this study, if management mechanisms were to be introduced on the upper Mataura, some anglers who currently fish the river may be displaced. Figure 4-40 shows the proportion of anglers who stated that they would stop fishing the river if management mechanisms were to be introduced.

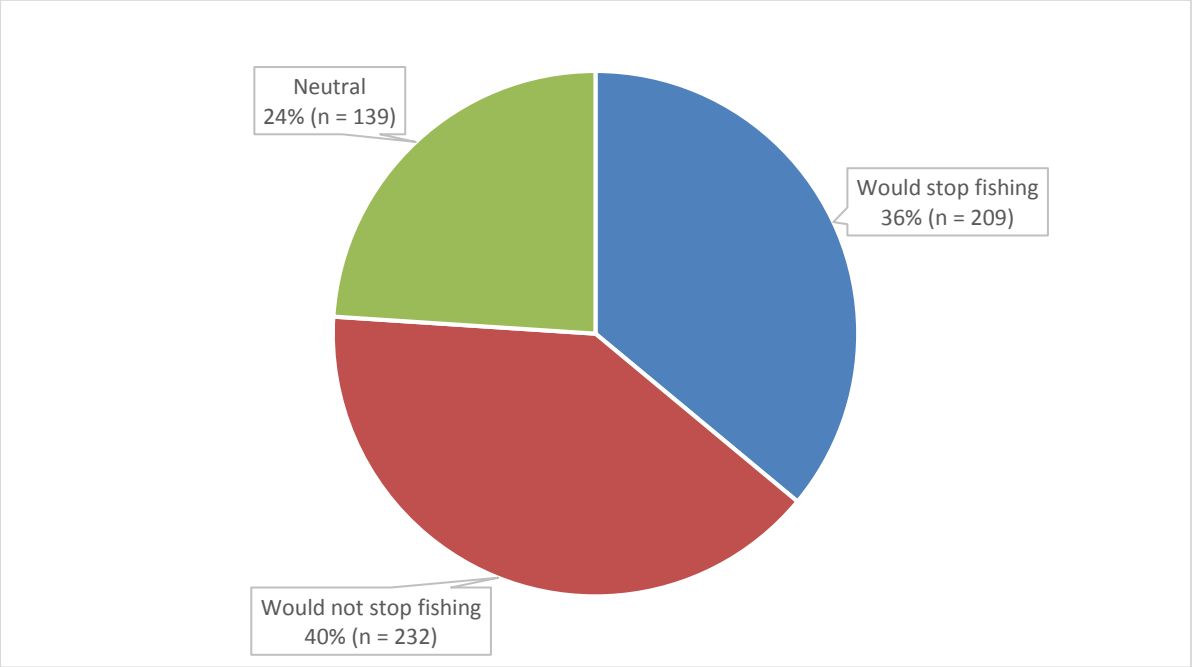

Figure 4-40: *Proportion of active anglers on the upper Mataura who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-40, of those anglers currently active on the river[48] and who also provided an answer to question 160[49] (n = 580), 40% (n = 232) said they would not stop fishing the upper Mataura if management mechanisms were introduced and 24% (n = 139) were neutral. Of critical importance in the context of this study, however, is the considerable proportion (36%) of anglers (n = 209) who stated that they would stop fishing the upper Mataura if management mechanisms were introduced; it is this group that may be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this group are:

- Mostly NZ residents (75%) with largest proportion Southland residents (40%); a further 21% were non-residents
- Almost all were intermediate/advanced anglers (96%), and of those most had over 20 years angling experience (79%)
- 84% (n = 175) did plan to continue fishing the upper Mataura in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention.

[48] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 117, options 1, 2, 3 (see Appendix 1).
[49] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

4.4.10 Summary points

- The issue of crowding is one of the chief reasons why anglers have chosen to fish the upper Mataura less often than in the past, but it is not necessarily a main reason why anglers stop fishing this particular river.
- A very small proportion (around 12%) of anglers currently active on the upper Mataura have been temporally displaced; those that have mainly avoid the mid-season period because of crowding.
- Most temporally displaced anglers sought alternative rivers and substituted a range of different rivers/waters located throughout the Otago and Southland catchments for the upper Mataura. Evidence of intra-site displacement to the Waikaia and lower reaches of the Mataura may be cause for concern (i.e. may add to pressure on these stretches of the Mataura) or optimism (i.e. may relieve pressure on sensitive stretches of the Mataura by displacing some anglers to less-sensitive stretches). Similarly, inter-site displacement to the Oreti may be of concern as it may be adding to issues of crowding on this river. However, inter-site displacement to less pressure sensitive rivers may provide welcome relief for the upper Mataura.
- The majority of anglers participating in the study seemed certain in their plans to return to the upper Mataura in the future, especially Southland residents and non-residents. This was mainly because the upper Mataura offers a world-class fishing experience that, at this stage, is able to cope with its own popularity.
- A small proportion of anglers who have chosen not to fish the upper Mataura in the past have done so because of perceived crowding.
- Less than half of all anglers who had experience of the upper Mataura (i.e. those who have fished the river before) agreed that the river needs management mechanisms to control crowding; most anglers, however, were unwilling to pay for such mechanisms even if they were introduced.
- Just over a third of active anglers on the upper Mataura may stop fishing the river if management mechanisms to control crowding were introduced.

4.5 Hunter

4.5.1 Overview

Attention is now turned to the Otago catchment rivers, starting with the Hunter. Overall, 426 anglers stated that they had fished the Hunter once or more in the past. Of those, almost three quarters (74%, n = 317) had purchased their license in the Otago area during the 2018/19 season, with the remaining 26% (n = 109) purchasing theirs in the Southland area. Of those who responded to the question *'Thinking about the Hunter, which statement best reflects your fishing activity?'* (n = 395, see Table 4-9), just over half of anglers (51%, n = 203) fished the Hunter less often than in the past or had stopped fishing this particular river completely. A far smaller proportion of anglers (21%, n = 82) fished the Hunter as often or more often as they used to in the past.

***Table 4-9**: Fishing activity on the Hunter*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	18%	54	16%	16	18%	70
I fish here, and more often than I did in the past	3%	10	2%	2	3%	12
I fish here, but less often than I did in the past	21%	64	20%	19	21%	83
I fished here in the past but don't fish here anymore	30%	89	32%	31	30%	120
I have only fished here once in my life	27%	81	30%	29	28%	110
Total	**100%**	**298**	**100%**	**97**	**100%**	**395**

Of the 395 anglers comprised in the Table above, the vast majority were New Zealand residents (73%, n = 287) with most those coming from Otago (52% of sample, n = 207). Of the remaining New Zealand residents, 58 (15% of sample) were from Southland and 22 (6% of sample) were from outside the Otago/Southland region. In addition, just 10% (n = 40) were non-resident angers and 17% (n = 68) did not supply sufficient residency information[50]

4.5.2 Why do some anglers fish the Hunter less often than they used to?

Of the 83 anglers who stated they fished the Hunter less often than in the past, most were experienced and committed anglers[51] (see Appendix 3). Figure 4-41 illustrates the main reasons

[50] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[51] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

why these anglers fished the Hunter less often than in the past (Note: n = greater than 83 as anglers could choose multiple options).

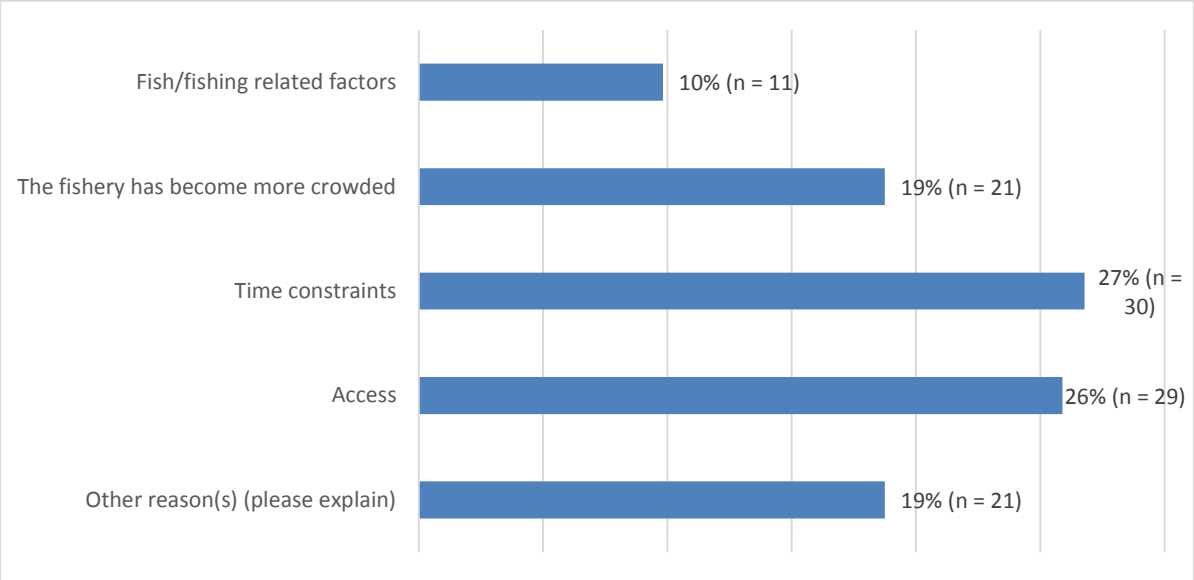

***Figure 4-41**: Reasons for anglers fishing the Hunter less often*

For the anglers participating in this study, a lack of time and difficulties with access appeared to be the main reasons for fishing the Hunter less often than in the past. Crowding, too, was an issue for these anglers. Of the 21 anglers who cited crowding as a reason for fishing the Hunter less often, most were New Zealand residents (57%, n = 12), with seven coming from Otago, four from Southland and one from outside the Otago/Southland region. Of the remaining anglers, two (10%) were non-residents and seven (33%) did not provide sufficient residency information. There were a number of different 'Other reasons' anglers gave for fishing the Hunter less, with many related to access issues (e.g. age/health, moved away). Interestingly, though, a few anglers also noted that the river is not what it used to be. As this Otago resident explained, for example:

> *The fishery has changed from a beautiful river with good pools holding many trout [and] where a group of 3 would catch 12+ each … to a much poorer fishery with pools full of gravel and few fish visible.*

In this example, the angler was quite specific in his/her description of changes to the Hunter, but other anglers were vaguer (e.g. *"Not the same charm"*).

4.5.3 Why have some anglers stopped fishing the Hunter?

Of the 120 anglers who stated that they had stopped fishing the Hunter, most, again, were experienced and committed anglers (see Appendix 3). Figure 4-42 illustrates the main reasons why some anglers who used to fish the river had stopped (Note: n = greater than 120 as anglers could choose multiple options).

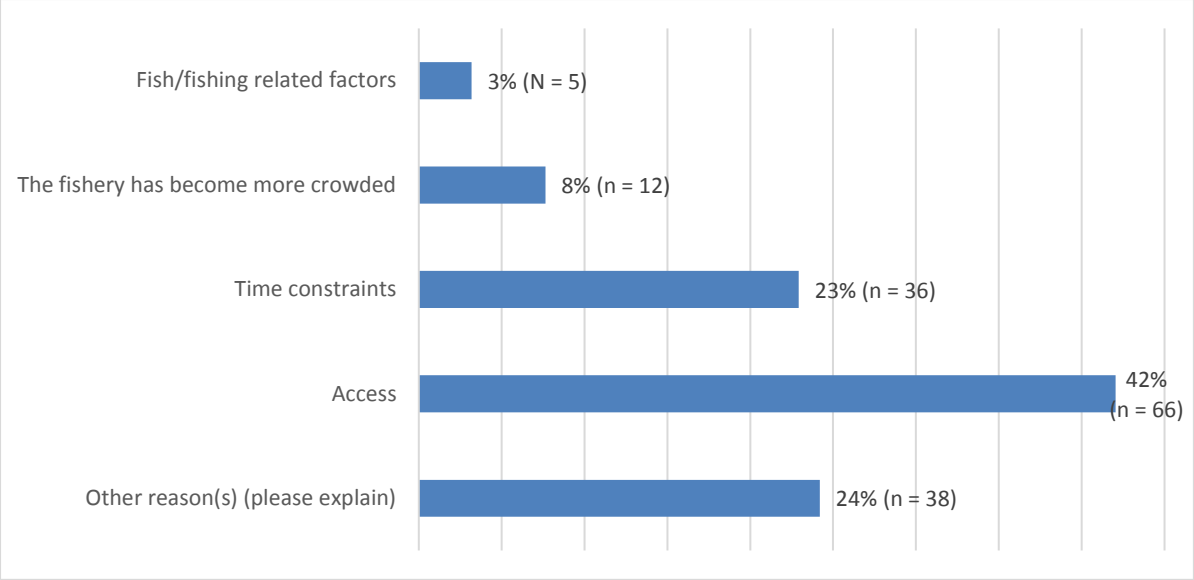

***Figure 4-42**: Reasons for stopping fishing the Hunter*

On the whole, access-related issues and time constraints were among the main reasons given for why some anglers no longer fished the Hunter. Analysis of open-text responses for 'Other reasons' further revealed that many who had stopped fishing the Hunter had done so for pragmatic reasons linked to broader access-related issues (e.g. they had moved out of the area, age/health, no longer had access to jet boat etc.). Given that only 8% (n = 12) of anglers selected the option '*The fishery has become more crowded',* crowding does not appear to be a major contributing factor in anglers stopping fishing the Hunter. It should be noted, though, that a few anglers did mention crowding-related issues in their responses to 'Other reasons' (e.g. *"Too many guides", "Guides and helicopters")*, with such responses coming exclusively from Otago residents.

4.5.4 Nature and scope of temporal and spatial displacement on/from the Hunter

4.5.4.1 Temporal displacement

For those anglers who had fished and continued to fish the Hunter, whether to a greater, lesser or similar extent as in the past (n = 165)[52], there is some, albeit very limited, evidence of temporal displacement occurring. Table 4-10 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the Hunter.

[52] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 70) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 12) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 83).

Table 4-10 *Temporal patterns of behaviour on the Hunter*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	24%	28	37%	13	27%	41
I've always done most of my fishing here in the mid-season	50%	59	37%	13	47%	72
I've always done most of my fishing here in the late season	13%	15	14%	5	13%	20
I used to mostly fish here in the early season but now avoid this period	5%	6	6%	2	5%	8
I used to mostly fish here in the mid-season but now avoid this period	8%	9	3%	1	6%	10
I used to mostly fish here in the late season but now avoid this period	2%	2	3%	1	2%	3
Total	**100%**	**119**	**100%**	**35**	**100%**	**154***

*does not total 165 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the Hunter, the vast majority (86%, n = 133) regularly fished at the same time of year. However, the remaining 14% (n = 21) of anglers had been temporally displaced and had changed when they fished during the season, with most choosing to avoid the popular mid-season period (January - March). Of the 10 anglers who stated that they avoid the mid-season period, most were New Zealand residents (80%, n = 8), with five coming from Otago, two from Southland and one from outside the Otago/Southland region). The remainder comprised one non-resident angler and one who did not provide sufficient residency information. For New Zealand residents and non-residents alike, crowding was the main reason cited for avoiding the mid-season period, as was the case for early season avoidance. Crowding, access issues (Otago residents) and time constraints (Southland resident) were the reasons given by anglers for avoiding the late season.

4.5.4.2 Spatial displacement

Of the small group of 21 anglers temporally displaced, just over half (52%, n = 11) had substituted an alternative river for the Hunter during the period of displacement. Stated alternative rivers/waters include (number in brackets = no. of mentions):

- Nevis (2)
- Wilkin (2)
- Waitaki (2)
- Cascade (1)
- Clutha (1)
- Makarora (1)
- Dingle (1)

Substituting any of the rivers listed above for the Hunter might reasonably be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different geographical areas to fish), even though many of the stated rivers are in close proximity. Based on the limited data available, the Nevis, Wilkin and Waitaki appeared to be the favoured alternatives.

4.5.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the Hunter once or more in the past (n = 426) were asked to reflect on whether any experience(s) on the Hunter had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 374 anglers who answered the question, 7% (n = 26) stated that they had experienced such a situation. Most of those (81%, n = 21) were New Zealand residents (18 from Otago and three from Southland). The other five anglers did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4-43 below (Note: n = greater than 26 as anglers could choose multiple options).

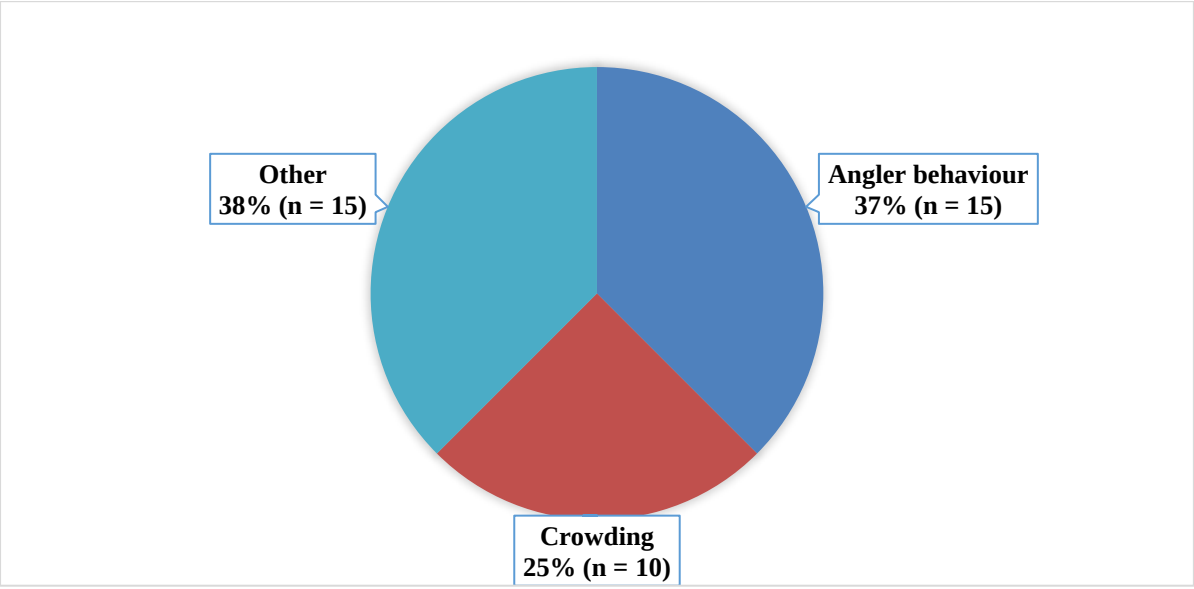

***Figure 4-43**: Factors contributing to potential absolute displacement (Hunter)*

Angler behaviour and crowding were the main factors contributing to potential absolute displacement as a result of a bad experience on the Hunter, particularly for Otago residents. Analysis of open-text responses for 'Other' reveals that, to a large degree, bad behaviour and/or crowding can be linked specifically to guided parties using helicopters (e.g. *"arrogant fishing guides", "Helicopter guide and clients landed just upstream from us", "Bloody heli flew in to the spot I was going to"*). Despite such issues, though, it should be reiterated that the vast majority of anglers (93%) had not been put off the sport of angling as a result of any bad experience on the Hunter.

4.5.6 Future intentions of all anglers who have previously fished the Hunter

Anglers who identified as having visited the Hunter once or more in the past (n = 426) were also asked to a) consider whether they intended to fish the river in the future and b) explain the main reason why/why not. Of the 381 anglers who responded to the question, overall just under half (46%, n = 174) did intend to return and 15% (n = 56) did not. The remaining 40% (n = 151) were unsure if they would return or not in the future. As can be seen in Figure 4-44 below, compared with Southland resident anglers, somewhat greater proportions of Otago and non-resident anglers did plan to return to the Hunter. Non-resident anglers appeared the most certain in terms of their future plans (i.e. only 30% were unsure if they would return to the Hunter or not).

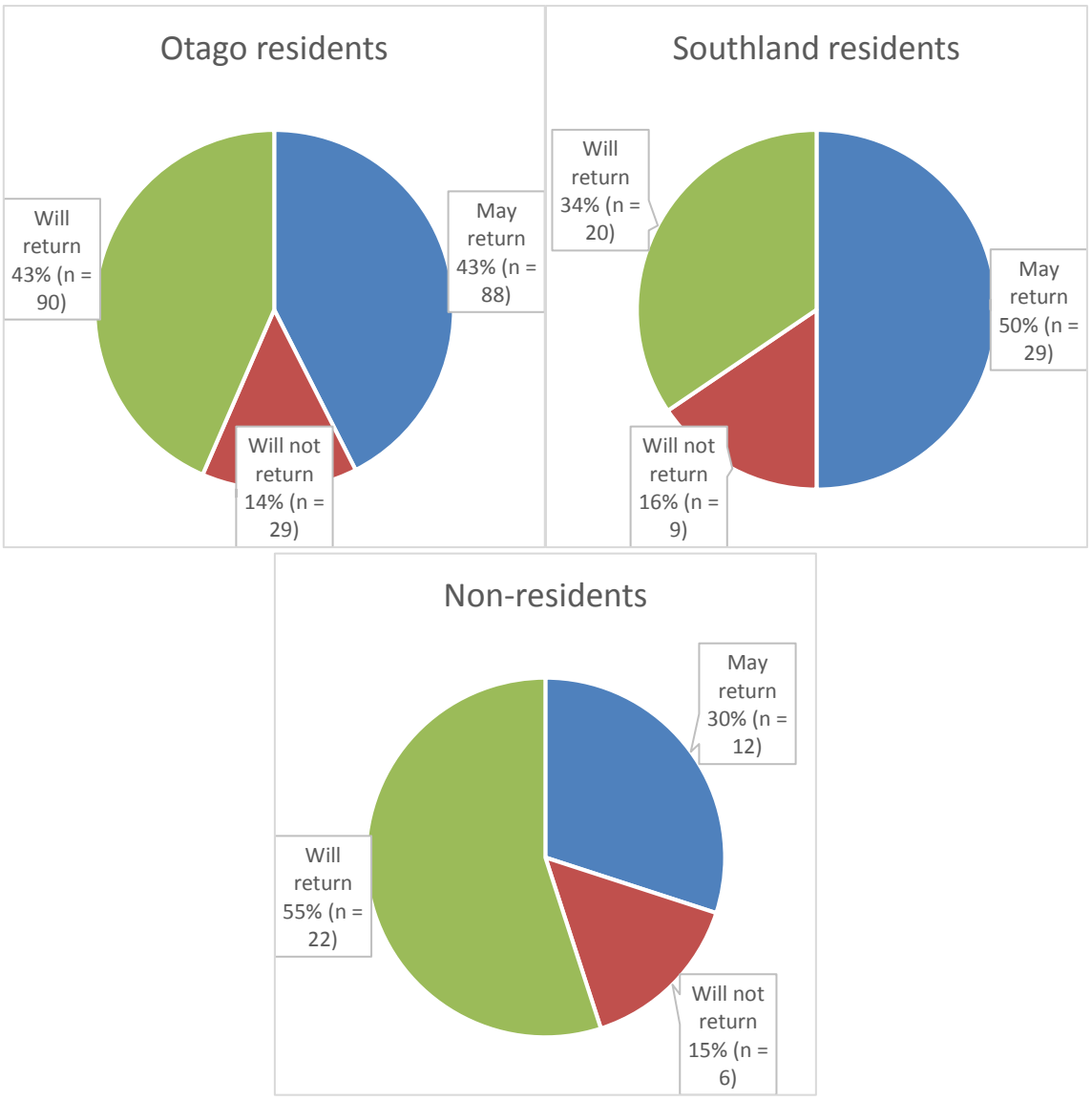

Figure 4-44: *Resident vs. non-resident future intentions to return to the Hunter*[53]

[53] Chart for Other NZ resident not provided due to low numbers of anglers in this sub-group.

Open-text data explaining the main reasons why anglers planned to return to the Hunter or not was analysed for themes. In general, for those who did intend to return to the Hunter in the future, anglers' motivations can, once again, be encapsulated in the theme 'Scenery/general experience'. This theme, which was common amongst all residency sub-groups, relates to the ways in which anglers described their positive experiences of the Hunter, as illustrated in the following extracts:

> *Fabulous mountain environment with a beautiful clear multi braided river system found only in New Zealand's high country. A special place to be angling* (Otago resident angler)
>
> *Love the entire experience* (Southland resident angler)
>
> *Solitude and wonderful fishing. The mix of rainbows and browns is a bonus* (non-resident angler).

For these anglers, and others like them, the Hunter continued to provide an excellent backcountry experience. Further, it appeared that issues related to access, rather than say crowding or the fishing experience per se, were mainly to blame for anglers choosing not to fish the Hunter in the future. Of those anglers that stated they did not plan to fish the Hunter in the future, most suggested that this was due to the difficulties associated with actually accessing the river (e.g. age/fitness, too far to travel etc.). It should be noted though that, in amongst the responses about access, five anglers did mention that issues to do with crowding/angler behaviour have put them off visiting the Hunter in the future; this comment from an Otago resident angler provides a vivid illustration of this:

> *One of the worst experiences I have ever had in my fishing career. Drunk bogans[54], 100 jet boats, 3 choppers, boats everywhere and multiple guides. I have always wanted to fish there and finally made it all the way in and this is what I was greeted with.*

For those anglers as yet undecided about a return visit to the Hunter, issues to with crowding and/or poor angler behaviour were again noted, as were access-related issues (e.g. time, lack of a boat etc.); indeed, of those undecided anglers, most seemed inclined not to fish the Hunter in the future for such reasons. The comments below illustrate this point:

> *Hard to get to, weather is a risk, lots of effort down the drain to get bounced by other anglers, don't have time needed to get in and fish and get back out* (Otago resident angler)
>
> *Too far from home but you never know, may get there again. I last fished it in 1986 ... There were signs back then of opportunity being spoiled by the increasing presence of guides and tourist anglers, mainly helicopter borne but also by vehicle through Hunter Valley station and occasionally by jet boat which is an excellent way to ruin a fly anglers day* (Southland resident angler)
>
> *Access is a challenge. In addition, my experience of the fishing was disappointing: there were too few fish and too many other anglers* (Non-resident angler).

[54] Colloquial term meaning a person whose speech, clothing, attitude and behaviour are considered unrefined or unsophisticated.

4.5.7 Why have some anglers never fished the Hunter?

Around 82% of anglers who participated in the survey had never fished the Hunter before (n = 2,056[55]) and, of those, 67% (n = 1,376) provided an explanation for this. Figure 4-45 illustrates the main reasons why these anglers had never fished the Hunter (Note: n = greater than 1,376 as anglers could choose multiple options).

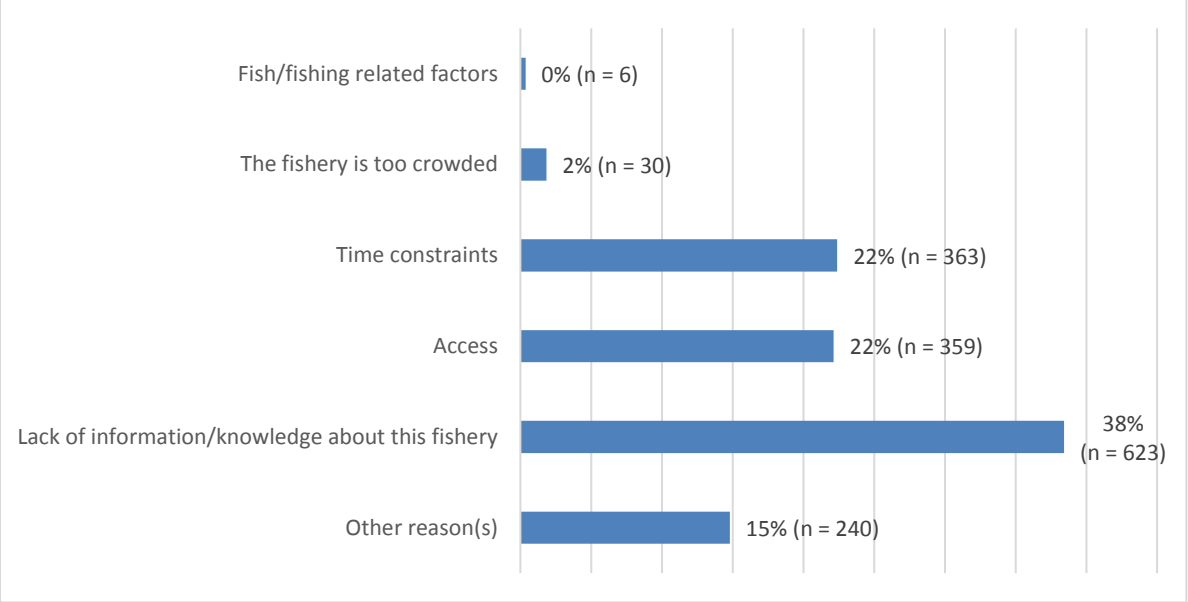

Figure 4-45: *Reasons for never fishing the Hunter*

For anglers who had never fished the Hunter before, there appears to be little issue with potential crowding. Instead, a lack of information/knowledge about the fishery, together with time constraints and other access-related issues, were the main reasons given by these anglers for not fishing the Hunter in the past. Open-text responses for 'Other reason(s)' indicate that time constraints, as part of broader access-related issues (e.g. age-related, distance from home etc.), were the main barriers to fishing the Hunter.

4.5.8 Future intentions of anglers who have never previously fished the Hunter

Those anglers who had never fished the Hunter before were also asked to consider whether they intended to fish the river in the future. Of the 1,553 anglers who responded, only 14% (n = 218) indicated that they did intend to fish the Hunter in the future; 40% (n = 628) stated they did not intend to fish the Hunter in the future; the remaining 46% (n = 707) were unsure whether they would fish the Hunter or not in the future.

Those answering 'no' (n = 628) were further prompted to explain the reason(s) why they did not intend to fish the Hunter in the future; 73% (n = 456) responded. Analysis of open-ended

[55] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Hunter in the past (n = 426) from the total number of surveys completed (n = 2,482).

responses revealed that issues related to access (e.g. distance from home, lack of time, age/health etc.) underpinned anglers' lack of willingness to fish the Hunter. Issues to do with perceived crowding were only mentioned by a few anglers (nine), mainly Otago and/or Southland residents (e.g. *"more pressure thru tourism & guiding"*, *"getting hammered by guides").*

4.5.9 Management mechanisms and potential implications

4.5.9.1 Does the Hunter need management mechanisms to control crowding?

Of the 1,708 anglers who responded to the question asking about the need for management mechanisms to control crowding on the Hunter[56], 323 (19%) had fished the Hunter at least once in the past and 1,385 (81%) had not. Of the 323 anglers who had fished the river, 47% (n = 153) agreed that the Hunter needed management mechanisms to control crowding and only 15% (n = 47) disagreed; 38% (n = 123) were neutral. As with all the Southland rivers in this study, anglers who had not fished the Hunter (n = 1385) were much more neutral, with 64% (n = 889) neither agreeing nor disagreeing with the statement. Of the remaining anglers, 330 (24%) agreed and 166 (12%) disagreed that the Hunter needed management mechanisms to control crowding. These findings are represented in Figure 4-46 below.

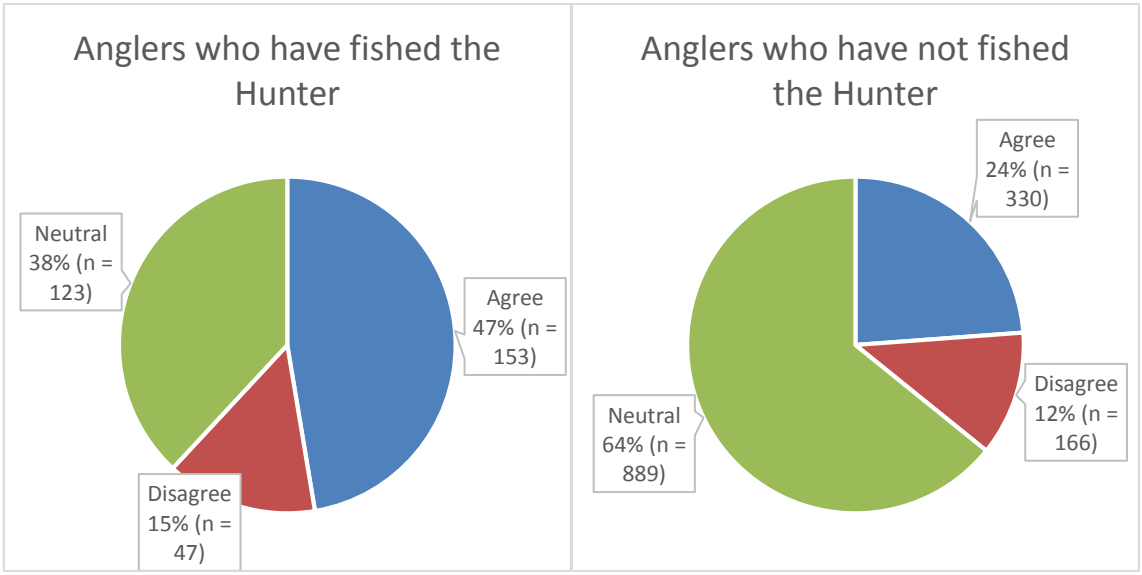

Figure 4-46: *The Hunter needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the Hunter, comparisons between different groups based on residency status (Figure 4-47 below) reveals that Otago residents were most in favour of the introduction of management mechanisms to control crowding on the Hunter. In this instance, management mechanisms to control crowding may be viewed as a means to maintain the excellent backcountry experience that is on these anglers doorstep. However, it

[56] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).

remains to be seen exactly what type of management mechanisms (e.g. booking system, ballot etc.) would be supported.

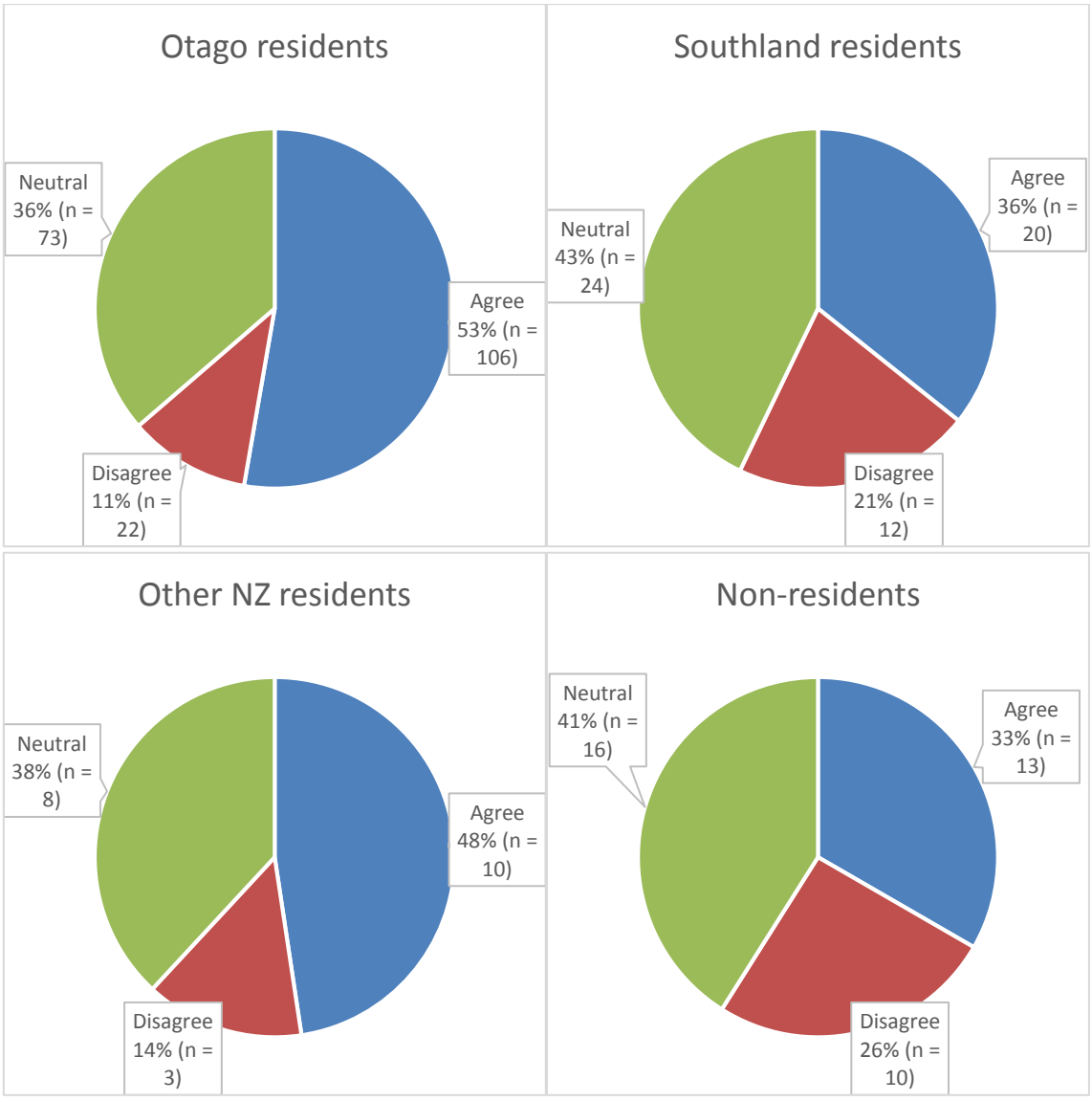

***Figure 4-47**: Resident vs. non-resident opinions: The Hunter needs management mechanisms to control crowding*

New Zealand residents from Southland and non-residents appeared least in favour of the introduction of management mechanisms to control crowding on the Hunter. One potential reason for this could be that a greater proportion of anglers in these particular sub-groups simply don't regard crowding as a major issue on the Hunter.

4.5.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the Hunter at some point in the past and who also responded to question 159[57] (n = 325), only 28% (n = 90) stated that they would be prepared to pay such a charge and 53% (n = 173) would not. The remaining 19% of anglers (n = 62) were neutral in their responses. This data is represented in Figure 4-48.

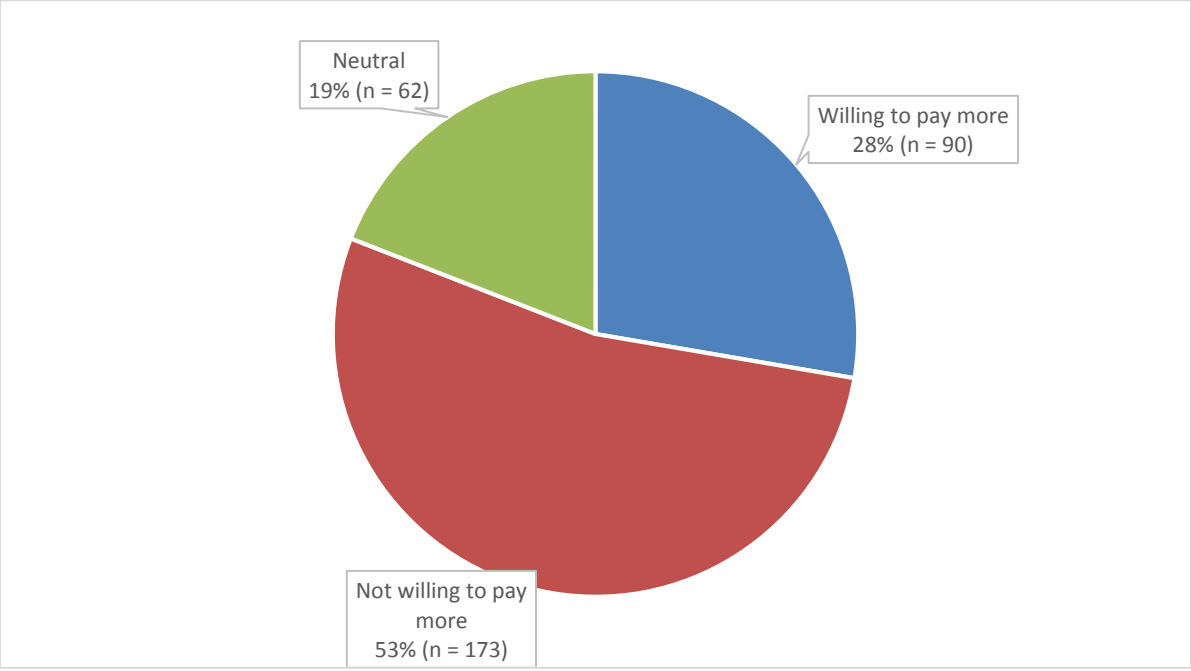

Figure 4-48: *Willingness of anglers who have fished the Hunter to pay an increased administration fee for management mechanisms*

From comparison of different groups based on residency status (see Figure 4-49 below), it is clear that Southland residents were considerably less willing than other groups to pay an additional administration charge for management mechanisms to control crowding on the Hunter.

[57] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

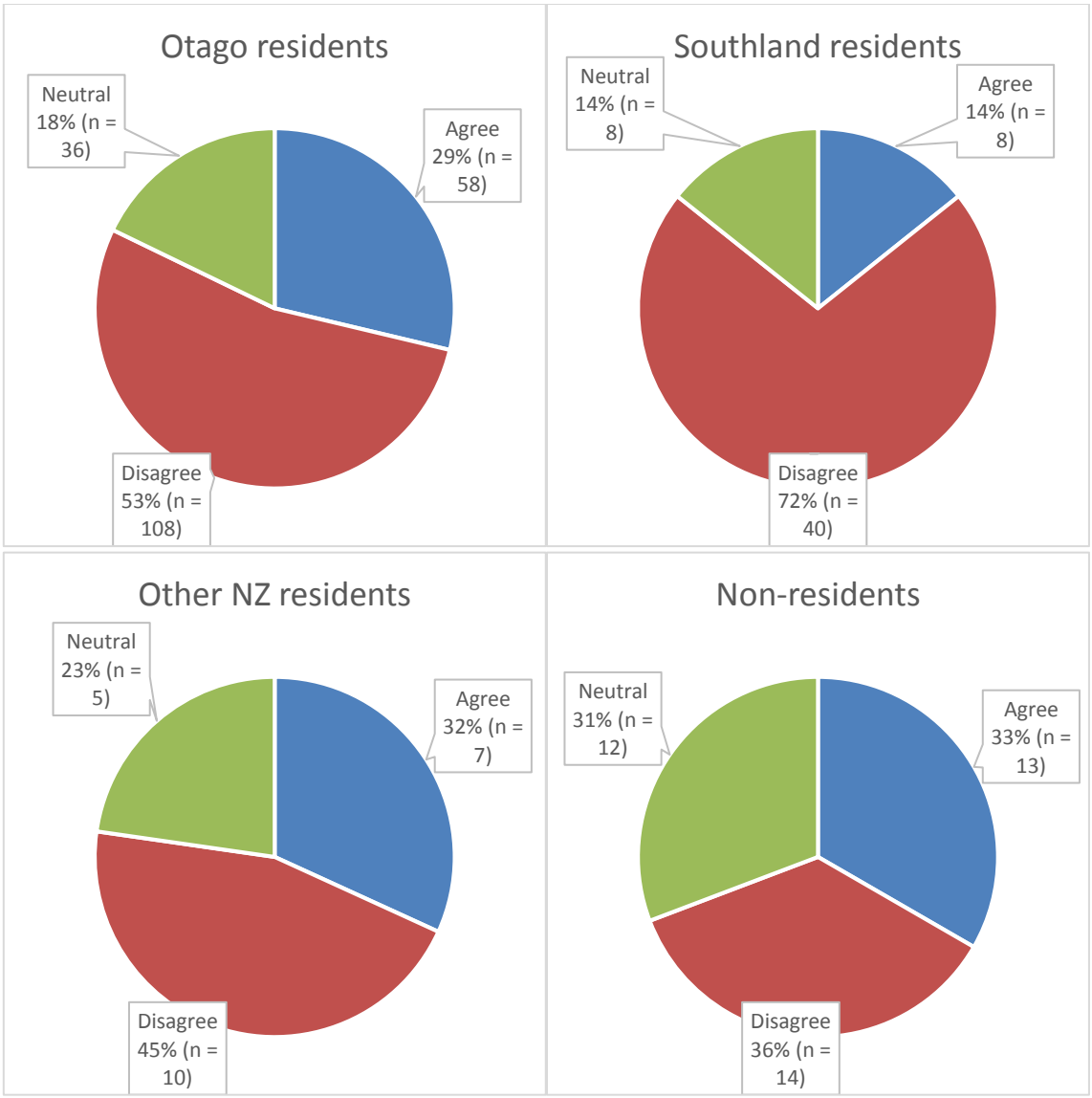

***Figure 4-49**: Resident vs. non-resident willingness to pay more for management mechanisms on the Hunter*

Interestingly, too, despite being the group most in favour of management mechanisms to control crowding, the majority of Otago residents did not want to pay an additional administration charge for such mechanisms. Non-residents appeared to be the most prepared to pay an additional administration fee if management mechanisms to control crowding were introduced on the Hunter, this despite being the group least in favour of the introduction of such mechanisms. As mentioned in the previous case studies, one reason could be that such a fee could be justifiably absorbed within the overall cost of a fishing trip to New Zealand, particularly if such a fee helps guarantee an uncrowded, backcountry experience.

4.5.9.3 *Potential displacement resulting from the introduction of management mechanisms to control crowding*

If management mechanisms were to be introduced on the Hunter, some anglers who currently fish the river may be displaced. Figure 4-50 shows the proportion of anglers who stated that they would stop fishing the river if management mechanisms were to be introduced.

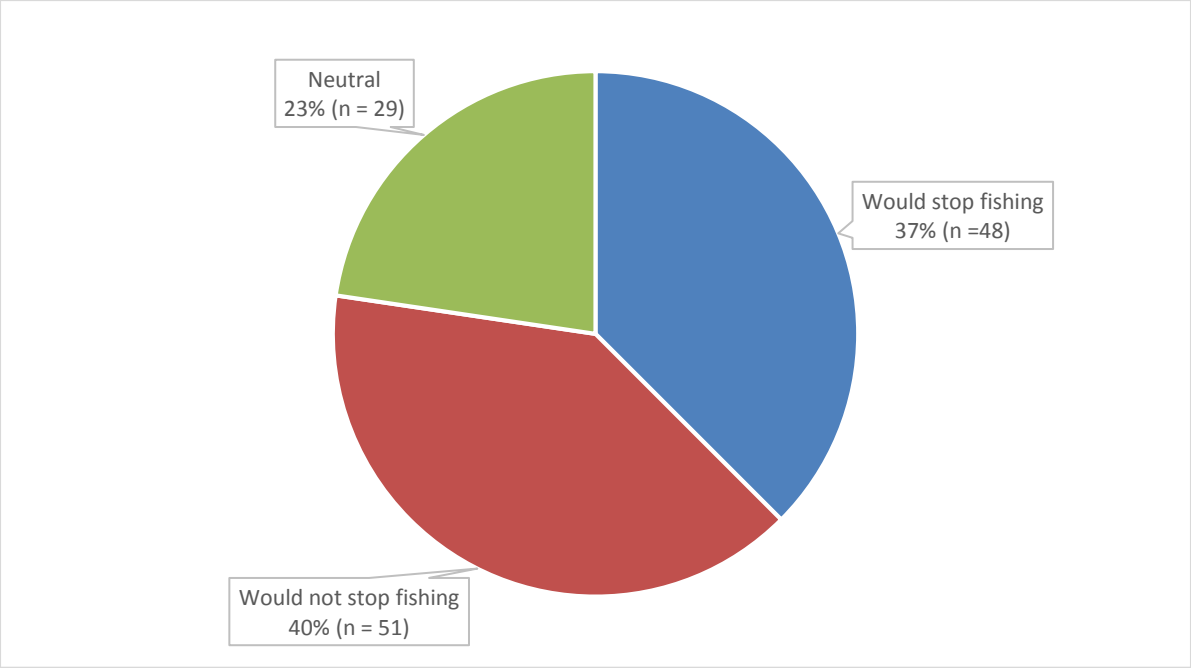

Figure 4-50: *Proportion of active anglers on the Hunter who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-50, of those anglers currently active on the river[58] and who also provided an answer to question 160[59] (n = 128), 40% (n = 51) said they would not stop fishing the Hunter if management mechanisms were introduced and 23% (n = 29) were neutral. Of critical importance in the context of this study, however, is the 37% of anglers (n = 48) who stated that they would stop fishing the Hunter if management mechanisms were introduced; it is this group that may be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this group are:

- Mostly NZ residents (94%) with largest proportion Otago residents (65%); only 6% were non-residents
- All were intermediate/advanced anglers and, of those, most had over 20 years angling experience (83%)
- 73% (n = 35) did plan to continue fishing the Hunter in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention.

[58] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 31, options 1, 2, 3 (see Appendix 1).
[59] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

4.5.10 Summary points

- The issue of crowding is just one of the reasons, and not the main one, why some anglers fish the Hunter less often than in the past; further, crowding alone does not appear to have stopped many anglers from fishing the Hunter.
- A very small proportion (around 14%) of anglers currently active on the Hunter have been temporally displaced; those that have mainly avoid the early or mid-season periods because of crowding.
- Around half of temporally displaced anglers have substituted a range of different rivers/waters, most of which are located in the Otago catchment, for the Hunter; of note, there is some evidence, albeit extremely limited, that anglers may substitute the Hunter for the already pressure-sensitive Dingle.
- The majority of New Zealand resident anglers participating in the study seemed unlikely to return to the Hunter in the future, but this was mainly due to access-related issues rather than crowding. The majority of non-resident anglers, on the other hand, did seem likely to return.
- A very small proportion of anglers who had chosen not to fish the Hunter in the past had done so because of perceived crowding.
- Just under half of all anglers who had experience of the Hunter (i.e. those who have fished the river before) agreed that the river needs management mechanisms to control crowding; Otago residents represented the bulk of those supporting such mechanisms, yet at the same time they, along with Southland residents, were among the least willing to pay extra for this.
- Just over a third of active anglers on the Hunter may stop fishing the river if management mechanisms to control crowding were introduced; most are Otago residents.

4.6 Dingle

4.6.1 Overview

Overall, 363 anglers stated that they had fished the Dingle once or more in the past. Of those, 78% (n = 282) had purchased their license in the Otago area during the 2018/19 season, with the remaining 22% (n = 81) purchasing theirs in the Southland area. Of those anglers who responded to the question *'Thinking about the Dingle, which statement best reflects your fishing activity?'* (n = 303, see Table 4-11), just under half (46%, n = 142) fished the Dingle less often than in the past or had stopped fishing this particular river completely. A much smaller proportion of anglers (17%, n = 53) fished the Dingle as often or more often as they used to in the past.

***Table 4-11**: Fishing activity on the Dingle*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	18%	42	6%	4	15%	46
I fish here, and more often than I did in the past	2%	4	4%	3	2%	7
I fish here, but less often than I did in the past	19%	44	18%	12	18%	56
I fished here in the past but don't fish here anymore	28%	67	28%	19	28%	86
I have only fished here once in my life	33%	79	43%	29	36%	108
Total	**100%**	**236**	**100%**	**67**	**100%**	**303**

Of the 303 anglers comprised in the Table above, the vast majority were New Zealand residents (78%, n = 236) with most those coming from Otago (59% of sample, n = 178). Of the remaining New Zealand residents, 42 (14% of sample) were from Southland and 16 (5% of sample) were from outside the Otago/Southland region. In addition, just 12% (n = 35) were non-resident angers and 11% (n = 32) did not supply sufficient residency information[60]

4.6.2 Why do some anglers fish the Dingle less often than they used to?

Of the 56 anglers who fished the Dingle less often than in the past, most were experienced and committed anglers[61] (see Appendix 3). Figure 4-51 illustrates the main reasons why these

[60] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[61] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

anglers fished the Dingle less often (Note: n = greater than 56 as anglers could choose multiple options).

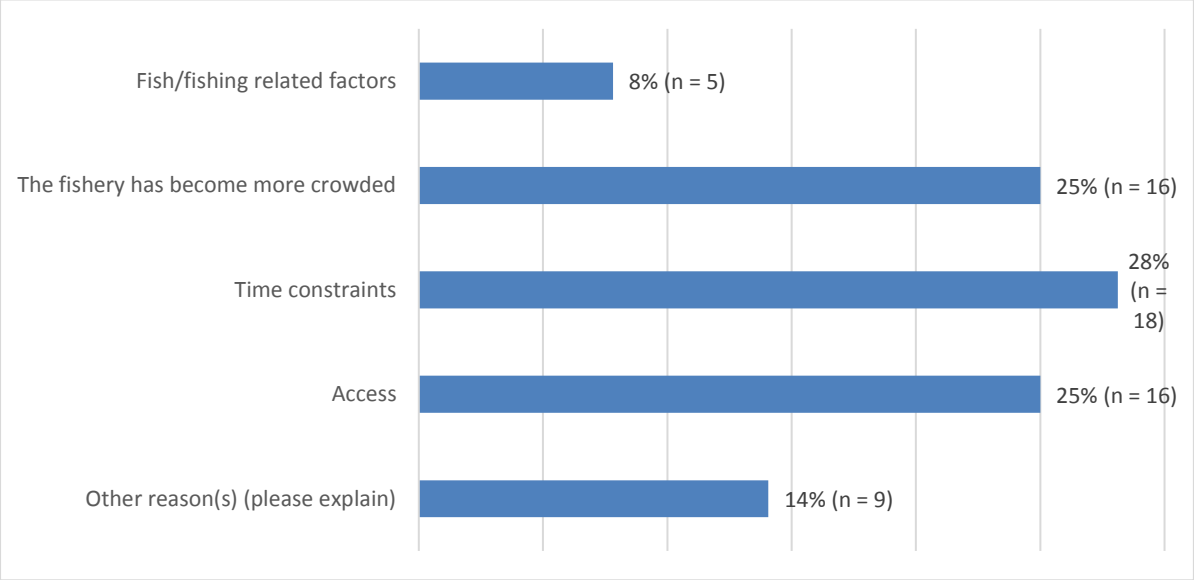

***Figure 4-51**: Reasons for anglers fishing the Dingle less often*

For the anglers participating in this study a lack of time, difficulties with access and crowding appeared to be the main reasons for fishing the Dingle less often than in the past. Of the 16 anglers who cited crowding as a reason for fishing the Dingle less often, most were New Zealand residents (81%, n = 13), with nine coming from Otago, two from Southland and two from outside the Otago/Southland region. Of the remaining anglers, two (13%) were non-residents and one (6%) did not provide sufficient residency information. Where comments for 'Other reasons' were provided, old age and associated difficulties with access were a barrier for non-residents (e.g. "*Getting too old to walk in and out each season*"). Resident anglers, on the other hand, suggested that they fished the Dingle less often because of deteriorating conditions. As this angler pointed out, for example:

> *I only fish the lower reaches accessible from the lake. The river and delta have deteriorated for fish holding over the years* (Other NZ resident).

In this particular instance there is clear evidence of intra-site displacement. In addition, other resident anglers who fished the Dingle less often stated that this was because they had either moved away from the area or had chosen to fish other rivers.

4.6.3 Why have some anglers stopped fishing the Dingle?

Of the 86 anglers who had stopped fishing the Dingle, most, again, were experienced and committed anglers (see Appendix 3). Figure 4-52 illustrates the main reasons why some anglers who used to fish the river had stopped (Note: n = greater than 86 as anglers could choose multiple options).

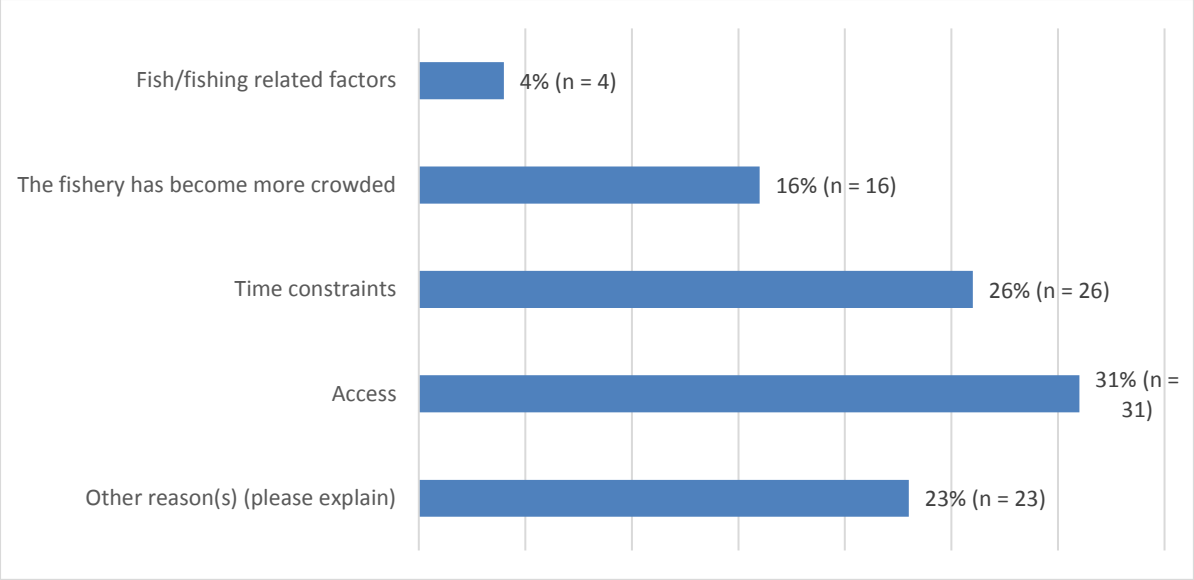

Figure 4-52: *Reasons for stopping fishing the Dingle*

As was the case for the Hunter, access-related issues and time constraints were the main reasons why some anglers no longer fished the Dingle. Crowding also appeared to play a role, especially for Otago residents; of the 16 anglers who selected this option, 14 (87%) were from Otago. There were several 'Other reasons' why some anglers had stopped fishing the Dingle, and these mostly centred on anglers fishing elsewhere or access-related issues (e.g. age, mobility, moved away from area). The issue of helicopters was also noted by three anglers as a reason for stopping fishing the Dingle (two Otago residents and one non-resident). As this Otago angler asked, for example, *"Why walk in then have a helicopter party usurp you[?]"*

4.6.4 Nature and scope of temporal and spatial displacement on/from the Dingle

4.6.4.1 Temporal displacement

For those anglers who had fished and continued to fish the Dingle, whether to a greater, lesser or similar extent as in the past (n = 109)[62], there is some, albeit extremely limited, evidence of temporal displacement occurring. Table 4-12 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the Dingle.

[62] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 46) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 7) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 56).

Table 4-12 *Temporal patterns of behaviour on the Dingle*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	35%	31	44%	8	36%	39
I've always done most of my fishing here in the mid-season	47%	42	39%	7	46%	49
I've always done most of my fishing here in the late season	7%	6	6%	1	7%	7
I used to mostly fish here in the early season but now avoid this period	6%	5	6%	1	6%	6
I used to mostly fish here in the mid-season but now avoid this period	6%	5	6%	1	6%	6
I used to mostly fish here in the late season but now avoid this period	0%	0	0%	0	0%	0
Total	**100%**	**89**	**100%**	**18**	**100%**	**107***

*does not total 109 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the Dingle, the vast majority (89%, n = 96) regularly fished at the same time of year. However, the remaining 11% (n = 12) of anglers had been temporally displaced and had changed when they fish during the season. Of those 12 temporally displaced anglers, half stated that they avoided the early season period (November to December) and the other half stated that they avoided the mid-season (January to March). In terms of those anglers displaced from the early season period (three Otago residents, one Southland resident and two who did not provide sufficient residency information), issues to with helicopters, too many guided parties and access were mentioned. For those who avoided the mid-season period, crowding, especially that linked to helicopter guided parties, appeared to be the main reason; as an example, this Otago angler described what he observes to be the problem with crowding on the Dingle:

> *Too many guides. DOC has granted 5 heli concessions to land in the Dingle … Guides are raping the Dingle and they seldom fly up the valley to ensure no anglers are above them or pay no attention if they fly above you and fish above the tree line below the airstrip. That's a good days fishing up to the forks for any angler and it ruins a walk in experience. It's a tough slog in and to have this is demoralising knowing that they can take clients to catch 10-20 fish per day and gain credibility in doing so with giving little back to the fishery.*

Here, the issue of guided parties jumping ahead of other anglers was again raised, with particular reference to those being helicoptered into prime parts of the Dingle. Despite such issues, though, it should be made clear that most anglers who had fished the Hunter had not been temporally displaced (as evidenced by the 89% of anglers who continued to fish at the same time of year).

4.6.4.2 Spatial displacement

Of the very small group of 12 anglers temporally displaced, most (67%, n = 8) had substituted an alternative river for the Dingle during the period of displacement. Stated alternative rivers/waters include (number in brackets = no. of mentions):

- Waitaki (2)
- Upper Mataura (1)
- Makarora (1)
- Wilkin (1)
- Hunter (1)
- Clutha (1)

Substituting any of these rivers, even the Makarora and Hunter which are close by, for the Dingle might reasonably be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different geographical areas to fish). Based on the extremely limited data available, the Waitaki appeared to be the most favoured alternative.

4.6.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the Dingle once or more in the past (n = 363) were asked to reflect on whether any experience(s) on the Dingle had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 300 anglers who answered the question, only 5% (n = 15) stated that they had experienced such a situation and, with the exception of one angler, all were Otago residents. The factors contributing to potential absolute displacement are highlighted in Figure 4-53 below (Note: n = greater than 15 as anglers could choose multiple options).

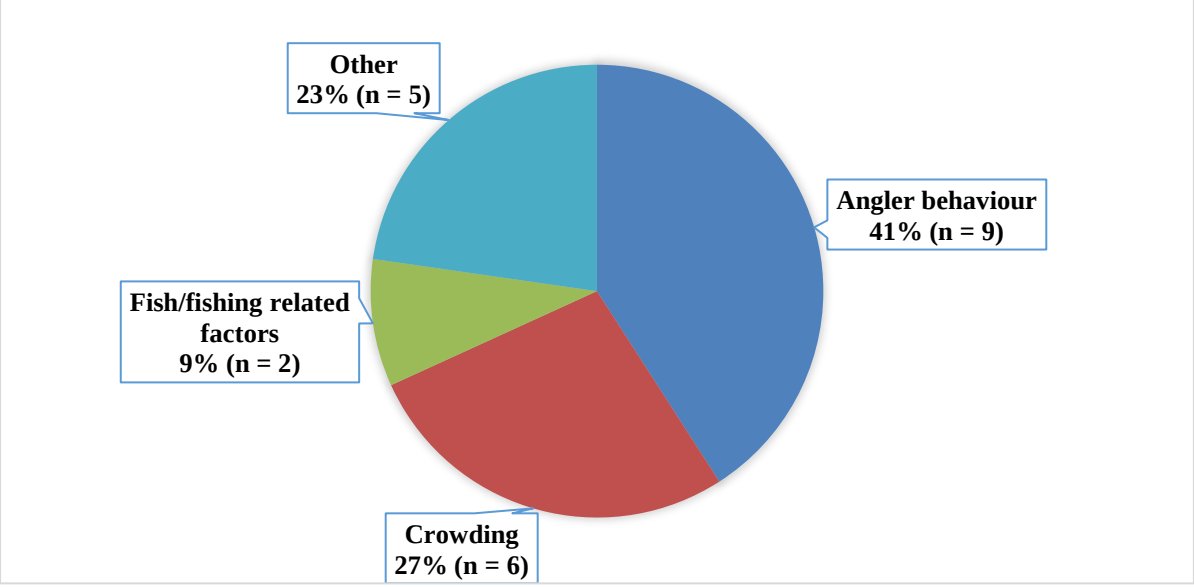

***Figure 4-53**: Factors contributing to potential absolute displacement (Dingle)*

As with most other rivers in this study, angler behaviour and crowding were the main factors contributing to potential absolute displacement as a result of a bad experience on the Dingle. Analysis of open-text responses for 'Other' revealed that, to a large degree, bad behaviour and/or crowding can again be linked specifically to guides/guided parties and the use of helicopters (e.g. *"Helicopter invasion", "guides thinking they have priority"*). Despite such issues, though, it should be reiterated that the overwhelming majority of anglers (95%) had not been put off the sport of angling as a result of any bad experience on the Dingle.

4.6.6 Future intentions of all anglers who have previously fished the Dingle

Anglers who identified as having visited the Dingle once or more in the past (n = 363) were also asked to a) consider whether they intended to fish the river in the future and b) explain the main reason why/why not. Of the 301 anglers who responded to the question, just over a third (37%, n = 112) did intended to return and 20% (n = 59) did not. The remaining 43% (n = 130) were unsure if they would return or not in the future. As can be seen in Figure 4-54 below, compared with Otago resident and non-resident anglers, a considerably smaller proportion of Southland anglers intended to return to the Dingle in the future.

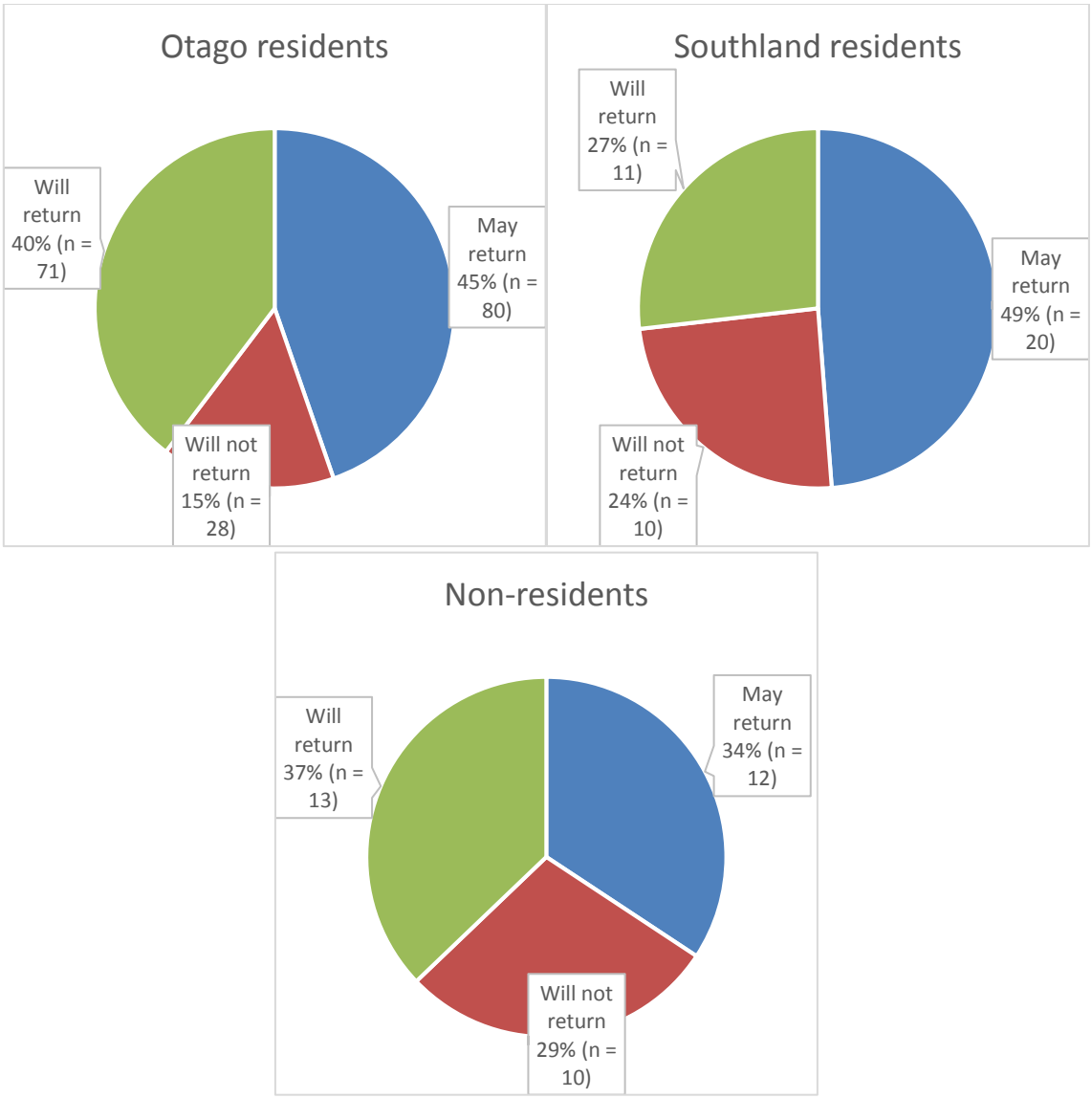

Figure 4-54: *Resident vs. non-resident future intentions to return to the Dingle*[63]

Open-text data explaining the main reasons why anglers planned to return to the Dingle or not was analysed for themes. In general, for those who did intend to return to the Dingle in the future anglers' motivations can, once again, be encapsulated in the theme 'Scenery/general experience'. This theme, which was common amongst all residency sub-groups, relates to the ways in which anglers described their positive experiences of the Dingle, as illustrated in the following extracts:

> *Good fishing, beautiful environment, a good experience last time* (Otago resident angler)
>
> *Beautiful country, good fishing challenge* (Southland resident angler)
>
> *Scenic beauty and world class fishing* (non-resident angler).

[63] Chart for Other NZ resident not provided due to low numbers of anglers in this sub-group.

For these anglers, and others like them, the Dingle continues to provide an excellent backcountry experience. However, for those who did plan to return to the Dingle in the future, there was also some suggestion, especially from Otago resident and non-resident anglers, that the quality of this experience had somewhat eroded due to crowding. The following extracts illustrate this point:

> *It's a wonderful and intimate fishery. There aren't many places to fish like the Dingle and it's a real sense of achievement to walk in with a mate and spend several days exploring and immersing yourself in a wonderful surrounding. The fishing is superb if you can manage to find a rare time with no guides flying in. Sadly this doesn't happen and leads to frustration … I can't imagine the number of fish caught by guides in the Dingle. It is a fish factory and this is exploited for commercial gain with nothing significant coming back into FGNZ other than miniscule license fees. Please save the dingle from commercial exploitation. It's being ruined for easy money* (Otago resident angler)

> *The lower Dingle and mouth are still great; unlikely to fish upper Dingle due to crowds from helicopters* (Non-resident angler).

Further, crowding-related issues were also to blame for some anglers, again Otago residents and non-residents, choosing not to fish the Dingle in the future (e.g. *"Spoiled as an upcountry burn by too many people"*). On the whole, though, a lack of opportunity or access-related issues (e.g. age, too far to travel) were the main reasons why some anglers did not plan to fish the Dingle in the future. Similarly, it was mainly for the same reasons that many other anglers remained uncertain about whether they would fish the river in the future. It should be noted, though, that amongst those who were yet to decide on a return trip to the Dingle, the negative issue of crowding was again mentioned by some anglers (ten), the vast majority of whom were Otago residents (e.g. *"Overseas anglers and guides...choppers coming and going has really effected the experience of fishing the Dingle"*).

4.6.7 Why have some anglers never fished the Dingle?

Around 85% of anglers who participated in the survey had never fished the Dingle before (n = 2,119[64]) and, of those, 66% (n = 1,390) provided an explanation for this. Figure 4-55 illustrates the main reasons why these anglers have never fished the Dingle (Note: n = greater than 1,390 as anglers could choose multiple options).

[64] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Hunter in the past (n = 363) from the total number of surveys completed (n = 2,482).

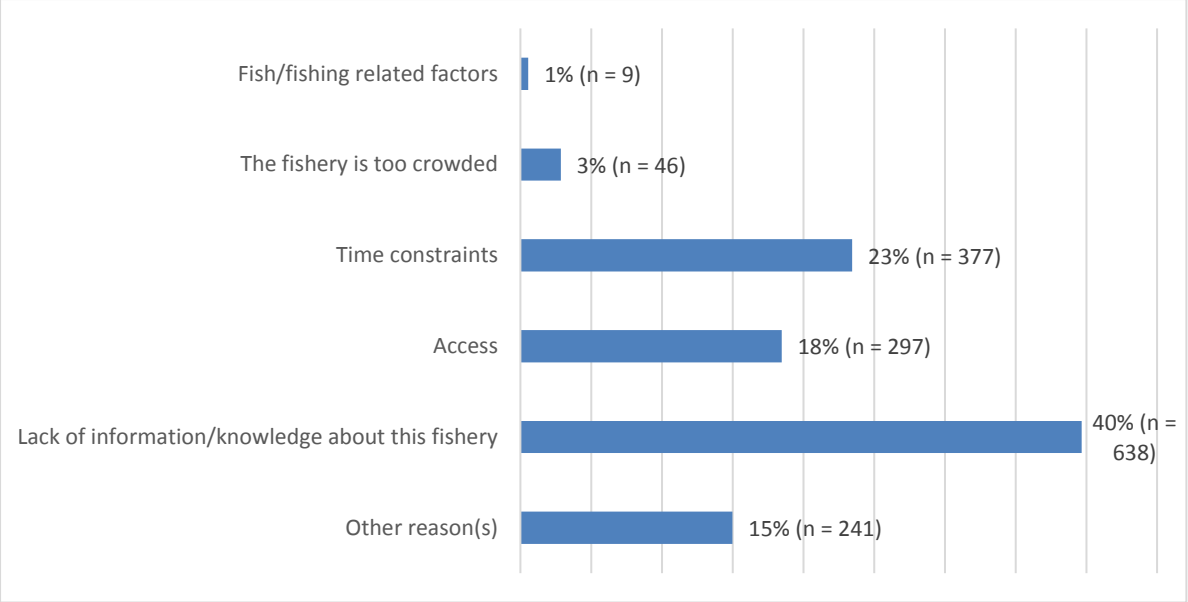

Figure 4-55: *Reasons for never fishing the Dingle*

Similarly as it was in the case of the Hunter, for anglers who had never fished the Dingle there appears little issue with potential crowding. Instead, a lack of information/knowledge about the fishery, together with time constraints and other access-related issues, were the main reasons why most of these anglers had chosen not to fish the Dingle in the past. Analysis of open-text responses for 'Other reason(s)' further indicated that time constraints, as part of broader access-related issues (e.g. age-related, distance from home etc.), together with a general lack of interest, were the main reasons why some anglers had never fished Dingle.

4.6.8 Future intentions of anglers who have never previously fished the Dingle

Those anglers who had never fished the Dingle before were also asked to consider whether they intended to fish the river in the future. Of the 1,592 anglers who responded, only 14% (n = 225) indicated that they did intend to fish the Dingle in the future; 42% (n = 675) stated they did not intend to fish the Dingle in the future; the remaining 44% (n = 692) were unsure whether they would fish the Dingle or not in the future.

Those answering 'no' (n = 675) were further prompted to explain the reason(s) why they did not intend to fish the Dingle in the future; 72% (n = 484) responded. Analysis of open-ended responses revealed that issues related to access (e.g. distance from home, lack of time, age/health etc.) and a lack of interest underpinned anglers' lack of willingness to fish the Dingle. Issues to do with perceived crowding were only mentioned by a few anglers (seven), mainly Otago and/or Southland residents (e.g. *"Too heavily fished and guided", "it's a popular river that gets thrashed").*

4.6.9 Management mechanisms and potential implications

4.6.9.1 Does the Dingle need management mechanisms to control crowding?

Of the 1,697 anglers who responded to the question asking about the need for management mechanisms to control crowding on the Dingle[65], 267 (16%) had fished the Dingle at least once in the past and 1,430 (84%) had not. Of the 267 anglers who had fished the river, 49% (n = 132) agreed that the Dingle needed management mechanisms to control crowding and only 13% (n = 36) disagreed; 37% (n = 99) were neutral. As with most other rivers in this study, anglers who had not fished the Dingle (n = 1430) were more neutral in their responses, with 64% (n = 912) neither agreeing nor disagreeing with the statement. Of the remaining anglers, 350 (24%) agreed and 168 (12%) disagreed that the Dingle needed management mechanisms to control crowding. These findings, which are virtually identical to those for the Hunter, are represented in Figure 4-56 below.

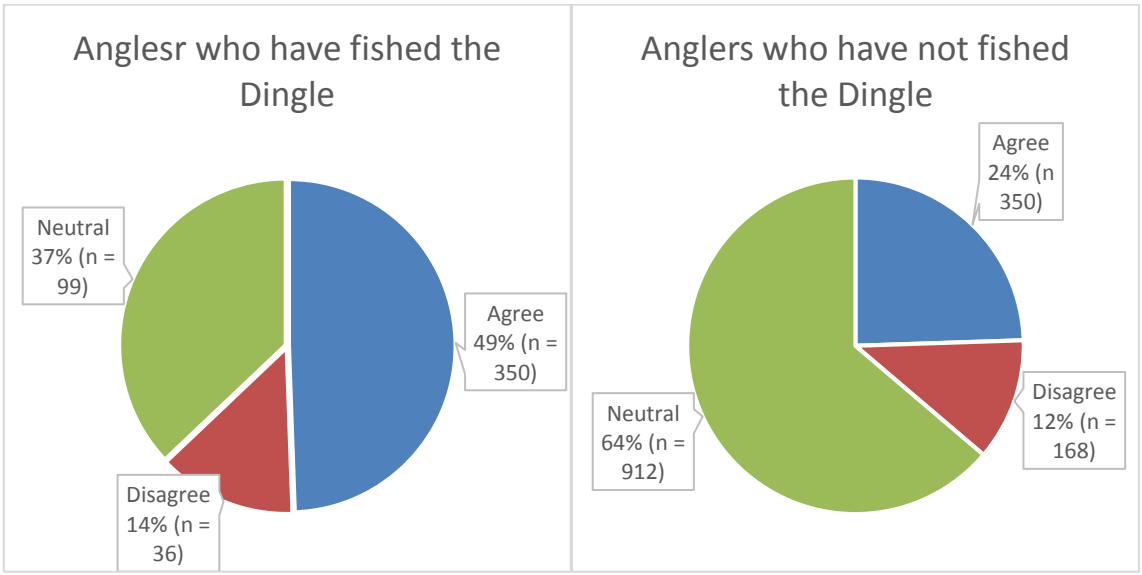

Figure 4-56: *The Dingle needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the Dingle, comparisons between different groups based on residency status (Figure 4-57 below) revealed that Otago residents were most in favour of the introduction of management mechanisms to control crowding on the Dingle.

[65] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).

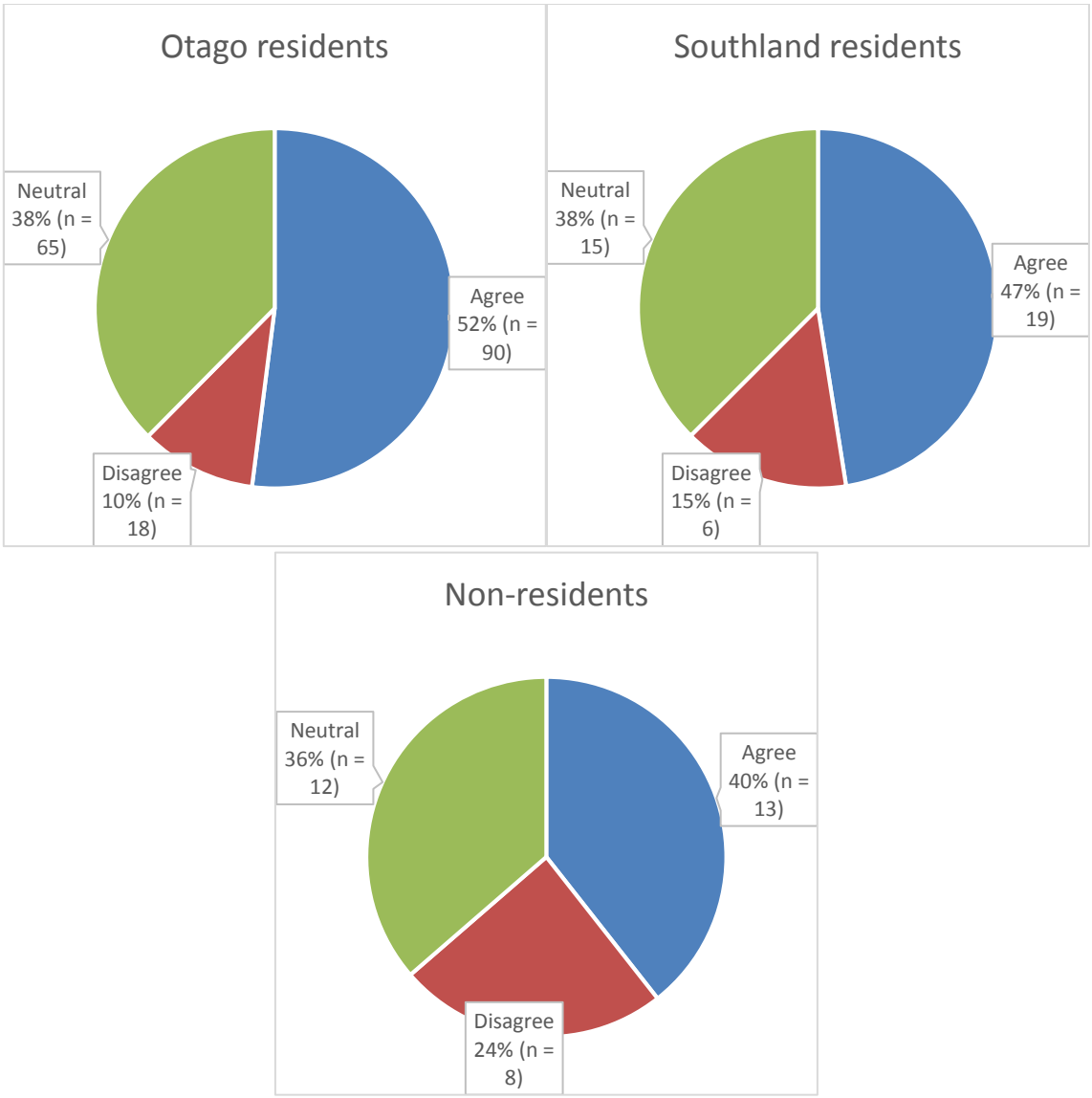

***Figure 4-57**: Resident vs. non-resident opinions: The Dingle needs management mechanisms to control crowding*[66]

Non-residents appeared least in favour of the introduction of management mechanisms to control crowding on the Dingle. It is unclear why this is the case, but one explanation could be that non-residents are simply not as sensitive to issues of crowding on the Dingle (arguably, comparable rivers in non-residents' home country are likely to be more crowded).

4.6.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the Dingle at some point in the past and who also responded to question 159[67] (n = 269), only 31% (n = 83) stated that they would be prepared to pay such

[66] Chart for Other NZ resident not provided due to low numbers of anglers in this sub-group.
[67] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

a charge and 49% (n = 132) would not. The remaining 20% of anglers (n = 54) were neutral in their responses. This data is represented in Figure 4-58.

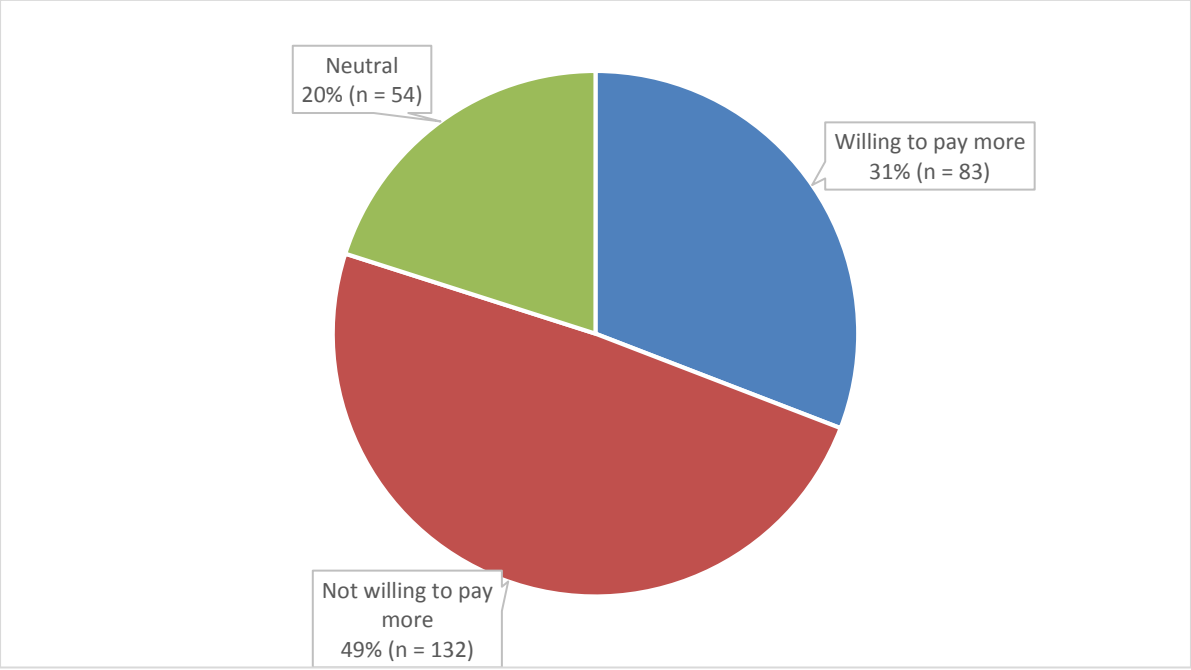

Figure 4-58: *Willingness of anglers who have fished the Dingle to pay an increased administration fee for management mechanisms*

From comparison of different groups based on residency status (see Figure 4-59 below), New Zealand residents, especially Southland residents, seemed considerably less willing than non-residents to pay an additional administration charge for management mechanisms to control crowding on the Dingle.

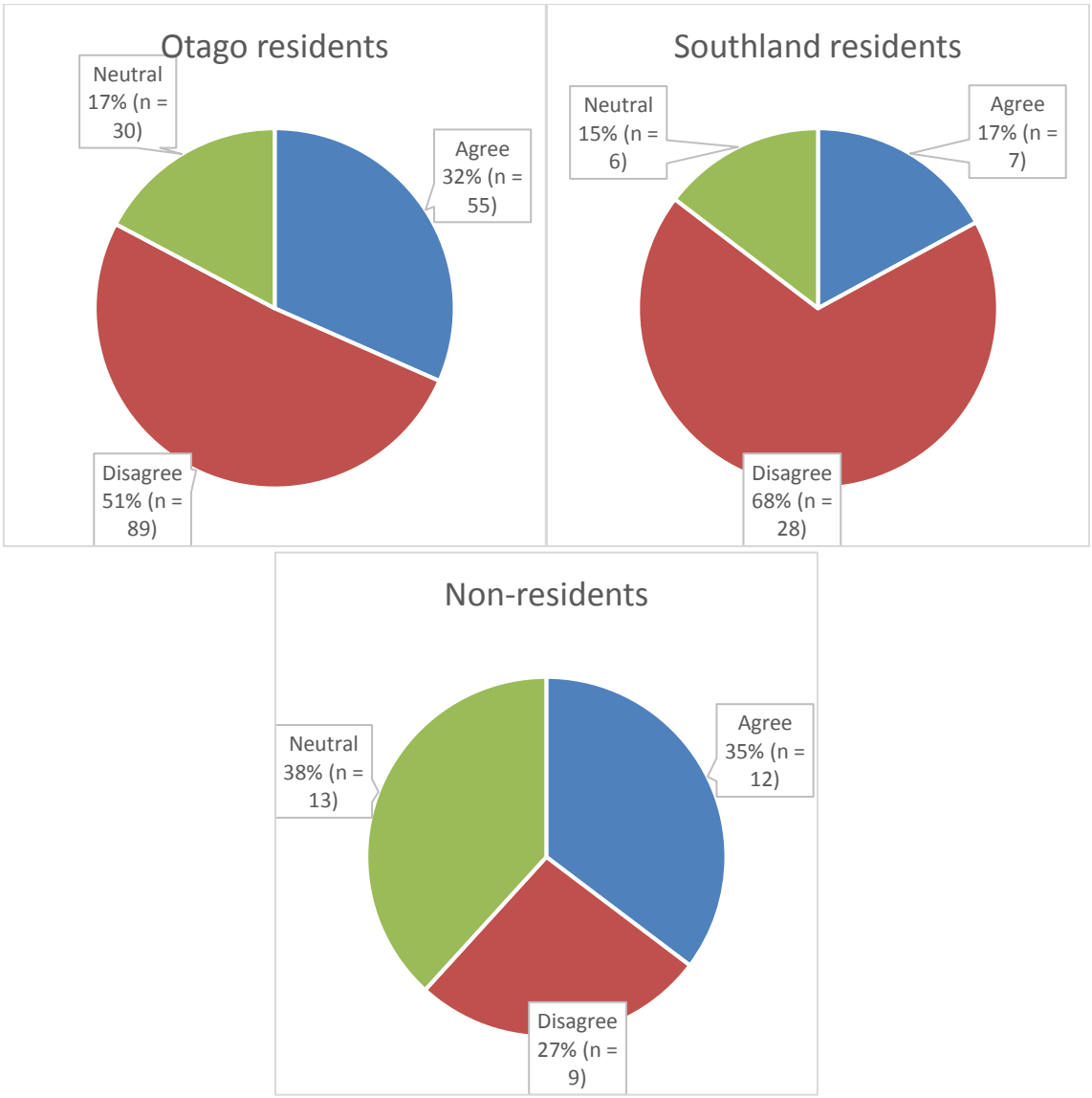

***Figure 4-59**: Resident vs. non-resident willingness to pay more for management mechanisms on the Dingle*

Further, non-residents appeared to be the most prepared to pay an additional administration fee if management mechanisms to control crowding were introduced on the Dingle, this despite being the group least in favour of the introduction of such mechanisms.

4.6.9.3 *Potential displacement resulting from the introduction of management mechanisms to control crowding*

If management mechanisms were to be introduced on the Dingle, some anglers who currently fish the river may be displaced. Figure 4-60 shows the proportion of anglers who stated that they would stop fishing the river if management mechanisms were to be introduced.

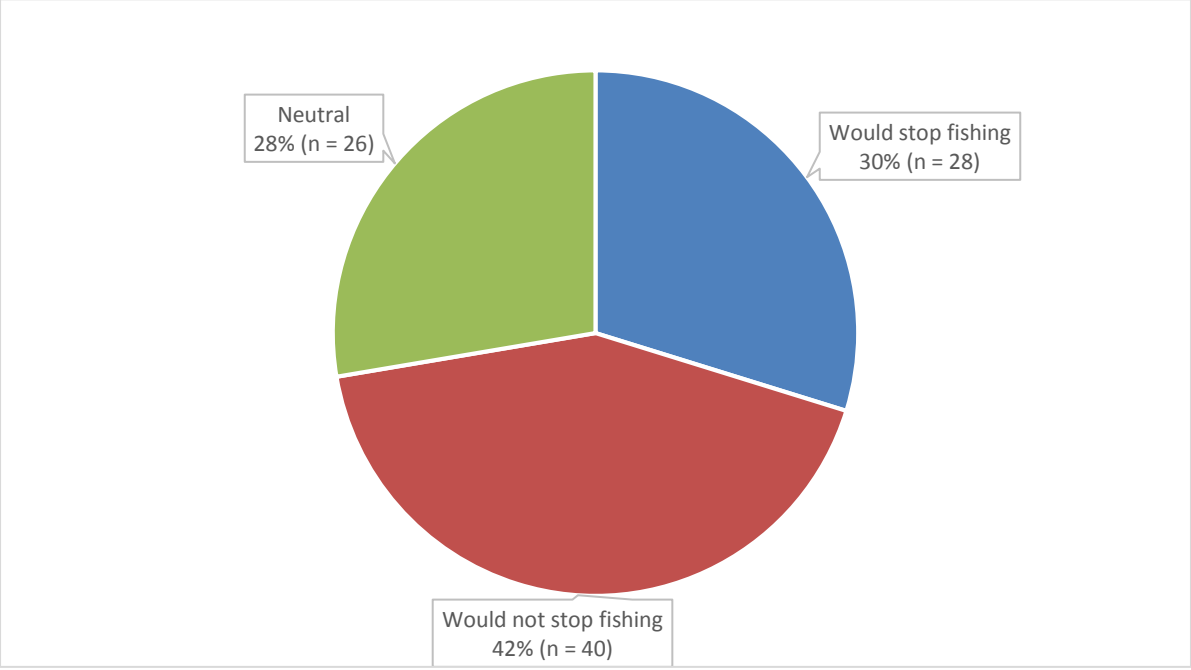

Figure 4-60: *Proportion of active anglers on the Dingle who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-60, of those anglers currently active on the river[68] and who also provided an answer to question 160[69] (n = 94), 42% (n = 40) said they would not stop fishing the Dingle if management mechanisms were introduced and 28% (n = 26) were neutral. Of critical importance in the context of this study, however, is the 30% of anglers (n = 28) who stated that they would stop fishing the Dingle if management mechanisms were introduced; it is this group that may be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this group are:

- Mostly NZ residents (96%) with largest proportion Otago residents (75%); only 4% were non-residents
- All were intermediate/advanced anglers and, of those, most had over 20 years angling experience (89%)
- 75% (n = 21) did plan to continue fishing the Dingle in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention.

[68] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 65, options 1, 2, 3 (see Appendix 1).
[69] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

4.6.10 Summary points

- Crowding is one of the main reasons why some anglers fish the Dingle less often than in the past but the issue does not appear to have stopped many anglers from fishing the Dingle completely.
- A very small proportion (around 12%) of anglers currently active on the Dingle have been temporally displaced; those that have mainly avoid the early or mid-season periods because of crowding, and especially that linked to guided parties using helicopters.
- Most temporally displaced anglers substituted a variety of different rivers/waters located in the Otago and Southland catchments for the Dingle; reported instances, albeit isolated, of anglers substituting the Dingle for other pressure-sensitive rivers (i.e. upper Mataura, Hunter) may be concerning.
- The majority of anglers participating in the study seemed unlikely to return to the Dingle in the future, but this was mainly due to access-related issues rather than crowding.
- A small proportion of anglers who had chosen not to fish the Dingle in the past had done so because of perceived crowding.
- Just under half of all anglers who had experience of the Dingle (i.e. those who have fished the river before) agreed that the river needs management mechanisms to control crowding; again, Otago residents represented the bulk of those supporting such mechanisms, yet at the same time they, along with Southland residents, were among the least willing to pay extra for this.
- Just under a third of active anglers on the Dingle may stop fishing the river if management mechanisms to control crowding were introduced; most are Otago residents.

4.7 Caples

4.7.1 Overview

Overall, 358 anglers stated that they had fished the Caples once or more in the past. Of those, 65% (n = 232) had purchased their license in the Otago area during the 2018/19 season, with the remaining 35% (n = 126) purchasing theirs in the Southland area. Of those anglers who responded to the question *'Thinking about the Caples, which statement best reflects your fishing activity?'* (n = 312, see Table 4-13), 43% (n = 134) stated that they fished the Caples less often than in the past or had stopped fishing this particular river completely. A smaller proportion of anglers (19%, n = 59) stated that they fished the Caples as often as or more often than in the past.

***Table 4-13**: Fishing activity on the Caples*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
Answer	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	16%	32	20%	21	17%	53
I fish here, and more often than I did in the past	1%	3	3%	3	2%	6
I fish here, but less often than I did in the past	18%	37	17%	18	18%	55
I fished here in the past but don't fish here anymore	24%	50	27%	29	25%	79
I have only fished here once in my life	41%	84	33%	35	38%	119
Total	**100%**	**206**	**100%**	**106**	**100%**	**312**

Of the 312 anglers comprised in the Table above, the vast majority were New Zealand residents (66%, n = 206) with most those coming from Otago (44% of sample, n = 136). Of the remaining New Zealand residents, 56 (18% of sample) were from Southland and 14 (4% of sample) were from outside the Otago/Southland region. In addition, 22% (n = 70) were non-resident anglers and 12% (n = 36) did not supply sufficient residency information[70]

4.7.2 Why do some anglers fish the Caples less often than they used to?

Of the 55 anglers who stated that they fished the Caples less often than in the past, most were experienced and committed anglers[71] (see Appendix 3). Figure 4-61 illustrates the main reasons

[70] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[71] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

why these anglers fished the Caples less often than in the past (Note: n = greater than 55 as anglers could choose multiple options).

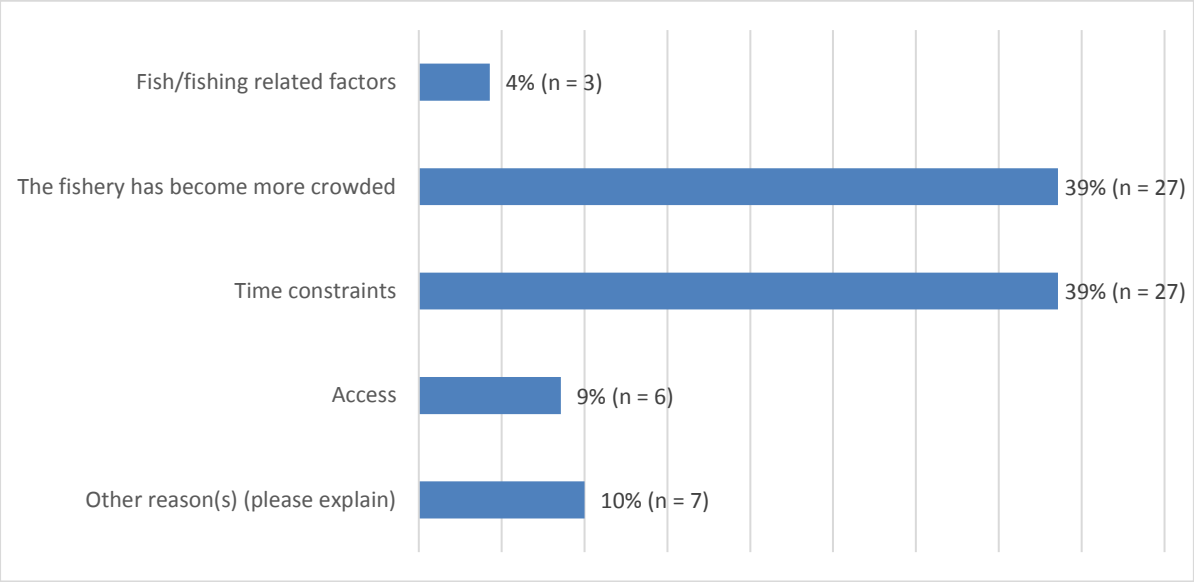

***Figure 4-61**: Reasons for anglers fishing the Caples less often*

For the anglers participating in this study a lack of time and crowding appeared to be the main reasons for fishing the Caples less often than in the past. 27 anglers cited crowding as a reason for fishing the Caples less often and, of those, most were New Zealand residents (74%, n = 20), with 12 coming from Otago, six from Southland and two from outside the Otago/Southland region. Of the remaining anglers, five (19%) were non-residents and two (7%) did not provide sufficient residency information. Where comments for 'Other reasons' were provided, issues to do with access (e.g. age/mobility, moved away from area) were mentioned most frequently. In addition, two anglers reported a deterioration in the quality of the Caples experience as a reason for fishing the river less often (e.g. *"fish numbers have dwindled", "seems to get more use during summer"*).

4.7.3 Why have some anglers stopped fishing the Caples?

Of the 79 anglers who had stopped fishing the Caples, most, again, were experienced and committed anglers (see Appendix 3). Figure 4-62 illustrates the main reasons why some anglers who used to fish the river had stopped (Note: n = greater than 79 as anglers could choose multiple options).

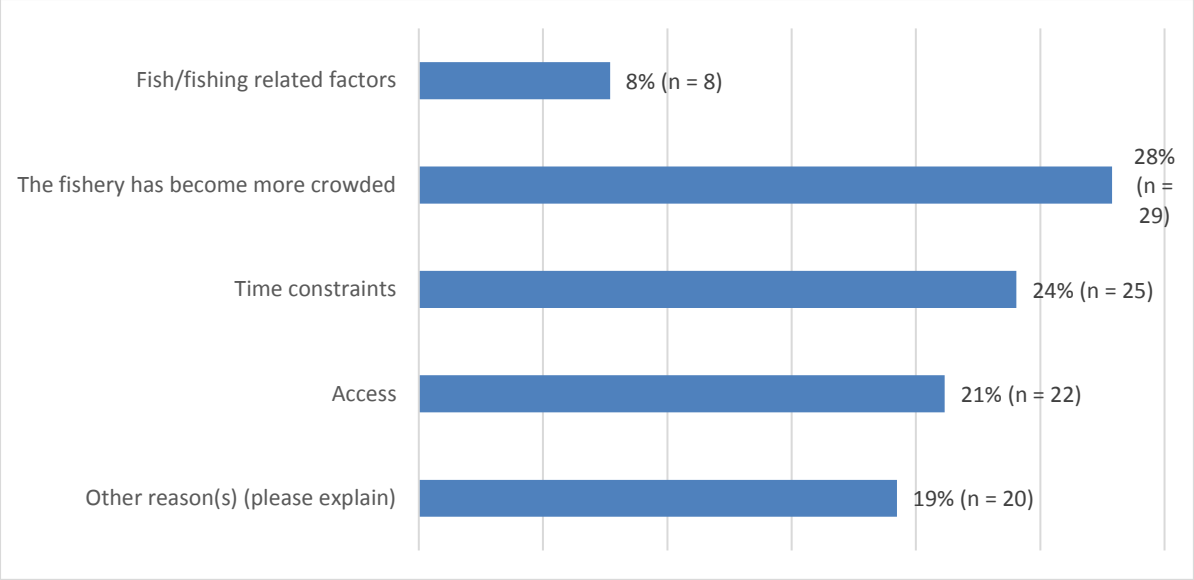

Figure 4-62: *Reasons for stopping fishing the Caples*

Crowding appeared to be the main reason why some anglers had chosen to stop fishing the Caples. Of the 29 anglers who selected this option, most (79%, n = 23) were New Zealand residents; of those 14 were from Otago and nine were from Southland. Of the remaining anglers, four (14%) were non-residents and two (7%) did not provide sufficient residency information. Access-related issues and time constraints were the other main reasons why some anglers have stopped fishing the Caples. When it comes to 'Other reasons', some anglers had simply moved out of the area whilst others had issues with age and/or health. Of particular importance to this study, two anglers, both from Southland, reiterated the issue of crowding when explaining 'Other reasons' (*"Three encounters in two bends. Nuts", "Too crowded for the effort to get there"*).

4.7.4 Nature and scope of temporal and spatial displacement on/from the Caples

4.7.4.1 Temporal displacement

For those anglers who had fished and continued to fish the Caples, whether to a greater, lesser or similar extent as in the past (n = 114)[72], there is some, again albeit extremely limited, evidence of temporal displacement occurring. Table 4-14 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continued to fish the Caples.

[72] I.e. Those who indicated either of the following: 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 53) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 6) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 55).

Table 4-14 *Temporal patterns of behaviour on the Caples*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	21%	14	36%	13	26%	27
I've always done most of my fishing here in the mid-season	54%	37	50%	18	53%	55
I've always done most of my fishing here in the late season	15%	10	6%	2	12%	12
I used to mostly fish here in the early season but now avoid this period	3%	2	3%	1	3%	3
I used to mostly fish here in the mid-season but now avoid this period	6%	4	6%	2	6%	6
I used to mostly fish here in the late season but now avoid this period	1%	1	0%	0	1%	1
Total	**100%**	**68**	**100%**	**36**	**100%**	**104***

*does not total 114 as some anglers skipped this question.

Of those anglers who had fished and continued to fish the Caples, the vast majority (90%, n = 94) regularly fished at the same time of year. However, the remaining 10% (n = 10) of anglers had been temporally displaced and had changed when they fished during the season. Of those 10 temporally displaced anglers, most avoided the mid-season period (January to March). This small group of six anglers comprised three Otago residents, two non-residents and one angler who did not provide residency information. Open-text responses provided by these anglers revealed that crowding was the sole reason why they avoided the mid-season period (e.g. *"its mire busy"*). Crowding was also an issue in terms of early season avoidance (one Otago angler), as was poor weather (one angler, no residency information).

4.7.4.2 Spatial displacement

Of all 10 anglers temporally displaced, most (70%, n = 7) have substituted an alternative river for the Caples during the period of displacement. Stated alternative rivers/waters include (number in brackets = no. of mentions):

- Greenstone (3)
- Mataura (2)
- Diamond Stream (1)

Arguably, substituting any of these rivers, even the Greenstone which is very close by, for Caples might reasonably be considered evidence of *inter*-site spatial displacement (i.e. anglers shifting to different geographical areas to fish). Based on the extremely limited data available, the Greenstone appeared to be the most favoured alternative, especially with Otago residents.

4.7.5 Nature and scope of potential absolute displacement

All anglers who identified as having visited the Caples once or more in the past (n = 358) were asked to reflect on whether any experience(s) on the Caples had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 306 anglers who answered the question, 7% (n = 21) stated that they had experienced such a situation. Most were New Zealand residents (85%, n = 18), with eight coming from Otago, eight from Southland and two from outside Otago/Southland. Of the remaining three anglers, one was a non-resident and two did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4-63 below (Note: n = greater than 21 as anglers could choose multiple options).

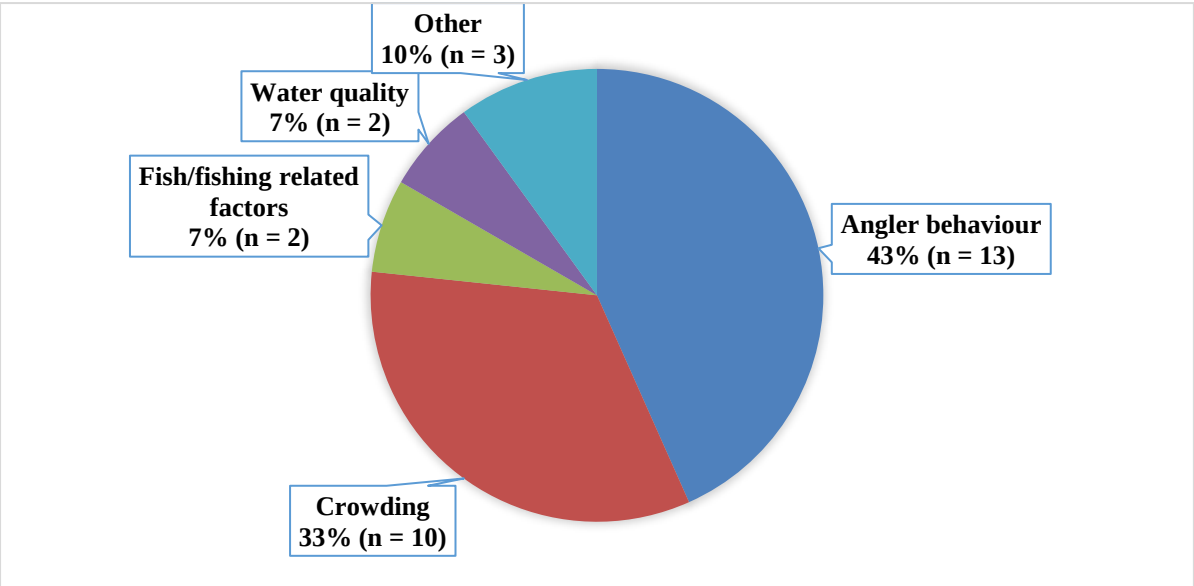

***Figure 4-63**: Factors contributing to potential absolute displacement (Caples)*

Once again, angler behaviour and crowding were the main factors contributing to potential absolute displacement as a result of a bad experience on the Caples. Proportionately, crowding appeared to be an issue mainly for Otago residents (half of all anglers who chose 'crowding' (n = 5) were Otago residents), whereas (poor) angler behaviour appeared to affect similar numbers of Otago and Southland residents. Interestingly, though, the three anglers who selected 'Other' were all from Southland and their open-text responses also implicitly pointed to poor angler behaviour and/or crowding as reasons for potential absolute displacement (e.g. *"guides with a chopper fishing pool to pool above me"*).

4.7.6 Future intentions of all anglers who have previously fished the Caples

Anglers who identified as having visited the Caples once or more in the past (n = 358) were also asked to a) consider whether they intended to fish the river in the future and b) explain the main reason why/why not. Of the 306 anglers who responded to the question, just under half (44%, n = 135) did intended to return and 16% (n = 50) did not. The remaining 40% (n = 121)

were unsure if they would return or not in the future. As can be seen in Figure 4-64 below, compared with Otago resident and non-resident anglers, a considerably smaller proportion of Southland anglers planned to return to the Caples in the future.

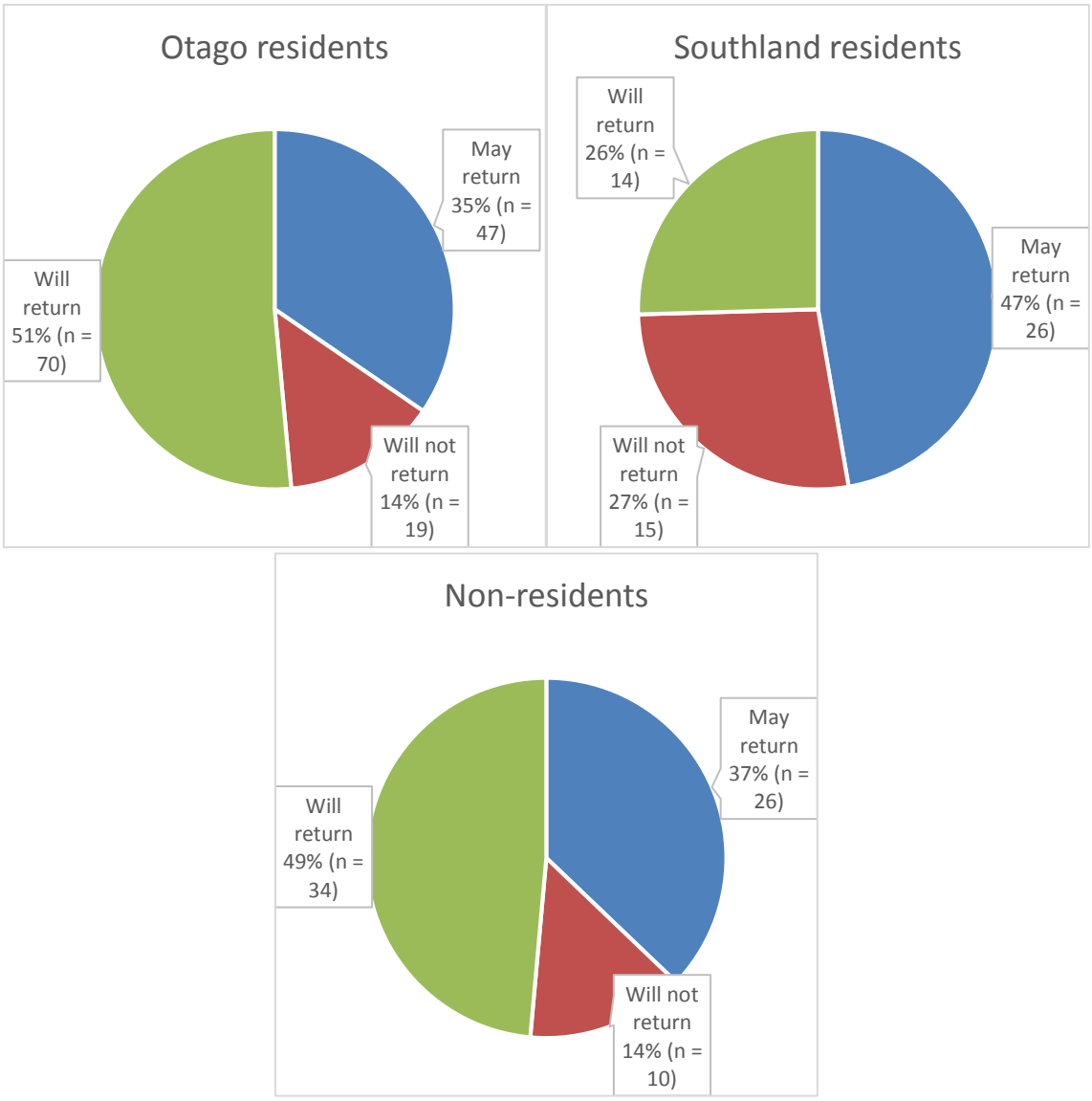

Figure 4-64: *Resident vs. non-resident future intentions to return to the Caples*[73]

Open-text data explaining the main reasons why anglers planned to return to the Caples or not was analysed for themes. In general, for those that did intend to return to the Caples in the future anglers' motivations can, once again, be encapsulated in the theme 'Scenery/general experience'. This theme, which was common amongst all residency sub-groups, relates to the ways in which anglers described their positive experiences of the Caples, as illustrated in the following extracts:

> *It's a beautiful river and environment* (Otago resident angler)
>
> *Beautiful place to fish* (Southland resident angler)

[73] Chart for Other NZ resident not provided due to low numbers of anglers in this sub-group.

Challenging river, solitude and beautiful scenery (non-resident angler).

Added to this, the Caples also appears to offer a relatively accessible option, be that in terms of convenience (i.e. close to home; especially for Otago anglers) and/or ease of access (e.g. *"Reasonably accessible by foot. Not too far to walk in"*). Good access was especially prevalent among Otago residents and this may be one reason why, when compared to other sub-groups (see Figure above), a slightly higher proportion of Otago anglers planned to fish the river in the future.

Paradoxically, however, issues to do with access was also one of the main reasons why some Otago anglers did not plan to fish the Caples in the future. Here, it was about the difficulties, rather than the ease, of access (e.g. deteriorating health, old age, lack of time). Across all residency sub-groups, however, the issue of crowding was a common reason why some anglers did not plan to fish the Caples in the future. The extracts below illustrate this point:

> *"The Caples is over-run with humanity .... It is a crowd experience, which is sad"* (Southland angler).

> *"Guided encounter risk (helicopters) too great for effort to get there"* (Otago angler)

Of those anglers as yet undecided about a return to the Caples, most seemed disinclined due to access-related issues (e.g. *"Time constraints and age"*) or crowding (e.g. "*There are better places to go pressure wise and no guides!!"*). This was common across all the main residency sub-groups.

4.7.7 Why have some anglers never fished the Caples?

Around 86% of anglers who participated in the survey had never fished the Caples before (n = 2,124[74]) and, of those, 64% (n = 1,365) provided an explanation for this. Figure 4-65 illustrates the main reasons why these anglers had never fished the Caples (Note: n = greater than 1365 as anglers could choose multiple options).

[74] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Hunter in the past (n = 358) from the total number of surveys completed (n = 2,482).

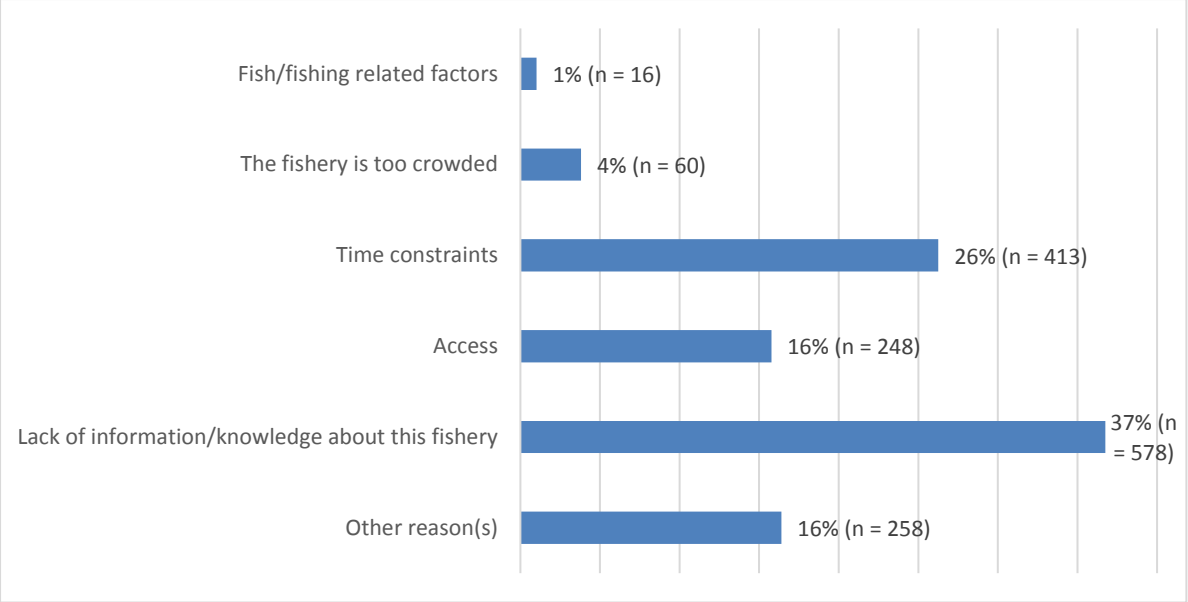

Figure 4-65*: *Reasons for never fishing the Caples

Similarly as it was for the other Otago rivers in this study, for most anglers who had chosen not to fish the Caples in the past potential crowding does not appear to be a major contributing factor in their decision. Instead, a lack of information/knowledge about the fishery, coupled with time constraints, were the main reasons why most anglers had chosen not to fish the Caples in the past. Analysis of open-text responses for 'Other reason(s)' further indicated that time constraints, together with broader access-related issues (e.g. age-related, distance from home etc.), were the main reasons why some anglers had never fished Caples. In addition, many anglers simply hadn't yet made it to the Caples or preferred to fish other rivers/waters. Crowding was only mentioned by three anglers.

4.7.8 Future intentions of anglers who have never previously fished the Caples

Those anglers who had never fished the Caples before were also asked to consider whether they intended to fish the river in the future. Of the 1,573 anglers who responded, only 12% (n = 194) indicated that they did intend to fish the Caples in the future; 44% (n = 692) stated they did not intend to fish the Caples in the future; the remaining 44% (n = 687) were unsure whether they would fish the Caples or not in the future.

Those answering 'no' (n = 692) were further prompted to explain the reason(s) why they did not intend to fish the Caples in the future; 72% (n = 483) responded. Analysis of open-ended responses revealed that issues related to access (e.g. distance from home, lack of time, age/health etc.) coupled with a lack of interest and/or preference for other rivers/waters underpinned anglers' lack of willingness to fish the Caples. Concerns about crowding were, however, mentioned by some anglers (n = 16), mainly Otago residents and non-residents (e.g. *"potentially crowded", "it's a popular river that gets thrashed", time and effort with no guarantee of having the stretch to myself"*).

4.7.9 Management mechanisms and potential implications

4.7.9.1 Does the Caples need management mechanisms to control crowding?

Of the 1,682 anglers who responded to the question asking about the need for management mechanisms to control crowding on the Caples[75], 288 (17%) had fished the Caples at least once in the past and 1394 (83%) had not. Of the 288 anglers who had fished the river, over half (56%, n = 161) agreed that the Caples needed management mechanisms to control crowding and only 15% (n = 44) disagreed; 29% (n = 83) were neutral in their responses. As with all other rivers in this study, anglers who had not fished the Caples (n = 1394) were more neutral in their responses, with 62% (n = 865) neither agreeing nor disagreeing with the statement. Of the remaining anglers, 362 (26%) agreed and 167 (12%) disagreed that the Caples needed management mechanisms to control crowding. These findings are represented in Figure 4-66 below.

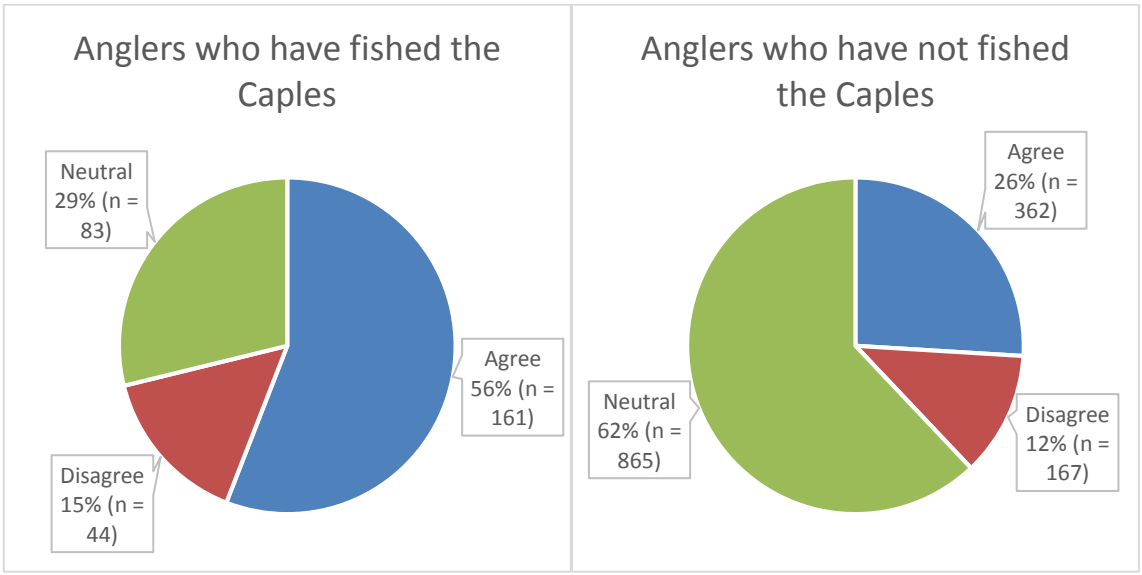

Figure 4-66: *The Caples needs management mechanisms to control crowding*

Concentrating just on those anglers who had fished the Caples, comparisons between different groups based on residency status (Figure 4-67 below) revealed that Otago residents were most in favour of the introduction of management mechanisms to control crowding on the Caples.

[75] Question 158: to what extent do you agree or disagree with the following statement: This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).

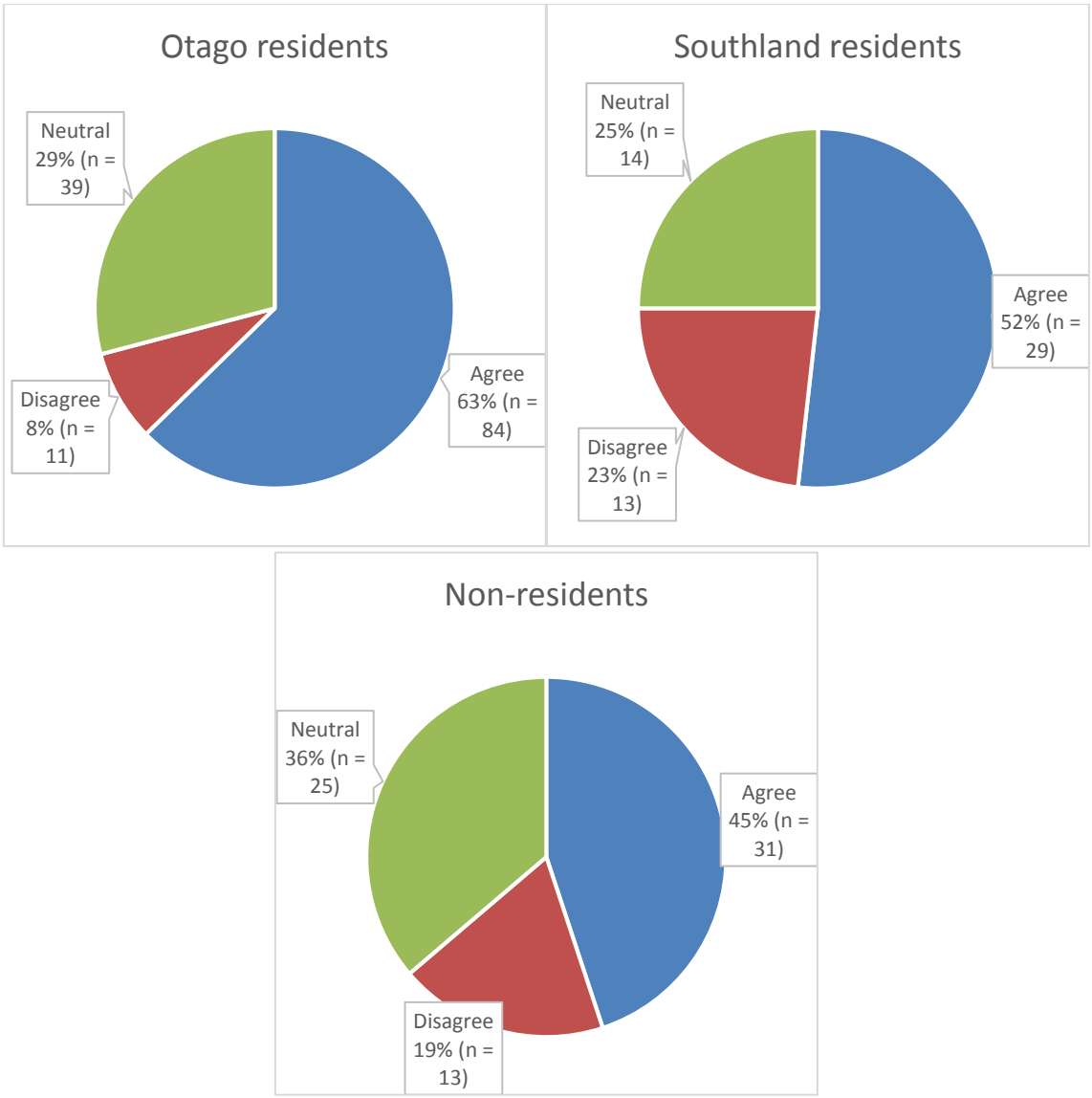

***Figure 4-67**: Resident vs. non-resident opinions: The Caples needs management mechanisms to control crowding*[76]

Non-residents appeared least in favour of the introduction of management mechanisms to control crowding on the Caples. It is unclear why this is the case, but, as noted in the Hunter case study, one explanation could be that non-residents are simply not as sensitive to issues of crowding on the Caples.

4.7.9.2 Are anglers willing to pay for management mechanisms to control crowding?

Of those anglers who had fished the Caples at some point in the past and who also responded to question 159[77] (n = 283), 35% (n = 100) stated that would be prepared to pay such a charge

[76] Chart for Other NZ resident not provided due to low numbers of anglers in this sub-group.
[77] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.

and 46% (n = 130) would not. The remaining 19% of anglers (n = 53) were neutral in their responses. This data is represented in Figure 4-68.

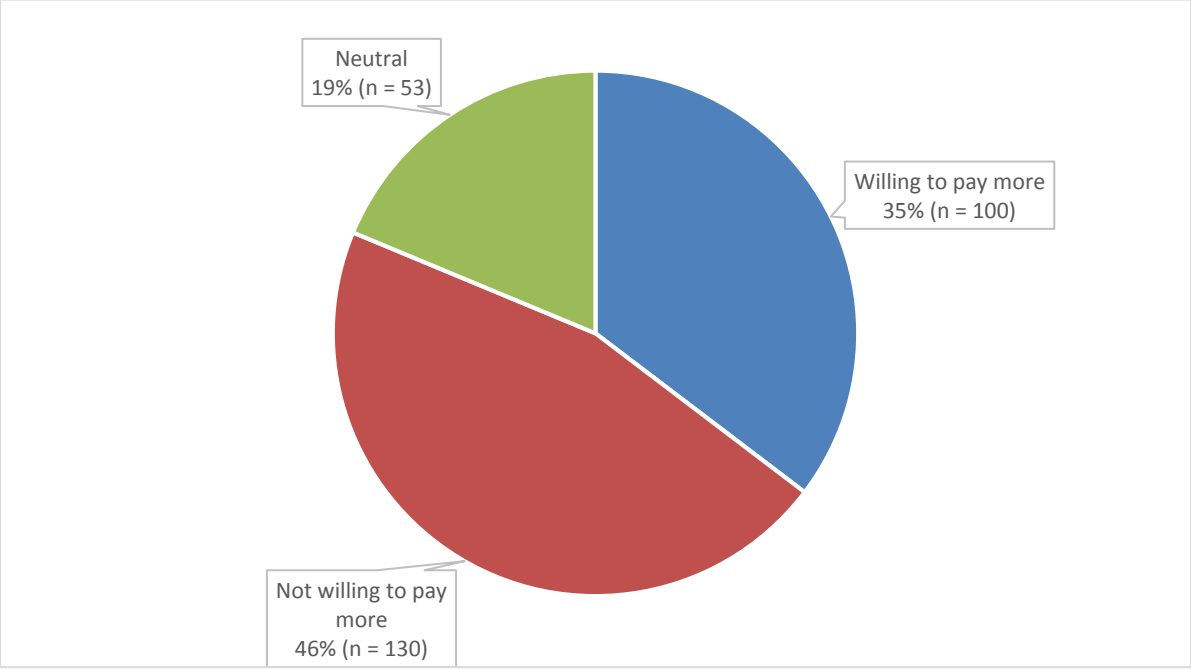

Figure 4-68: *Willingness of anglers who have fished the Caples to pay an increased administration fee for management mechanisms*

From comparison of different groups based on residency status (see Figure 4-69 below), New Zealand residents, especially Southland residents, appeared considerably less willing than non-residents to pay an additional administration charge for management mechanisms to control crowding on the Caples.

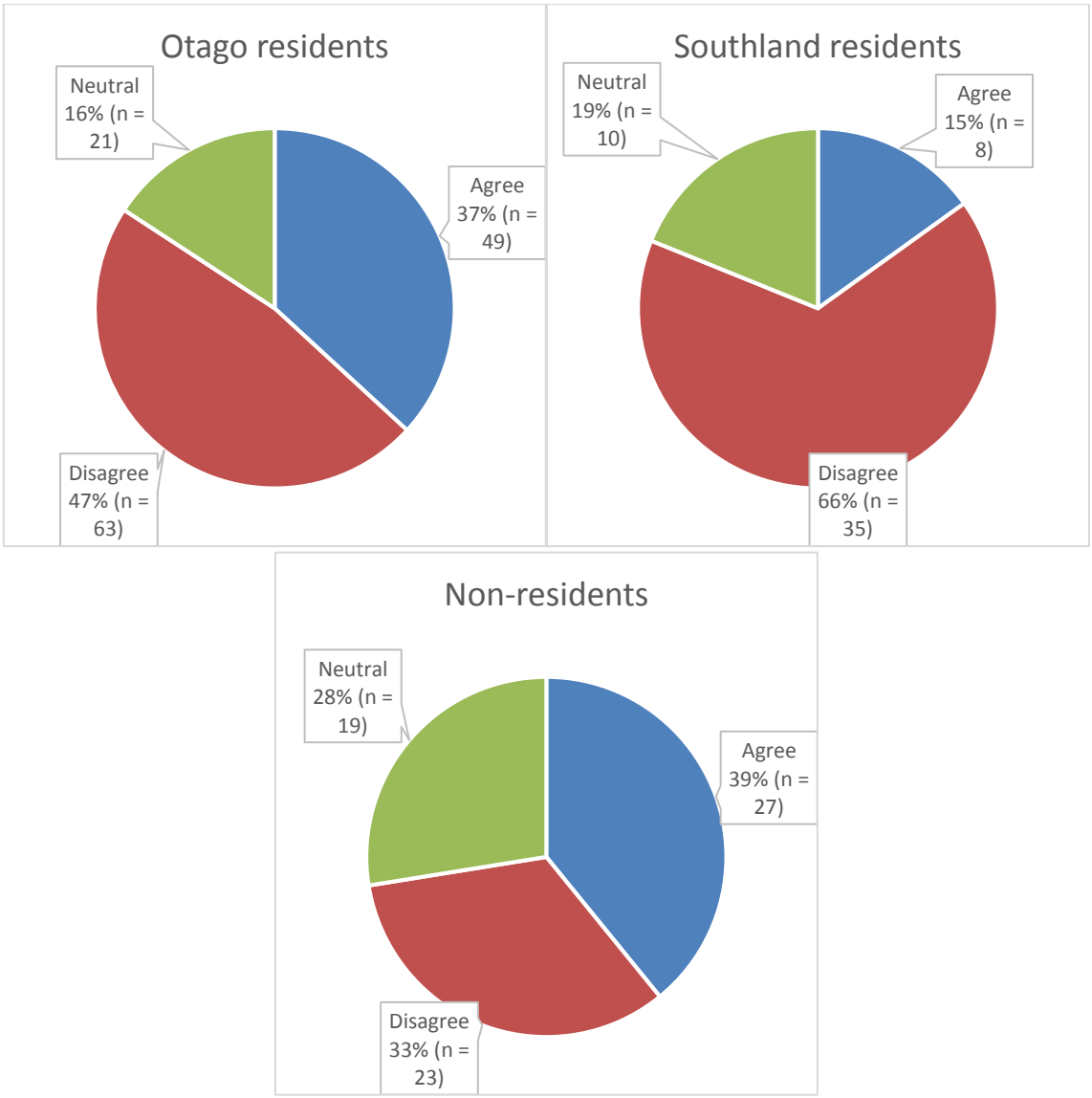

***Figure 4-69**: Resident vs. non-resident willingness to pay more for management mechanisms on the Caples*

Otago residents and non-residents appeared to be the most prepared to pay an additional administration fee if management mechanisms to control crowding were introduced on the Caples.

4.7.9.3 Potential displacement resulting from the introduction of management mechanisms to control crowding

If management mechanisms were to be introduced on the Caples, some anglers who currently fish the river may be displaced. Figure 4-70 shows the proportion of anglers who stated that they would stop fishing the river if management mechanisms were to be introduced.

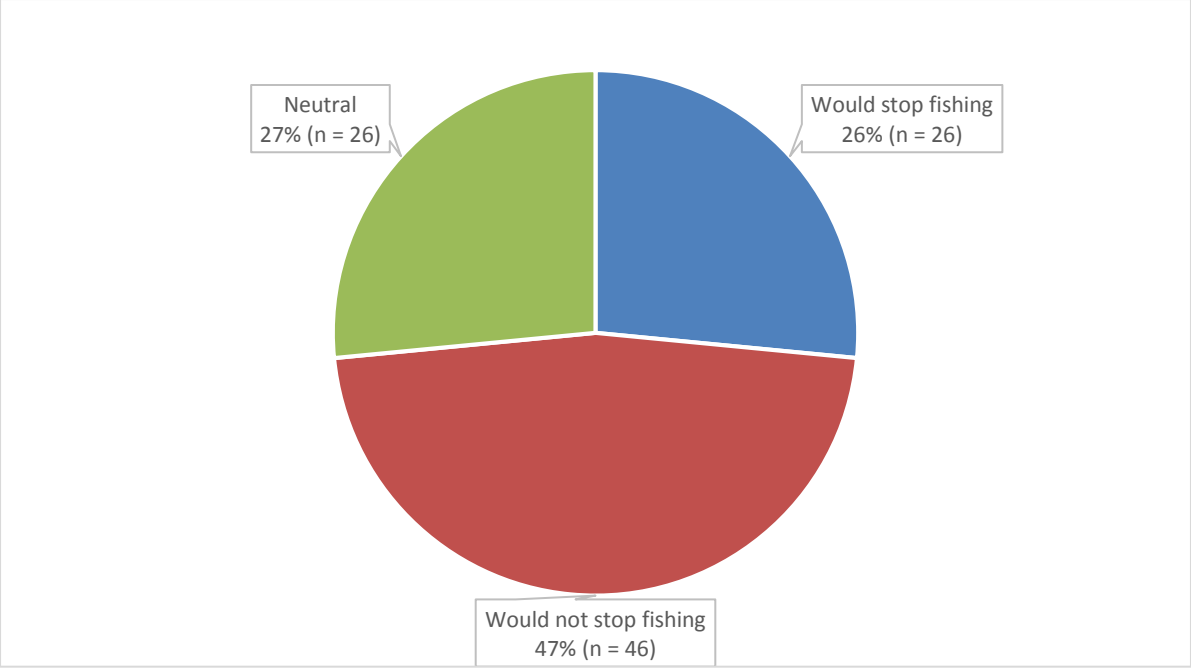

Figure 4-70: *Proportion of active anglers on the Caples who would stop fishing the river if management mechanisms were introduced*

As can be seen in Figure 4-70, of those anglers currently active on the river[78] and who also provided an answer to question 160[79] (n = 98), just under half (47%, n = 46) said they would not stop fishing the Caples if management mechanisms were introduced and 27% (n = 26) were neutral. Of critical importance in the context of this study, however, is the 26% of anglers (n = 26) who stated that they would stop fishing the Caples if management mechanisms were introduced; it is this group that may be displaced by the introduction of management mechanisms to limit or control use. The key characteristics of this group are:

- Mostly NZ residents (85%) with largest proportion Otago residents (46%); 15% were non-residents
- Vast majority (96%) were intermediate/advanced anglers and, of those, most had over 20 years angling experience (88%)
- 54% (n = 14) did plan to continue fishing the Caples in the future; thus, any decision not to return would most likely be as a direct consequence of management intervention. A further 10 anglers (38%) were as yet undecided about a return visit to the Caples and, arguably therefore, the introduction of management mechanisms could also have some bearing on their future decision-making.

[78] Based on those anglers who stated that they continue to fish the river (regardless of whether this is to a similar, lesser or greater extent as in the past); Survey question 99, options 1, 2, 3 (see Appendix 1).
[79] To what extent do you agree or disagree with the following statement: If management mechanisms were introduced on this river I would stop fishing here.

4.7.10 Summary points

- Crowding is one of the main reasons why anglers fish the Caples less often than in the past and it is *the* main reason why anglers stop fishing the Caples altogether.
- An extremely small proportion (around 10%) of anglers currently active on the Caples have been temporally displaced; those that have mainly avoid the mid-season period, and solely because of crowding
- Most temporally displaced anglers substituted either the Greenstone or Mataura for the Caples, and this is potentially concerning given that these rivers are also highly sensitive to angling pressure.
- The majority of Otago anglers participating in the study seemed likely to return to the Caples in the future, as did a large proportion of non-residents. The picture is less clear for Southland residents, however, with most seemingly unlikely to return to the Caples in the future. Regardless of residency, crowding is one of the main reasons why anglers did not want to return to the Caples.
- A small proportion of anglers who had chosen not to fish the Caples in the past had done so because of perceived crowding.
- Just over half of all anglers who had experience of the Caples (i.e. those who have fished the river before) agreed that the river needed management mechanisms to control crowding; New Zealand residents were most in favour of the introduction of such mechanisms yet are the least willing to pay extra for these; conversely, non-residents were least in favour of the introduction of mechanisms to control crowding but were still the group most willing to pay extra for these.
- Just over a quarter of active anglers on the Dingle may stop fishing the river if management mechanisms to control crowding were introduced.

4.8 Greenstone

4.8.1 Overview

Overall, 522 anglers stated that they had fished the Greenstone River once or more in the past. Most of those (n = 321) had purchased their license in the Otago area (n = 321) during the 2018/19 season, with the remainder (n = 201) purchasing theirs in the Southland area. Of those who responded to the question *'Thinking about the Greenstone, which statement best reflects your fishing activity?'* (n = 413) almost half had only fished there once. Around a further 40% fished the Greenstone less often than in the past or had stopped fishing this particular river altogether (Table 4-15).

***Table 4-15**: Fishing activity on the Greenstone*

	Otago licence area		Southland licence area		Combined total Otago/Southland	
	%	Count	%	Count	%	Count
I fish here, and about as often as I did in the past	12%	31	11%	18	12%	49
I fish here, and more often than I did in the past	0%	0	4%	6	1%	6
I fish here, but less often than I did in the past	16%	40	11%	18	14%	58
I fished here in the past but don't fish here anymore	25%	63	28%	44	26%	107
I have only fished here once in my life	47%	119	46%	74	47%	193
Total	**100%**	**253**	**100%**	**160**	**100%**	**413**

This group of 413 anglers was comprised mostly of New Zealand residents (71%, n = 294). In addition, 21% (n = 88) were non-resident angers and 8% (n = 31) did not supply sufficient residency information[80].

4.8.2 Why do some anglers fish the Greenstone less often than they used to?

Of the 58 anglers who fished the Greenstone less often than in the past, most were experienced and committed anglers[81] (see Appendix 3). Figure 4-71 illustrates the main reasons why these anglers now fished the Greenstone less often (Note: n = greater than 58 as anglers could choose multiple options).

[80] In response to a question about residency (Q162, Appendix 1) these anglers either answered 'Other' or did not answer at all. Subsequently, it is impossible to determine with any degree of accuracy whether these anglers are New Zealand residents or NR's.

[81] As identified by cross tabulating questions related to angling skill level (Q2), general participation in/commitment to angling (Q3, Q4) and residency status (Q162) – see Appendix 1 for full wording of questions.

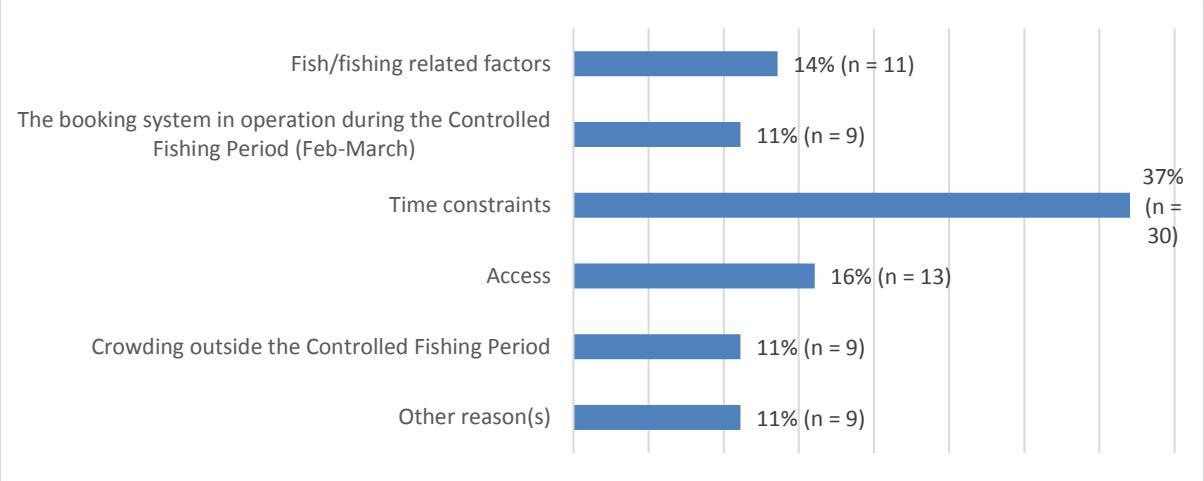

Figure 4-71: *Reasons for anglers fishing the Greenstone less often*

For the anglers participating in this study, time constraints and other access issues appeared to be the main reasons for fishing the Greenstone less often than in the past. This was further confirmed in the open-text responses for 'Other reason(s)', where 'access issues' was identified as the main theme and related mainly to age/health constraints and the remoteness of the river. Interestingly, potential crowding outside of the Controlled Fishing Period did not appear be a major issue; neither did the booking system in operation during the Controlled Fishing Period. It should be noted, though, that in the few cases where the booking system caused anglers to fish the river less often, the regulative nature of the booking system was seen as being too restrictive and not conducive to spontaneous trip planning. This is illustrated in the extract below:

> *Too restrictive. You might get a booking during bad weather or high water. The Caples is just as good. I can fish it when the conditions are good* (Southland resident).

Implicit in the extract above is also the idea that the booking system, certainly when viewed as being overly restrictive, may force anglers to seek alternative rivers.

4.8.3 Why have some anglers stopped fishing the Greenstone?

As with those who fish the Greenstone less often, most of the 107 anglers who had stopped fishing the Greenstone were experienced and committed anglers (see Appendix 3). Figure 4-72 illustrates the main reasons why these anglers stopped fishing the Greenstone (Note: n = greater than 107 as anglers could choose multiple options).

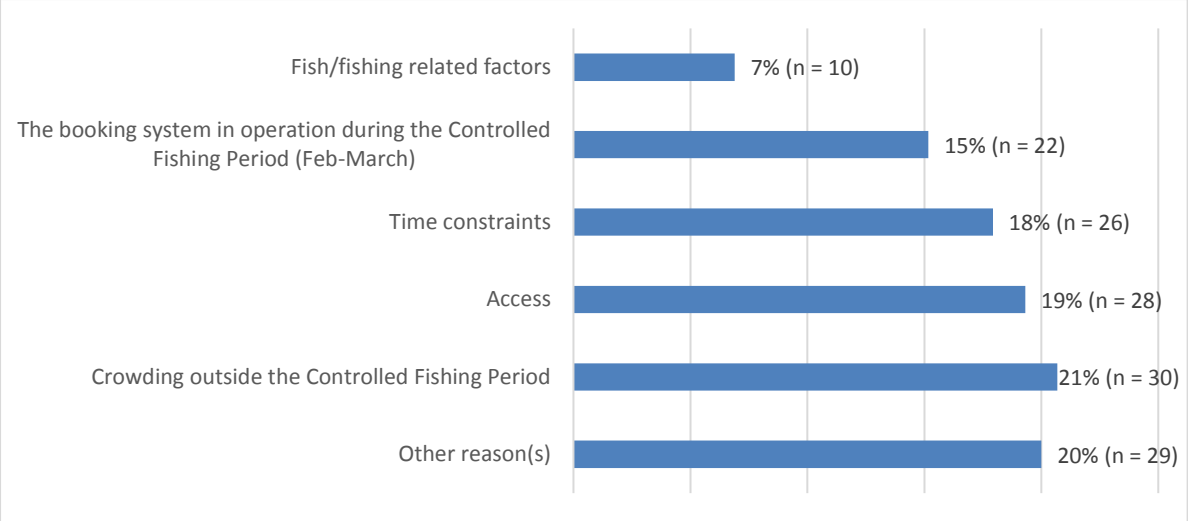

Figure 4-72: *Reasons for stopping fishing the Greenstone*

Time constraints and access issues were, again, some of the main reasons why anglers participating in this study stopped fishing the Greenstone. In a similar way to those anglers who fished the Greenstone less often, open-text responses for 'Other reason(s)' further identify 'access issues' as being problematic and mostly related to anglers' age/health and the remoteness of the river. However, crowding outside the Controlled Fishing Period appeared to be the main reason why these anglers had stopped fishing the Greenstone. Of the 30 anglers who cited crowding as a reason for stopping fishing the Greenstone, the vast majority (87%) were New Zealand resident anglers (n = 26), and most were Otago residents. Only 13% (n = 4) were non-resident anglers. In addition to the issues mentioned, the booking system in operation during the Controlled Fishing Period appeared also to have had a more prominent effect on angler activity and, again, this is underpinned by concerns about how booking restrictions hindered spontaneous trip planning. Of the 22 anglers who cited the booking system as a reason for stopping fishing the Greenstone, the overwhelming majority were New Zealand residents, most of whom reside in Otago.

4.8.4 Nature and scope of temporal and spatial displacement on/from the Greenstone

4.8.4.1 Temporal displacement

For those anglers who had fished and continue to fish the Greenstone, whether to a greater, lesser or similar extent as in the past (n = 113)[82], there was some *limited* evidence of temporal displacement occurring. Table 4-16 provides an overview of temporal patterns of behaviour amongst those anglers who had fished and continue to fish the Greenstone.

[82] I.e. Those who indicated either of the following (see Table 1): 'I fish here, and about as often as I did in the past' (combined Otago/Southland, n = 49) or 'I fish here, and more often than I did in the past' (combined Otago/Southland, n = 6) or 'I fish here, but less often than I did in the past' (combined Otago/Southland, n = 58).

***Table 4-16**: Temporal patterns of behaviour on the Greenstone*

	Otago licence area		**Southland licence area**		**Combined total Otago/Southland**	
	%	Count	%	Count	%	Count
I've always done most of my fishing here in the early season	31%	20	30%	11	32%	33
I've always done most of my fishing here in the mid-season	48%	31	38%	14	43%	45
I've always done most of my fishing here in the late season	11%	7	19%	7	13%	14
I used to mostly fish here in the early season but now avoid this period	5%	3	5%	2	5%	5
I used to mostly fish here in the mid-season but now avoid this period	5%	3	8%	3	6%	6
I used to mostly fish here in the late season but now avoid this period	2%	1	0%	0	1%	1
Total	**100%**	**65**	**100%**	**37**	**100%**	**104***

* does not total 113 as some anglers skipped this question.

Of those anglers who had fished and continue to fish the Greenstone, 88% (n = 92) regularly fished at the same time of year. However, the remaining 12% (n = 12) of anglers changed when they fish during the season, with most choosing to avoid either the early season (November to December) or mid-season (January-March) periods. This is perhaps unsurprising given that the November to March period is the peak tourist season and coincides with the New Zealand summer school holidays (December to February). Indeed, when asked to explain why they now avoid the early or mid-season, the few anglers affected cited 'crowding' as one of the main causes of temporal displacement, in addition to a lack of time. Of the 12 anglers temporally displaced, 83% were local Otago residents.

4.8.4.2 Spatial displacement

Of the 12 anglers temporally displaced, 75% (n =9) substitute an alternative river during the period of displacement for the Greenstone. Stated alternative rivers included (number in brackets = no. of mentions):

- Caples (2)
- Routeburn (1)
- Rees (1)
- Waikaia (1)
- Clutha (1)
- Mataura (1)

Substituting any of the rivers listed for the Greenstone might be considered to represent evidence of *inter*-site spatial displacement. This is because, on the whole, the anglers in this study were shifting to different geographical areas to fish rather than simply seeking a quieter spot on the Greenstone (*intra*-site spatial displacement).

4.8.5 Nature and scope of potential absolute displacement

All those anglers who identified as having visited the Greenstone once or more in the past (n = 522) were asked to reflect on whether any experience(s) on the Greenstone had been so bad as to encourage them consider giving up the sport of angling altogether. Of the 401 anglers who answered the question, only 6% (n = 23) stated that they had experienced such a situation. Of those 23 anglers, most were residents (87%, n= 20; 11 from Otago/9 from Southland). Only two were non-resident anglers and one did not provide sufficient residency information. The factors contributing to potential absolute displacement are highlighted in Figure 4.73 below (Note: n = greater than 23 as anglers could choose multiple options).

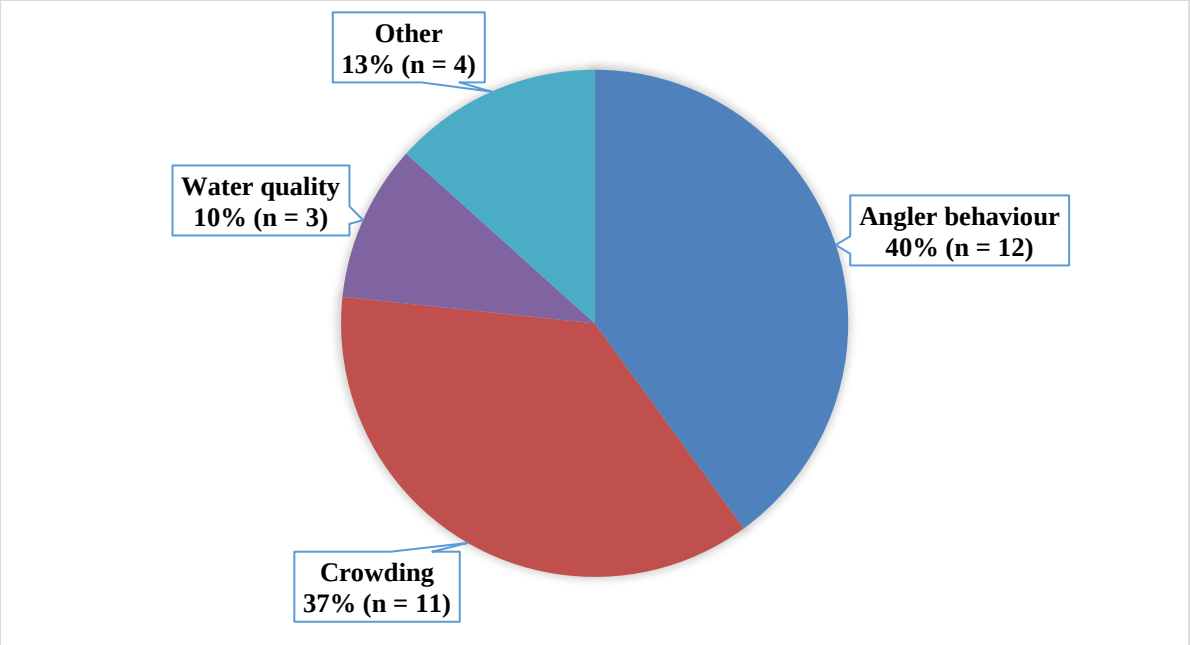

***Figure 4-73**: Factors contributing to potential absolute displacement (Greenstone)*

As can be seen in Figure 4.73, in the Greenstone river context issues to do with angler behaviour and crowding were the main factors contributing to potential absolute displacement (i.e. anglers giving up the sport altogether). Where 'Other' factors were stated, obtrusive guided parties and helicopter intrusions were further sources of annoyance. Despite the issues mentioned, it must be emphasised that, overall, the vast majority of anglers were not put off the sport of angling by their experiences on the Greenstone.

4.8.6 Future intentions of all anglers who have previously visited the Greenstone

Anglers who identified as having visited the Greenstone once or more in the past (n = 522) were also asked to a) consider whether they intend to fish the river in the future and b) to explain the main reason why/why not. Of the 405 anglers who responded to the question, 36% (n = 147) did intend to return and 24% (n = 97) did not. The remaining 40% (n = 161) were unsure if they would return or not in the future. As can be seen in Figure 4-74 below, these proportions are broadly similar across different residency sub-groups. However, in comparison to the other sub-groups, a slightly greater proportion of Southland anglers did not plan to return to the Greenstone.

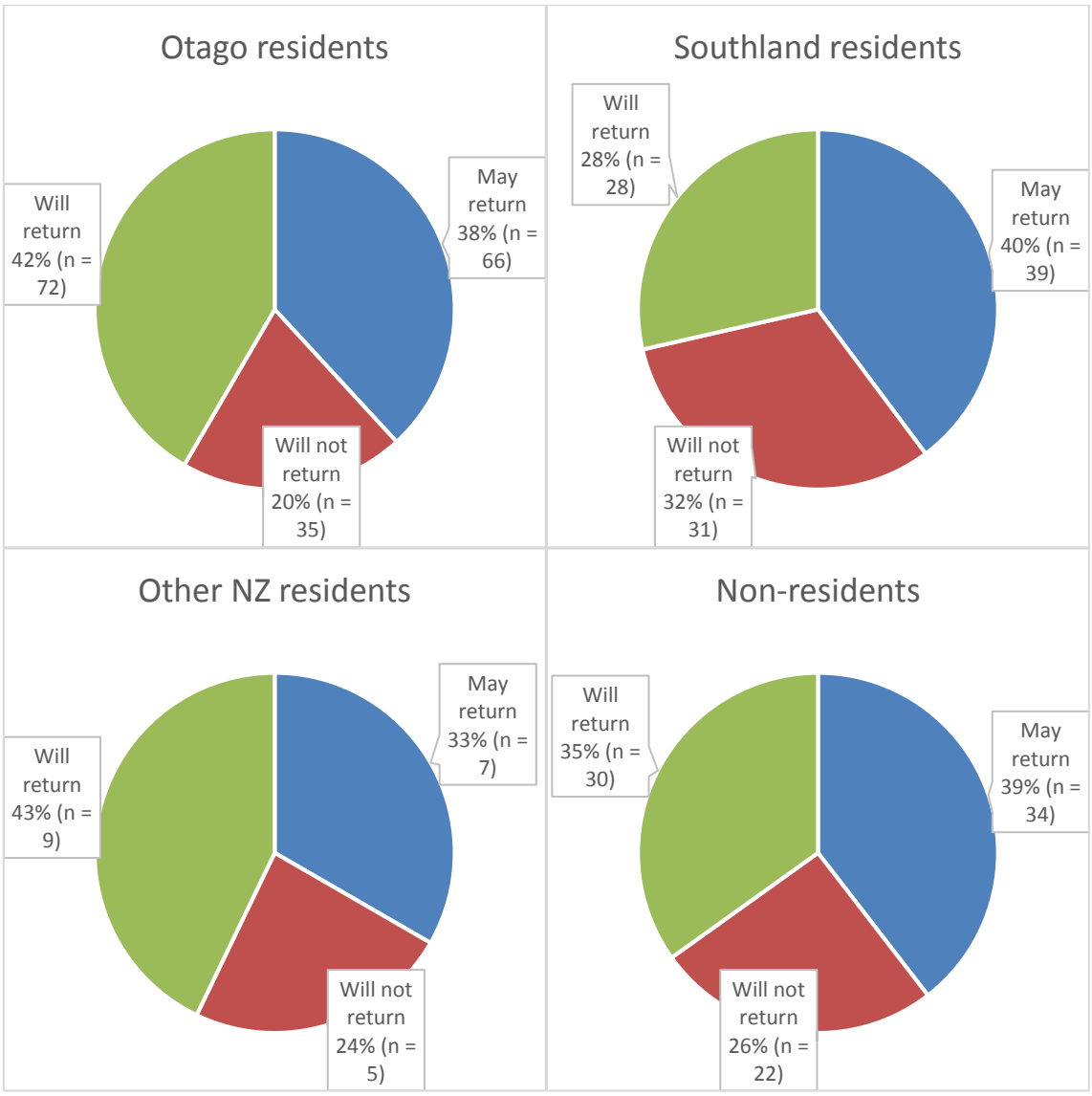

Figure 4-74: *Resident vs. non-resident future intentions to return to the Greenstone*

Open-text data explaining the main reasons why anglers planned to return to the Greenstone or not were analysed for themes. For those who did intend to return to the Greenstone in the future, anglers' motivations can be encapsulated in the theme 'Scenery/general experience'. This theme refers to the idea that the Greenstone provides an excellent backcountry fishing

experience, rich with beautiful scenery, a sense of solitude and good fishing opportunities. It should be noted, though, that, in amongst the positive comments about the Greenstone, some anglers intending to return also expressed concerns that commercial activities, general crowding and deteriorating water quality could have a negative impact (not only in terms of the angling experience, but also on the overall health of the river). Interestingly, too, of the 100 open-text responses explaining why they intended to return to the Greenstone in the future, only five anglers made specific mention of the booking system in place during the Controlled Fishing Period. In each instance, the booking system was deemed beneficial in terms of guaranteeing a crowd-free experience. Examples of specific comments in relation to this point include, *"Managing angler pressure with a beat-and-permit system provides an excellent fishery and experience"* and *"Plan to fish the Greenstone because of the Controlled period so can ensure no one else on the water at the same time"*.

For those who did not intend to return to the Greenstone in the future, issues to do with access and crowding were the main reasons given by anglers. In terms of access, old age and associated health issues, together with time constraints, were the main reasons why some anglers did not intend to return to the Greenstone in the future. On the issue of crowding, concerns were expressed about overcrowding in general (e.g. *"Too many fishers"*) but there were also concerns about the high numbers of tourist anglers in particular. As this angler states, for example, *"It's a tourist mecca, no longer any good for Kiwis"*. Similarly, *"too much angling pressure, especially from tourist anglers"*. It should be noted that concerns about crowding came mostly from New Zealand residents, however a few non-residents also mentioned the issue. Only two (one each from Otago/Southland) anglers suggested that they will not return to the Greenstone because of the booking system in place during the Controlled Fishing Period.

Of those anglers who were unsure if they would return to the Greenstone or not in the future, open-text responses revealed that most appeared unlikely to return. This was related to access and crowding issues similar to those described above. In addition, some anglers also pointed out that there are alternative, and perhaps better, fishing options closer to home. As this angler states, for example, *"there are numerous other stretches of water that do not receive the same publicity and offer similar experiences. And again without the guides or tourists"*. Here, the specific issue of overcrowding linked to commercial activities and tourist anglers is also implicit in this comment. Only five anglers made specific mention of the booking system in place during the Controlled Fishing Period, with most negatively commenting on its restrictive nature (e.g. *"Got to get lucky on beat assignment", "Permit system doesn't work with a flexible schedule"*).

4.8.7 Why have some anglers never fished the Greenstone

Around 79% of anglers had never fished the Greenstone before (n = 1961[83]) and, of those, 64% (n = 1246) provided an explanation for this. Figure 4-75 illustrates the main reasons why these anglers had never fished the Greenstone (Note: n = greater than 1246 as anglers could choose multiple options).

[83] Calculated by subtracting the number of participants who answered 'Yes' to having fished the Greenstone in the past (n = 521) from the total number of surveys completed (n = 2482).

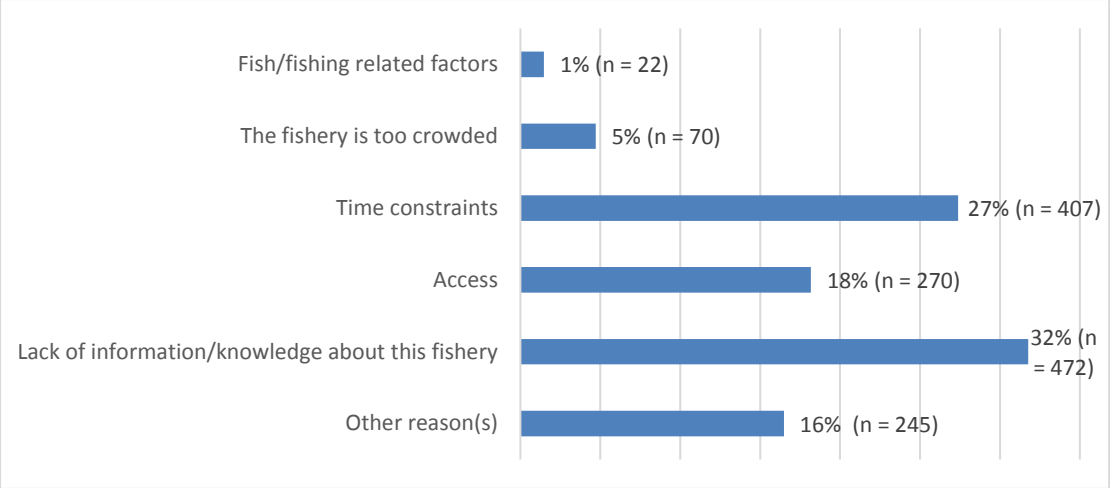

***Figure 4-75**: Reasons for never fishing the Greenstone*

As can be seen in Figure 4-75 above, access issues and time constraints were, again, among the main reasons why anglers participating in this study had never fished the Greenstone. Interestingly, too, a large proportion of anglers had not visited the Greenstone simply because they appeared to know little about the river. Of greatest importance to this study, however, is the low proportion of anglers citing crowding as a reason for not visiting the river. This suggests, perhaps, that the Greenstone is perceived as uncrowded by those who had never visited before. Analysis of open-text responses for 'Other reason(s)' provides further evidence that access issues and time constraints represent barriers to visiting the Greenstone. In addition, many anglers simply had little or no interest in visiting the Greenstone. Importantly, too, almost no mention was made of the booking system in operation during the Controlled Fishing Period.

4.8.8 Future intentions of anglers who have never previously fished the Greenstone

Those anglers who had never fished the Greenstone before were also asked to consider whether they intended to fish the river in the future. Of the 1,516 anglers who responded, only 19% (n = 284) indicated they do intend to fish the Greenstone in the future; 38% (n = 577) stated that they did not intend to fish the Greenstone in the future; the remaining 43% (n = 655) were unsure whether they would fish the Greenstone or not in the future.

Those answering 'no' (n = 577) were further prompted to explain the reason(s) why they did not intend to fish the Greenstone in the future; 68% (n= 395) responded. Analysis of open-ended responses reveals, once again, that issues related to access (age/health, time constraints etc.) strongly underpin anglers' lack of willingness to fish this particular river. A general lack of interest was also noted, as were issues associated with perceived crowding (e.g. "too many fishermen?" or "reputation for crowds").

4.8.9 Summary points

- On the whole, access issues and time constraints appeared to be the main reasons why anglers a) fished the Greenstone less often than in the past, b) had stopped fishing the Greenstone, or c) had never previously fished the Greenstone.
- Some, albeit very limited, evidence exists to suggest that anglers are being displaced from the Greenstone due to crowding.
- Some, albeit very limited, evidence of crowding being specifically linked to temporal and spatial displacement, and potential absolute displacement.
- Booking system in operation during the Controlled Fishing Period appears to have almost no bearing on whether anglers chose to fish the Greenstone or not.
- The majority of anglers were unlikely to choose to fish the Greenstone in the future.

5 Concluding remarks

This research has shown that many anglers with experience of pressure-sensitive rivers in Otago and Southland are concerned about crowding. The important questions are, though, to what extent is angling on these rivers negatively impacted by issues of crowding, and to what extent does this lead to some form of displacement? Table 5-1 provides a summary of the key findings in relation to these questions.

Table 5-1: *Summary of key findings: Displacement*

	Effects of crowding on levels of fishing activity		**Displacement**		
	Fish less because of crowding	Stopped fishing because of crowding	Temporal displacement[#]	Spatial displacement[*]	Potential absolute displacement[^]
Upper Oreti	**45%**	**32%**	**25%**	**81%**	6%
Worsley	**25%**	**21%**	18%	61%	4%
Clinton	**30%**	11%	16%	58%	4%
Upper Mataura	**32%**	15%	12%	76%	7%
Hunter	19%	8%	14%	52%	7%
Dingle	**25%**	16%	11%	67%	5%
Caples	**39%**	**28%**	10%	70%	7%
Greenstone	11%	21%	12%	75%	6%

[#] As a proportion of active anglers (i.e. those who continued to fish the river)

[*] As a proportion of temporally displaced anglers

[^] As a proportion of all anglers who had fished the river at least once

Note: Red shading represents immediate concern and orange shading represents moderate concern.

For each of the rivers being investigated, crowding has, to differing degrees, caused fishing activity to be curtailed or abandoned. Of most immediate concern, potentially, are the upper Oreti and Caples. In both cases, anglers who fished the river less often or had stopped fishing the river altogether had done so mainly because of crowding (hence red shading). Also of concern is the relatively high proportion of anglers who fished the upper Mataura less often because of crowding. Compared to the upper Oreti and Caples, however, crowding, relative to other factors, was less of an issue for the upper Mataura and certainly did not appear to have stopped many anglers from fishing this river (hence shaded orange rather than red). In part, it's relatively large catchment size may mean that the upper Mataura is, at this point in time, better able to cope with increasing angling pressure. Somewhat concerning, too, is the relatively high proportion of anglers who fished the Clinton less often because of crowding, some of which was clearly attributed to angling pressure. What is less clear from this study is the extent to

which tramping activity in the area may also be contributing to crowding[84]. Crowding on the Worsley and Dingle had, in both cases, also caused a quarter of anglers to fish these rivers less often than in the past (and in the case of the Worsley, a similarly high proportion had also stopped fishing because of crowding). In the case of the Worsley, Clinton and Dingle, the issue of crowding, therefore, is of moderate concern (hence orange shading). Of potential concern, too, is the relatively high proportion of anglers who have stopped fishing the Greenstone due to crowding outside the Controlled Fishing Period.

In addition to causing some anglers to curtail or abandon their fishing activity on a particular river, issues related to crowding and/or poor angler behaviour (including, for example, intrusions from helicopters) had also forced some anglers to consider giving up the sport of fishing altogether (i.e. potential absolute displacement). As Table 5-1 highlights, though, such instances were, in all cases, limited to a small proportion of anglers.

When it comes to coping with crowding, some anglers in this study indicated that they had fished at different times of the season (commonly avoiding the mid-season). Again, of most immediate concern is the relatively high proportion of temporally displaced anglers from the upper Oreti (hence red shading). Further, for each of the rivers, a generally high proportion of temporally displaced anglers were also spatially displaced, choosing to fish a different river/rivers. Worryingly, though, in some cases where alternative rivers were chosen, these rivers tended also to be pressure-sensitive and subject to their own crowding-related issues. A clear example of this can be seen in the instances of spatial displacement from the upper Oreti to the Mataura (and vice-versa). Fortunately, however, such cases at this stage remain fairly limited.

Another key objective of this study was to evaluate the potential effects of management mechanisms on angler displacement. Central to this was a) assessing the level of support for the introduction of management mechanisms to control crowding, b) gauging anglers' willingness to pay more for such mechanisms and c) determining the proportion of anglers who may be displaced by their introduction. Key findings are summarised in Table 5-2.

[84] New Zealand's most popular multi-day walking track, the Milford Track, runs parallel with the Clinton River.

Table 5-2: *Summary of key findings: Management mechanisms*

	Proportion of anglers supporting management mechanisms to control crowding	Proportion of anglers willing to pay more for management mechanisms to control crowding	Proportion of anglers[#] who may be displaced by the introduction of man. mechs.
Upper Oreti	**58%**	35%	28%
Worsley	51%	31%	37%
Clinton	45%	28%	30%
Upper Mataura	43%	26%	36%
Hunter	47%	28%	37%
Dingle	48%	31%	30%
Caples	**56%**	35%	26%

[#] Based on anglers who had and continued to fish each river.
Note: Green shading represents those rivers where there is the highest support for the introduction of management mechanisms and where rates of displacement would be potentially the lowest if such mechanisms were introduced. Red shading represents those rivers where there is least support for the introduction of management mechanisms to control crowding and/or where rates of displacement would be potentially high if such mechanisms were introduced.

Amongst those with experience of pressure-sensitive rivers, there appeared to be generally good levels of support for the introduction of management mechanisms to control crowding. This is likely to be because anglers want to preserve the unique, and much coveted, backcountry experience afforded by each of the rivers included in this study. However, the specific level of support varied somewhat depending on the river; for example, there was considerable support for the introduction of crowd control mechanisms on the upper Oreti and Caples (hence green shading). This is, perhaps, unsurprising given that it was these rivers that suffered most from crowding. Comparatively, however, there was less support for the introduction of crowd control mechanisms on the upper Mataura (hence red shading). For each of the rivers in this study, it remains unclear of course as to exactly what type(s) of management mechanism would be supported or not (e.g. booking system, ballot etc.), and this would certainly require additional research if or when management mechanisms were to be seriously considered.

Interestingly, even if crowding control mechanisms were to be introduced there is clear evidence to suggest that anglers would be largely unwilling to pay extra for this. This applies to all rivers, regardless of how much (or how little) support actually exists for such mechanisms. It should be noted, however, that for all rivers a higher proportion of non-resident anglers were prepared to pay an additional administration fee as compared with resident anglers.

Finally, and perhaps most importantly, some anglers (between at least 26% in the case of the Caples and up to 37% in the case of the Hunter) may be displaced by the introduction of management mechanisms to control crowding. Given the comparatively higher levels of support for the introduction of such mechanisms on the upper Oreti and Caples, it is unsurprising that comparatively smaller proportions of anglers may be displaced from these particular rivers in the event that crowd control mechanisms were to actually be introduced in

the future (hence green shading). In all cases, the flow on effects of possible displacement as a result of management intervention should be taken into consideration. As this study shows, there are signs that some anglers who have been displaced because of crowding already substitute one pressure-sensitive river for another, and there is little to suggest that anglers displaced by the introduction of management mechanisms wouldn't do the same. It is also important to note that, as is potentially evident on the Greenstone, the introduction of controlled fishing periods may simply shift the issue of crowding to earlier and/or later periods in the season. Therefore, thought must be given to how angling pressure can be best distributed throughout the angling season. Finally, concerns about possible displacement as a consequence of management intervention must also be tempered with a degree of pragmatism; previous studies[85] have shown, for example, that recreational users tend not to be impacted as much as they say they will be by the introduction of management mechanisms. Notwithstanding this point, however, the rivers in this study appear to represent the essence of a New Zealand backcountry experience – scenery, solitude and abundant fishing. Preserving the essence of these rivers for the long-term enjoyment of future generations of anglers requires, at this stage, ongoing monitoring of crowding related issues. As part of this, each of the rivers in this study should be treated as a heterogeneous social-ecological system[86], wherein the social carrying capacity of each river will be differently determined by its unique characteristics (e.g. geomorphology, catchment shape/size, vegetation etc.). Arguably, though, the upper Oreti and Caples may require more urgent attention, and further consideration should be given to how, and in what form, crowding may be best be controlled in the more immediate term.

[85] E.g. Ready et al., (2005)

[86] See Arlinghaus et al (2017) and Dunham et al (2018) for a discussion of rivers/riverscapes as social-ecological systems

6 References

Arlinghaus, R., Alós, J., Beardmore, B., Daedlow, K., Dorow, M., Fujitani, M., ... & Johnston, F. (2017). Understanding and managing freshwater recreational fisheries as complex adaptive social-ecological systems. *Reviews in Fisheries Science & Aquaculture*, *25*(1), 1-41.

Dunham, J. B., Angermeier, P. L., Crausbay, S. D., Cravens, A. E., Gosnell, H., McEvoy, J., ... & Sanford, T. (2018). Rivers are social–ecological systems: Time to integrate human dimensions into riverscape ecology and management. *Wiley Interdisciplinary Reviews: Water*, *5*(4), e1291.

Fleishman, L., Feitelson, E., & Salomon, I. (2007). Behavioral adaptations to crowding disturbance: evidence from nature reserves in Israel. *Leisure Sciences*, *29*(1), 37-52.

Greenaway, R., Cessford, G., & Leppens, J. (2007). An exploration of recreation displacement in New Zealand. *Annals of Leisure Research*, *10*(2), 146-167.

Hall, T. E., & Cole, D. N. (2007). Changes in the motivations, perceptions, and behaviors of recreation users: displacement and coping in wilderness. *Res. Pap. RMRS-RP-63. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. 37 p.*, *63*.

Hayes, S., & Lovelock, B.A. (2016). *Analysis of the recreational freshwater angling behaviours of overseas visitors to New Zealand.* Dunedin, New Zealand: Centre for Recreation Research, Department of Tourism, University of Otago

Kearsley, G., & Coughlan, D. (1999). Coping with crowding: Tourist displacement in the New Zealand backcountry. *Current Issues in Tourism*, *2*(2-3), 197-210.

Ready, R., Epp, D., & Delavan, W. (2005). A comparison of revealed, stated, and actual behavior in response to a change in fishing quality. *Human Dimensions of Wildlife*, *10*(1), 39-52.

Schneider, I. E. (2007). The prevalence and significance of displacement for wilderness recreation management and research. *International Journal of Wilderness. 13 (3): 23-27.*

Unwin, M.J. (2016) Angler usage of New Zealand lake and river fisheries: results from the 2014/15 National Angling Survey. NIWA Client Report 2016021CH. 143 p.

7 Appendices

7.1 Appendix 1: Abbreviated version of final survey

Start of Block: Intro questions

Q1 The aim of this survey is to investigate your experiences and/or perceptions of some specific rivers in the Otago and Southland catchments. Before focusing on those specific rivers, we just want to ask a few general questions about you and your angling preferences. *Please note: This survey can be completed in stages (i.e. responses will be saved and you can pick up where you left off at a later stage). However, once the survey has been started it must be completed within one week.*

Q2 How would you rate your angling skill level?

- ○ Advanced (1)
- ○ Intermediate (2)
- ○ Casual/beginner (3)

Q3
About how long have you participated in freshwater sport fishing?

- ○ Less than 1 year (1)
- ○ 1 - 2 years (2)
- ○ 2 - 5 years (3)
- ○ 5 - 20 years (4)
- ○ More than 20 years (5)

Q4 Which of the following best describes you?

- ○ I go freshwater sport fishing every year (1)
- ○ I go freshwater sport fishing most years (2)
- ○ I have gone freshwater sport fishing several times in the last 5 years (3)
- ○ I have only gone freshwater sport fishing once or twice in the last 10 years (4)

Q5 On average, how many days per year do you go angling? Please state number of days (e.g. 1, 5, 10)

_____

Q6 Please indicate which of the following statements is most like you and least like you?

Most like me (1)		Least like me (2)
○	⊗ Most of my life revolves around fishing (1)	○
○	⊗ I fish regularly, but enjoy other leisure activities (2)	○
○	⊗ Fishing is not all that important to me (3)	○

Q7 In general, how important are each of the following factors are in making your fishing experience a really satisfying trip.

	Essential for a really satisfying trip (1)	Important but not essential (2)	Somewhat important (3)	Not very important (4)	Of no concern at all (5)
Catching several fish (1)	○	○	○	○	○
Catching large fish (2)	○	○	○	○	○
Spotting trout (3)	○	○	○	○	○
Peace and solitude (4)	○	○	○	○	○
Being with friends/family (5)	○	○	○	○	○
Exploring new areas (6)	○	○	○	○	○
Challenge to your skill (7)	○	○	○	○	○
Physical exercise (8)	○	○	○	○	○
Natural environment/scenery (9)	○	○	○	○	○
Absence of other anglers (10)	○	○	○	○	○
Other factors (11)	○	○	○	○	○
Other factors (12)	○	○	○	○	○

End of Block: Intro questions

Start of Block: Filter question

Q8 OK, thanks for that. The questions in this section will focus in on your experiences of some specific rivers in the Otago and Southland catchments.

Q9 Have you **EVER** fished any of the rivers listed below (tick all that apply)?
If you have never fished any of these rivers simply ignore this question and move onto the next.

- ☐ Dingle (above So Big Creek confluence) (1)
- ☐ Dingle (2)
- ☐ Dingle (3)
- ☐ Dingle (4)
- ☐ Clinton (5)
- ☐ Caples (6)
- ☐ Dingle (above Riversdale) (7)
- ☐ Greenstone (8)

End of Block: Filter question

Start of Block: Dingle

Q10 The following questions ask you about your experiences of the **Dingle river** (above So Big Creek confluence)

Q11 Approximately when did you **first** fish the **Dingle** (above So Big creek confluence)?

▼ 2018/19 season (1) ... 1989 or before (30)

Q12 Approximately when did you last fish the Dingle (above So Big creek confluence)?▼ 2018/19 season (1) ... 1989 or before (30)

Q13 Thinking about the **Dingle** (above So Big creek confluence), which statement best reflects your fishing activity?

- ○ I fish here, and about as often as I did in the past (1)
- ○ I fish here, and more often than I did in the past (2)
- ○ I fish here, but less often than I did in the past (3)
- ○ I fished here in the past but don't fish here anymore (4)
- ○ I have only fished here once in my life (5)

Skip To: Q23 If Thinking about the Dingle (above So Big creek confluence), which statement best reflects you... = I have only fished here once in my life

Skip To: Q22 If Thinking about the Dingle (above So Big creek confluence), which statement best reflects you... = I fished here in the past but don't fish here anymore

Display This Question:
If Thinking about the Dingle (above So Big creek confluence), which statement best reflects you... = I fish here, but less often than I did in the past

Q14 Can you tell us why you fish the **Dingle** (above So Big creek confluence) less often than you did in the past (tick all that apply).

- ☐ Fish/fishing related factors (1)
- ☐ The fishery has become more crowded (2)
- ☐ Time constraints (3)
- ☐ Access (4)
- ☐ Other reason(s) (please explain) (6) _____

Q15 Thinking about the last season you fished the **Dingle** (above So Big creek confluence), what period of the season did you do **most** of your fishing in?

- ○ Early season (Oct-Nov) (1)
- ○ Mid season (Dec-Jan-Feb) (2)
- ○ Late season (March-April) (3)

Q16 Compared to previous seasons, which of the following statements is most accurate?

- ○ I've always done most of my fishing here in the early season (1)
- ○ I've always done most of my fishing here in the mid season (2)
- ○ I've always done most of my fishing here in the late season (5)
- ○ I used to mostly fish here in the early season but now avoid this period (Please state reasons) (3) _____
- ○ I used to mostly fish here in the mid season but now avoid this period (Please state reasons) (4) _____
- ○ I used to mostly fish here in the late season but now avoid this period (Please state reasons) (6) _____

Display This Question:

If Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the early season but now avoid this period (Please state reasons)

Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the late season but now avoid this period (Please state reasons)

Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the mid season but now avoid this period (Please state reasons)

Q17 Approximately when did this change happen?

▼ 2018/19 season (1) ... 1989 or before (30)

Display This Question:

If Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the early season but now avoid this period (Please state reasons)

Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the mid season but now avoid this period (Please state reasons)

Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the late season but now avoid this period (Please state reasons)

Q18 Whilst avoiding the **Dingle** (above So Big creek confluence) (either during early, mid or late season), did you/do you regularly fish an alternative river?

- ○ Yes (please state the name of the alternative fishery) (1)
  _____
- ○ No (2)

○ Q19 Is there a specific reach/beat on the **Dingle** (above So Big creek confluence) that you used to visit in the past but now avoid completely due to crowding?

- ○ Yes (1)
- ○ No (2)

Display This Question:
If Is there a specific reach/beat on the Dingle (above So Big creek confluence) that you used t... = Yes

Q20 From the list below, please tell us which specific reach/beat you now avoid completely?

- Mt Nicholas Bridge beat (1)
- Ashton Burn beat (2)
- Dingle Hut beat (3)
- Patterson's Bush beat (4)
- Lincoln Hill beat (5)
- Three King's Gorge beat (6)
- Windy Hill beat (7)
- Gravel Pit beat (8)
- Windley beat (9)
- Windley River beat (10)
- So Big Creek beat (11)

Q21 Thinking about your experiences of the **Dingle** (above So Big creek confluence), please tell us the extent to which you agree or disagree with the following statements.

	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree (5)
I have special memories of this fishery (1)	○	○	○	○	○
I enjoy my visits here as much as I used to (2)	○	○	○	○	○
Visiting this fishery is a tradition for me (3)	○	○	○	○	○
The area has changed, but I've gotten used to it (4)	○	○	○	○	○
I seek different experiences here than I used to (5)	○	○	○	○	○
The fishery has become more crowded (6)	○	○	○	○	○
The numbers of international anglers are spoiling the experience (7)	○	○	○	○	○
The numbers of local anglers are spoiling the experience (8)	○	○	○	○	○
The level of guided/commercial activity is spoiling the experience (9)	○	○	○	○	○
I will continue visiting this fishery in the future (10)	○	○	○	○	○
I will visit an alternative fishery to this one in the future (11)	○	○	○	○	○

Display This Question:

If Thinking about the Dingle (above So Big creek confluence), which statement best reflects you... = I fished here in the past but don't fish here anymore

Q22 Can you tell us why you stopped fishing the **Dingle** (above So Big creek confluence) (tick all that apply).

- ☐ Fish/fishing related factors (1)
- ☐ The fishery became too crowded (2)
- ☐ Time constraints (3)
- ☐ Access (4)
- ☐ Other reason(s) (please explain) (6) _____

Q23 Thinking about your experiences of the **Dingle** (above So Big creek confluence), please complete the following.

	Generally, I expect(ed) to encounter ??? angling parties per day	Generally, I prefer(ed) to encounter ??? angling parties per day	Generally, I tolerate(d) encountering ??? angling parties per day
	(fill in number in box) (1)	(fill in number in box) (1)	(fill in number in box) (1)
Dingle (above So Big creek confluence) (1)			

Q24 Whilst fishing the **Dingle** (above So Big creek confluence), have you ever had an experience so bad that it made you want to stop the sport of angling altogether?

- ○ Yes (1)
- ○ No (2)

Display This Question:
If Whilst fishing the Dingle (above So Big creek confluence), have you ever had an experience s... = Yes

Q25
Please indicate which, if any, of the following factors present during that experience made you want to stop the sport of angling altogether. Tick all that apply.

- ☐ Angler behaviour (4)
- ☐ Crowding (5)
- ☐ Fish/fishing related factors (6)
- ☐ Water quality (7)
- ☐ Other (please state) (8) _____

Q26 Do you plan to fish the **Dingle** (above So Big creek confluence) in the future?

- ○ Yes (1)
- ○ No (2)
- ○ Maybe (3)

Q27 Can you tell us the **MAIN** reason for your answer?

_____

_____

_____

_____

End of Block: Dingle

QUESTIONS 10-27 were then repeated for the following rivers: Dingle, Dingle, Dingle, Clinton, Caples, Dingle (above Riversdale). Questions in relation to the Greenstone river were slightly different and are included below.

Start of Block: Greenstone

Q132 The following questions ask you about your experiences of the **Greenstone.**

Q133 Approximately when did you **first** fish the Greenstone?

▼ 2018/19 season (1) ... 1989 or before (30)

Q134 Approximately when did you **last** fish the Greenstone?

▼ 2018/19 season (1) ... 1989 or before (30)

Q135 Thinking about the Greenstone, which statement best reflects your fishing activity?

- ○ I fish here, and about as often as I did in the past (1)
- ○ I fish here, and more often than I did in the past (2)
- ○ I fish here, but less often than I did in the past (3)
- ○ I fished here in the past but don't fish here anymore (4)
- ○ I have only fished here once in my life (5)

Skip To: Q147 If Thinking about the Greenstone, which statement best reflects your fishing activity? = I have only fished here once in my life

Skip To: Q145 If Thinking about the Greenstone, which statement best reflects your fishing activity? = I fished here in the past but don't fish here anymore

Display This Question:

If Thinking about the Greenstone, which statement best reflects your fishing activity? = I fish here, but less often than I did in the past

Q136 Can you tell us why you fish the Greenstone less often than you did in the past (tick all that apply).

- ☐ Fish/fishing related factors (1)
- ☐ The booking system in operation during the Controlled Fishing Period (Feb-March) (2)
- ☐ Time constraints (3)
- ☐ Access (4)
- ☐ Crowding outside the Controlled Fishing Period (5)
- ☐ Other reason(s) (please explain) (6) _____

Display This Question:
If Can you tell us why you fish the Greenstone less often than you did in the past (tick all that ap... = The booking system in operation during the Controlled Fishing Period (Feb-March)

Q137 Can you please explain why the booking system in operation during the Controlled Fishing Period has contributed to you fishing the Greenstone less often than in the past?

_____

_____

_____

_____

_____

Q138 Thinking about the last season you fished the Greenstone, what period of the season did you do **most** of your fishing in?

- ○ Early season (Nov-Dec) (1)
- ○ Mid season (Jan-Feb-March) (2)
- ○ Late season (April-May) (3)

Q139 Compared to previous seasons, which of the following statements is most accurate?

- ○ I've always done most of my fishing here in the early season (1)
- ○ I've always done most of my fishing here in the mid season (2)
- ○ I've always done most of my fishing here in the late season (5)
- ○ I used to mostly fish here in the early season but now avoid this period (Please state reasons) (3) _____
- ○ I used to mostly fish here in the mid season but now avoid this period (Please state reasons) (4) _____
- ○ I used to mostly fish here in the late season but now avoid this period (Please state reasons) (6) _____

Display This Question:
If Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the early season but now avoid this period (Please state reasons)
Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the mid season but now avoid this period (Please state reasons)
Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the late season but now avoid this period (Please state reasons)

Q140 Approximately when did this change happen?

▼ 2018/19 season (1) ... 1989 or before (30)

Display This Question:
If Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the early season but now avoid this period (Please state reasons)
Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the mid season but now avoid this period (Please state reasons)
Or Compared to previous seasons, which of the following statements is most accurate? = I used to mostly fish here in the late season but now avoid this period (Please state reasons)

Q141 Whilst avoiding the Greenstone (either during early, mid or late season), did you/do you regularly fish an alternative river?

- ○ Yes (please state the name of the alternative fishery) (1)
  _____
- ○ No (2)

Q142 Is there a specific reach/beat on the Greenstone that you used to visit in the past but now avoid completely due to crowding?

- ○ Yes (1)
- ○ No (2)

Display This Question:
If Is there a specific reach/beat on the Greenstone that you used to visit in the past but now avoid... = Yes

Q143 From the list below, please tell us which specific reach/beat you now avoid completely?

- ○ Beat 1 (1)
- ○ Beat 2 (2)
- ○ Beat 3 (3)

Q144 Thinking about your experiences of the **Greenstone,** please tell us the extent to which you agree or disagree with the following statements.

	Strongly agree (1)	Agree (2)	Neutral (3)	Disagree (4)	Strongly disagree (5)
I have special memories of this fishery (1)	○	○	○	○	○
I enjoy my visits here as much as I used to (2)	○	○	○	○	○
Visiting this fishery is a tradition for me (3)	○	○	○	○	○
The area has changed, but I've gotten used to it (4)	○	○	○	○	○
I seek different experiences here than I used to (5)	○	○	○	○	○
The fishery has become more crowded outside the Controlled Fishing Period (6)	○	○	○	○	○
The numbers of international anglers are spoiling the experience (7)	○	○	○	○	○
The numbers of local anglers are spoiling the experience (8)	○	○	○	○	○
The level of guided/commercial activity is spoiling the experience (9)	○	○	○	○	○
Crowding is much less of a problem since the booking system was introduced (10)	○	○	○	○	○
The booking system is too complicated (11)	○	○	○	○	○

Display This Question:

If Thinking about the Greenstone, which statement best reflects your fishing activity? = I fished here in the past but don't fish here anymore

Q145 Can you tell us why you stopped fishing the Greenstone (tick all that apply).

- ☐ Fish/fishing related factors (1)
- ☐ The booking system in operation during the Controlled Fishing Period (Feb-March) (2)
- ☐ Time constraints (3)
- ☐ Access (4)
- ☐ Crowding outside the Controlled Fishing Period (5)
- ☐ Other reason(s) (please explain) (6) _____

Display This Question:
If Can you tell us why you stopped fishing the Greenstone (tick all that apply). = The booking system in operation during the Controlled Fishing Period (Feb-March)

Q146 Can you please explain why the booking system in operation during the Controlled Fishing Period contributed to you stopping fishing the Greenstone?

_____

_____

_____

_____

_____

Q147 Thinking about your experiences of the Greenstone, please complete the following.

	Generally, I expect(ed) to encounter ??? angling parties per day	Generally, I prefer(ed) to encounter ??? angling parties per day	Generally, I tolerate(d) encountering ??? angling parties per day
	(fill in number in box) (1)	(fill in number in box) (1)	(fill in number in box) (1)
Greenstone (1)			

Q148 Whilst fishing the Greenstone, have you ever had an experience so bad that it made you want to stop the sport of angling altogether?

- ○ Yes (1)
- ○ No (2)

Display This Question:
If Whilst fishing the Greenstone, have you ever had an experience so bad that it made you want to st... = Yes

Q149
Please indicate which, if any, of the following factors present during that experience made you want to stop the sport of angling altogether. Tick all that apply.

- ☐ Angler behaviour (4)
- ☐ Crowding (5)
- ☐ Fish/fishing related factors (6)
- ☐ Water quality (7)
- ☐ Other (please state) (8) _____

Q150 Do you plan to fish the Greenstone in the future?

- ○ Yes (1)
- ○ No (2)
- ○ Maybe (3)

Q151 Can you tell us the **MAIN** reason for your answer?

_____

_____

_____

_____

_____

End of Block: Greenstone

Start of Block: Reasons for never visiting certain fisheries

Display This Question:
If Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle (above So Big Creek confluence)
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Clinton
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Caples
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle (above Riversdale)
Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Greenstone

Q152 OK, thanks for that. We now just want to ask you some quick questions about those rivers you have never fished before.

Display This Question:

If Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle (above So Big Creek confluence)

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Clinton

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Caples

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle (above Riversdale)

And Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Greenstone

Carry Forward Unselected Choices from "Have you EVER fished any of the rivers listed below (tick all that apply)? If you have never fished any of these rivers simply ignore this question and move onto the next."

Q153 From the following list of rivers that you have **NEVER** fished, have any of the following factors discouraged you from fishing these rivers in the past?

	Fish/fishing related factors (1)	The fishery is too crowded (2)	Time constraints (3)	Access (4)	Lack of information/knowledge about this fishery (5)	Other reasons (6)
Dingle (above So Big Creek confluence) (x1)	☐	☐	☐	☐	☐	☐
Dingle (x2)	☐	☐	☐	☐	☐	☐
Dingle (x3)	☐	☐	☐	☐	☐	☐
Dingle (x4)	☐	☐	☐	☐	☐	☐
Clinton (x5)	☐	☐	☐	☐	☐	☐
Caples (x6)	☐	☐	☐	☐	☐	☐
Dingle (above Riversdale) (x7)	☐	☐	☐	☐	☐	☐
Greenstone (x8)	☐	☐	☐	☐	☐	☐

Display This Question:

If From the following list of rivers that you have NEVER fished, have any of the following factors d... = Other reasons

Q154 For the rivers listed below, you stated 'other reasons'. What is your **MAIN** 'other reason' for not fishing these rivers in the past?

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Dingle (above So Big Creek confluence) - Other reasons Is Selected

☐ Dingle (above So Big Creek confluence) (1) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Dingle - Other reasons Is Selected

☐ Dingle (2) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Dingle - Other reasons Is Selected

☐ Dingle (3) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Dingle - Other reasons Is Selected

☐ Dingle (4) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Clinton - Other reasons Is Selected

☐ Clinton (5) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Caples - Other reasons Is Selected

☐ Caples (6) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Dingle (above Riversdale) - Other reasons Is Selected

☐ Dingle (above Riversdale) (7) _____

If Thinking about just those rivers that you have NEVER fished: Have any of the following factors di... Greenstone - Other reasons Is Selected

☐ Greenstone (8) _____

Display This Question:

If Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle (above So Big Creek confluence)

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Clinton

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Caples

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Dingle (above Riversdale)

Or Have you EVER fished any of the rivers listed below (tick all that apply)?If you have never fishe... != Greenstone

Carry Forward Unselected Choices from "Have you EVER fished any of the rivers listed below (tick all that apply)? If you have never fished any of these rivers simply ignore this question and move onto the next."

Q155 Do you have plans to fish any of these rivers in the future?

	Yes (1)	No (2)	Maybe (3)
Dingle (above So Big Creek confluence) (x1)	○	○	○
Dingle (x2)	○	○	○
Dingle (x3)	○	○	○
Dingle (x4)	○	○	○
Clinton (x5)	○	○	○
Caples (x6)	○	○	○
Dingle (above Riversdale) (x7)	○	○	○
Greenstone (x8)	○	○	○

Display This Question:
If Do you have plans to fish any of these rivers in the future? = No

Q156 You stated that you do not plan to fish these rivers in the future. Please state the **MAIN** reason for this.

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Dingle (above So Big Creek confluence) - No Is Selected

☐ Dingle (1) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Dingle - No Is Selected

☐ Dingle (2) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Dingle - No Is Selected

☐ Dingle (3) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Dingle - No Is Selected

☐ Dingle (4) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Clinton - No Is Selected

☐ Clinton (5) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Caples - No Is Selected

☐ Caples (6) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Dingle (above Riversdale) - No Is Selected

☐ Dingle (7) _____

If Thinking about just those rivers that you have NEVER fished in the past, do you have plans to fish there in the future? (Ignore any rivers that you have fished) Greenstone - No Is Selected

☐ Greenstone (8) _____

End of Block: Reasons for never visiting certain fisheries

Start of Block: Management mechanisms

Q157 In this section, we are seeking your opinions about management mechanisms to control the number of anglers on a river or part thereof.

Q158 For each river listed, to what extent do you agree or disagree with the following statement: **This river needs management mechanisms to control crowding (examples could include allocation of days, limits to use etc.).**

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Dingle (above So Big creek confluence (1)	○	○	○	○	○
Dingle (2)	○	○	○	○	○
Dingle (3)	○	○	○	○	○
Dingle (4)	○	○	○	○	○
Clinton (5)	○	○	○	○	○
Caples (6)	○	○	○	○	○
Dingle (above Riversdale) (7)	○	○	○	○	○

Q159 For each river listed, to what extent do you agree or disagree with the following statement: **If management mechanisms were introduced on this river I would be prepared to pay an increased administrative charge.**

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Dingle (above So Big creek confluence) (1)	○	○	○	○	○
Dingle (2)	○	○	○	○	○
Dingle (3)	○	○	○	○	○
Dingle (4)	○	○	○	○	○
Clinton (5)	○	○	○	○	○
Caples (6)	○	○	○	○	○
Dingle (above Riversdale) (7)	○	○	○	○	○

Q160 For each river listed, to what extent do you agree or disagree with the following statement: **If management mechanisms were introduced on this river I would stop fishing here.**

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Dingle (above So Big creek confluence) (1)	○	○	○	○	○
Dingle (2)	○	○	○	○	○
Dingle (3)	○	○	○	○	○
Dingle (4)	○	○	○	○	○
Clinton (5)	○	○	○	○	○
Caples (6)	○	○	○	○	○
Dingle (above Riversdale) (7)	○	○	○	○	○

End of Block: Management mechanisms

Start of Block: Demographics

Q161 You are almost at the end of the survey, but we just need to find out a little bit more about you.

Q162 Which of the following best describes you?

- ○ I am a New Zealand citizen/permanent resident and live in Otago (1)
- ○ I am a New Zealand citizen/permanent resident and live in Southland (2)
- ○ I am a New Zealand citizen/permanent resident and live outside of Otago/Southland (3)
- ○ I am a non-resident (4)
- ○ Other (please state) (5) _____

Display This Question:
If Which of the following best describes you? = I am a non-resident

Q163 Which country are you normally resident?

▼ American Samoa (1) ... Other, please state: (55)

Q164 Which of the following best describes your angling experience?

- ○ Guided (1)
- ○ Unguided (2)

Q165 In general, when fishing in New Zealand do you usually fish alone or as part of group?

- ○ I usually fish alone (1)
- ○ I usually fish as part of a group (2)

Q166 Are you a guide?

- ○ Yes (1)
- ○ No (2)

Q167 What is your age?

- 18 - 24 years old (1)
- 25 - 34 years old (2)
- 35 - 44 years old (3)
- 45 - 54 years old (4)
- 55 - 64 years old (5)
- 65 - 74 years old (6)
- 75 years or older (7)
- Would rather not say (8)

Q168 What is your gender?

- Male (1)
- Female (2)
- Other (3)

Q169 What is your total household income (NZ$)?

- ○ Less than NZ$ 20,000 (1)
- ○ NZ$ 20,000 - 39,999 (2)
- ○ NZ$ 40,000 - 59,999 (3)
- ○ NZ$ 60,000 - 79,999 (4)
- ○ NZ$ 80,000 - 99,999 (5)
- ○ NZ$ 100,000 - 139,000 (6)
- ○ More than NZ$ 140,000 (7)
- ○ Would rather not say (8)

Q170 Finally, in order to help us learn more about your angling experiences in New Zealand and with the aim of improving the services provided by Fish & Game, would you be willing to take part in a follow up phone/Skype interview in the future?

- ○ Yes. If yes, please include your email address: (1)
  _____
- ○ No (2)

End of Block: Demographics

7.2 Appendix 2: Survey invitation

Kia Ora,

Fish & Game New Zealand is committed to managing, maintaining and enhancing the sports fish resource in the recreational interests of all anglers. As part of this commitment we are conducting research aimed at understanding the nature, scope and characteristics of angler behaviour in response to changing use of Otago and Southland catchments. Findings will be used by Fish & Game New Zealand to build policy that will contribute to the provision of better experiences for anglers.

This survey is being conducted by the University of Otago on behalf of Fish & Game New Zealand. Your name has been selected from the Fish & Game database holding the email addresses of anglers that purchased a fishing license in Otago during the 2018/19 season.

Should you agree to take part in this project, you will be asked to complete a web-based survey that will take approximately 20-30 minutes to complete. You may withdraw your participation without any disadvantage to yourself (Note: if after completing and submitting your response you wish to withdraw your participation please advise the principal researcher, Stuart Hayes (via the email address below), prior to 15th July 2019).

All completed surveys go into the draw to win one of three NZ$200 vouchers for an outdoor retailer of your choice!

All completed surveys will be stored in a password protected computer. Individual survey participants remain anonymous, and only combined responses will be reported on. At the completion of the research project, all email addresses will be permanently deleted. The results of the survey will be analysed and used as part of a report presented to Fish & Game New Zealand (Otago and Southland) and in academic publications.

Follow this link to the Survey:

Or copy and paste the URL below into your internet browser:

What if Participants have any Questions?
If you have any questions about this survey, either now or in the future, please feel free to contact either:-
Stuart Hayes

Department of Tourism
Tel: +64 (0) 3 479 8520
Email: stuart.hayes@postgrad.otago.ac.nz

or

Associate Professor Brent Lovelock
Department of Tourism
Tel: +64 (0) 3 479 8520
Email: brent.lovelock@otago.ac.nz

This study has been approved by the Department stated above. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (ph. 03 479-8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.
Many thanks in advance for your time and feedback.

Yours Sincerely,

Stuart Hayes

7.3 Appendix 3: Demographic information for anglers who fish less often/have stopped fishing (all rivers)

Upper Oreti

Key demographics of anglers who fish the upper Oreti less often than in the past	
Advanced	**115**
5 - 20 years	**13**
I go freshwater sport fishing every year	13
I am a New Zealand citizen/permanent resident and live in Otago	4
I am a non-resident	3
Other (please state)	1
(blank)	5
More than 20 years	**102**
I go freshwater sport fishing every year	97
I am a New Zealand citizen/permanent resident and live in Otago	22
I am a New Zealand citizen/permanent resident and live in Southland	36
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	17
Other (please state)	3
(blank)	18
I go freshwater sport fishing most years	3
I am a New Zealand citizen/permanent resident and live in Southland	2
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	2
I am a non-resident	1
(blank)	1
Casual/beginner	**5**
5 - 20 years	**4**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	1
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Southland	2
More than 20 years	**1**
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
Intermediate	**54**
2 - 5 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Southland	2
5 - 20 years	**10**
I go freshwater sport fishing every year	6
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	3
(blank)	2

I go freshwater sport fishing most years	3
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
Other (please state)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**42**
I go freshwater sport fishing every year	40
I am a New Zealand citizen/permanent resident and live in Otago	9
I am a New Zealand citizen/permanent resident and live in Southland	13
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	8
Other (please state)	2
(blank)	7
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
(blank)	**2**
More than 20 years	**1**
I go freshwater sport fishing every year	1
(blank)	1
(blank)	**1**
(blank)	1
(blank)	1
Grand Total	**176**

Key demographics of anglers who have stopped fishing the Dingle	
Advanced	**94**
5 - 20 years	**8**
I go freshwater sport fishing every year	8
I am a New Zealand citizen/permanent resident and live in Otago	3
I am a New Zealand citizen/permanent resident and live in Southland	2
I am a non-resident	3
More than 20 years	**86**
I go freshwater sport fishing every year	83
I am a New Zealand citizen/permanent resident and live in Otago	31
I am a New Zealand citizen/permanent resident and live in Southland	21
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	4
I am a non-resident	16
Other (please state)	3
(blank)	8
I go freshwater sport fishing most years	3
I am a New Zealand citizen/permanent resident and live in Southland	2
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
Casual/beginner	**7**
2 - 5 years	**1**

I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**6**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Southland	2
I go freshwater sport fishing most years	4
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	2
Intermediate	**68**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Southland	1
5 - 20 years	**10**
I go freshwater sport fishing every year	7
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live in Southland	3
I am a non-resident	1
(blank)	2
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**56**
I go freshwater sport fishing every year	47
I am a New Zealand citizen/permanent resident and live in Otago	14
I am a New Zealand citizen/permanent resident and live in Southland	17
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	5
I am a non-resident	5
Other (please state)	1
(blank)	5
I go freshwater sport fishing most years	8
I am a New Zealand citizen/permanent resident and live in Otago	3
I am a New Zealand citizen/permanent resident and live in Southland	3
(blank)	2
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**1**
(blank)	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**3**
More than 20 years	**3**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live in Southland	1

(blank)	1
Grand Total	**172**

Worsley

Key demographics of anglers who fish the Worsley less often than in the past	
Advanced	**34**
5 - 20 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	1
More than 20 years	**32**
I go freshwater sport fishing every year	31
I am a New Zealand citizen/permanent resident and live in Otago	6
I am a New Zealand citizen/permanent resident and live in Southland	17
I am a non-resident	1
(blank)	7
I go freshwater sport fishing most years	1
(blank)	1
Casual/beginner	**2**
5 - 20 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Southland	1
Intermediate	**22**
5 - 20 years	**5**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	1
(blank)	1
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**17**
I go freshwater sport fishing every year	17
I am a New Zealand citizen/permanent resident and live in Otago	5
I am a New Zealand citizen/permanent resident and live in Southland	9
I am a non-resident	1
(blank)	2
Grand Total	**58**

Key demographics of anglers who have stopped fishing the Worsley	

Advanced	**41**
More than 20 years	**41**
I go freshwater sport fishing every year	38
I am a New Zealand citizen/permanent resident and live in Otago	10
I am a New Zealand citizen/permanent resident and live in Southland	16
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	5
Other (please state)	2
(blank)	4
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
I have gone freshwater sport fishing several times in the last 5 years	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
Intermediate	**27**
5 - 20 years	**3**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Southland	2
I go freshwater sport fishing most years	1
I am a non-resident	1
More than 20 years	**23**
I go freshwater sport fishing every year	20
I am a New Zealand citizen/permanent resident and live in Otago	5
I am a New Zealand citizen/permanent resident and live in Southland	10
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
(blank)	4
I go freshwater sport fishing most years	3
I am a New Zealand citizen/permanent resident and live in Southland	2
(blank)	1
(blank)	**1**
(blank)	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**4**
More than 20 years	**3**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	1
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**1**
(blank)	1
(blank)	1
Grand Total	**72**

Upper Mataura

Key demographics of anglers who fish the upper Mataura less often than in the past	
Advanced	**134**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a non-resident	1
5 - 20 years	**10**
I go freshwater sport fishing every year	10
I am a New Zealand citizen/permanent resident and live in Otago	4
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	2
Other (please state)	1
(blank)	2
More than 20 years	**123**
I go freshwater sport fishing every year	117
I am a New Zealand citizen/permanent resident and live in Otago	46
I am a New Zealand citizen/permanent resident and live in Southland	34
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	4
I am a non-resident	23
Other (please state)	4
(blank)	6
I go freshwater sport fishing most years	4
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
I have gone freshwater sport fishing several times in the last 5 years	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
Casual/beginner	**10**
2 - 5 years	**2**
I go freshwater sport fishing every year	1
(blank)	1
I go freshwater sport fishing most years	1
(blank)	1
5 - 20 years	**2**
I go freshwater sport fishing every year	1
I am a non-resident	1
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**6**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Southland	3
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1

Intermediate	**109**
2 - 5 years	**4**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	2
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
5 - 20 years	**26**
I go freshwater sport fishing every year	24
I am a New Zealand citizen/permanent resident and live in Otago	8
I am a New Zealand citizen/permanent resident and live in Southland	9
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	3
Other (please state)	2
(blank)	1
I go freshwater sport fishing most years	2
(blank)	2
More than 20 years	**79**
I go freshwater sport fishing every year	66
I am a New Zealand citizen/permanent resident and live in Otago	21
I am a New Zealand citizen/permanent resident and live in Southland	32
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	3
I am a non-resident	5
Other (please state)	2
(blank)	3
I go freshwater sport fishing most years	5
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	3
I have gone freshwater sport fishing several times in the last 5 years	8
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	5
(blank)	1
(blank)	**3**
More than 20 years	**3**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
Grand Total	**256**

Key demographics of anglers who have stopped fishing the upper Mataura	
Advanced	**75**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Otago	1
5 - 20 years	**5**

I go freshwater sport fishing every year	5
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a non-resident	3
More than 20 years	**69**
I go freshwater sport fishing every year	67
I am a New Zealand citizen/permanent resident and live in Otago	32
I am a New Zealand citizen/permanent resident and live in Southland	19
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	4
I am a non-resident	6
Other (please state)	2
(blank)	4
I go freshwater sport fishing most years	2
I am a non-resident	1
(blank)	1
Casual/beginner	**17**
1 - 2 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Southland	1
2 - 5 years	**2**
I have gone freshwater sport fishing several times in the last 5 years	2
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	1
5 - 20 years	**6**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Southland	1
I go freshwater sport fishing most years	4
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**8**
I go freshwater sport fishing every year	5
I am a New Zealand citizen/permanent resident and live in Otago	4
I am a New Zealand citizen/permanent resident and live in Southland	1
I go freshwater sport fishing most years	3
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	1
Intermediate	**93**
2 - 5 years	**4**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
I have gone freshwater sport fishing several times in the last 5 years	1

I am a New Zealand citizen/permanent resident and live in Southland	1
5 - 20 years	**13**
I go freshwater sport fishing every year	10
I am a New Zealand citizen/permanent resident and live in Otago	4
I am a New Zealand citizen/permanent resident and live in Southland	4
(blank)	2
I go freshwater sport fishing most years	3
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
Less than 1 year	**2**
I go freshwater sport fishing every year	2
I am a non-resident	2
More than 20 years	**73**
I go freshwater sport fishing every year	58
I am a New Zealand citizen/permanent resident and live in Otago	27
I am a New Zealand citizen/permanent resident and live in Southland	18
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	4
Other (please state)	1
(blank)	8
I go freshwater sport fishing most years	10
I am a New Zealand citizen/permanent resident and live in Otago	5
I am a New Zealand citizen/permanent resident and live in Southland	5
I have gone freshwater sport fishing several times in the last 5 years	4
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I have only gone freshwater sport fishing once or twice in the last 10 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**1**
(blank)	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**3**
5 - 20 years	**1**
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**1**
I have only gone freshwater sport fishing once or twice in the last 10 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**1**
(blank)	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Grand Total	**188**

Dingle

Key demographics of anglers who fish the Dingle less often than in the past	

Advanced	**45**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Otago	1
5 - 20 years	**4**
I go freshwater sport fishing every year	4
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
(blank)	2
More than 20 years	**40**
I go freshwater sport fishing every year	40
I am a New Zealand citizen/permanent resident and live in Otago	19
I am a New Zealand citizen/permanent resident and live in Southland	4
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	3
I am a non-resident	3
(blank)	11
Intermediate	**36**
2 - 5 years	**1**
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
5 - 20 years	**5**
I go freshwater sport fishing every year	4
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
(blank)	2
I have only gone freshwater sport fishing once or twice in the last 10 years	1
I am a New Zealand citizen/permanent resident and live in Southland	1
More than 20 years	**30**
I go freshwater sport fishing every year	26
I am a New Zealand citizen/permanent resident and live in Otago	12
I am a New Zealand citizen/permanent resident and live in Southland	5
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	2
I am a non-resident	1
Other (please state)	1
(blank)	5
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	1
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	**2**
More than 20 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1

(blank)	1
Grand Total	**83**

Key demographics of anglers who have stopped fishing the Dingle	
Advanced	**61**
5 - 20 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	1
More than 20 years	**59**
I go freshwater sport fishing every year	56
I am a New Zealand citizen/permanent resident and live in Otago	37
I am a New Zealand citizen/permanent resident and live in Southland	9
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	5
I am a non-resident	2
(blank)	3
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a non-resident	1
Casual/beginner	**2**
More than 20 years	**2**
I go freshwater sport fishing most years	1
(blank)	1
(blank)	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Intermediate	**57**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Otago	1
5 - 20 years	**5**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	1
(blank)	1
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	1
More than 20 years	**51**
I go freshwater sport fishing every year	42
I am a New Zealand citizen/permanent resident and live in Otago	20
I am a New Zealand citizen/permanent resident and live in Southland	12
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	1
Other (please state)	2

(blank)	6
I go freshwater sport fishing most years	8
I am a New Zealand citizen/permanent resident and live in Otago	3
I am a non-resident	1
(blank)	4
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Grand Total	**120**

Dingle

Key demographics of anglers who have fish the Dingle less often than in the past	
Advanced	**37**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
5 - 20 years	**2**
I go freshwater sport fishing every year	2
(blank)	2
More than 20 years	**34**
I go freshwater sport fishing every year	34
I am a New Zealand citizen/permanent resident and live in Otago	19
I am a New Zealand citizen/permanent resident and live in Southland	4
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	3
I am a non-resident	4
(blank)	4
Intermediate	**18**
5 - 20 years	**5**
I go freshwater sport fishing every year	4
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a non-resident	1
(blank)	1
I go freshwater sport fishing most years	1
(blank)	1
More than 20 years	**13**
I go freshwater sport fishing every year	12
I am a New Zealand citizen/permanent resident and live in Otago	6
I am a New Zealand citizen/permanent resident and live in Southland	3
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
Other (please state)	1
(blank)	1
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
(blank)	**1**
More than 20 years	**1**
I go freshwater sport fishing every year	1

(blank)	1
Grand Total	**56**

Key demographics of anglers who have stopped fishing the Dingle	
Advanced	**51**
5 - 20 years	**3**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	1
More than 20 years	**48**
I go freshwater sport fishing every year	46
I am a New Zealand citizen/permanent resident and live in Otago	28
I am a New Zealand citizen/permanent resident and live in Southland	6
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	4
I am a non-resident	4
(blank)	4
I have gone freshwater sport fishing several times in the last 5 years	2
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	1
Casual/beginner	**3**
1 - 2 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
5 - 20 years	**1**
I go freshwater sport fishing every year	1
(blank)	1
More than 20 years	**1**
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Intermediate	**32**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a non-resident	1
More than 20 years	**31**
I go freshwater sport fishing every year	27
I am a New Zealand citizen/permanent resident and live in Otago	18
I am a New Zealand citizen/permanent resident and live in Southland	5
I am a non-resident	1
Other (please state)	1
(blank)	2
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
I have gone freshwater sport fishing several times in the last 5 years	3
I am a New Zealand citizen/permanent resident and live in Otago	3
Grand Total	**86**

Caples

Key demographics of anglers who fish the Dingle less often than in the past	
Advanced	**39**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a non-resident	1
5 - 20 years	**4**
I go freshwater sport fishing every year	4
I am a New Zealand citizen/permanent resident and live in Otago	3
I am a non-resident	1
More than 20 years	**34**
I go freshwater sport fishing every year	34
I am a New Zealand citizen/permanent resident and live in Otago	13
I am a New Zealand citizen/permanent resident and live in Southland	6
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	4
I am a non-resident	7
Other (please state)	1
(blank)	3
Intermediate	**16**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
(blank)	1
5 - 20 years	**4**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1
Other (please state)	1
I go freshwater sport fishing most years	2
I am a non-resident	1
(blank)	1
More than 20 years	**11**
I go freshwater sport fishing every year	11
I am a New Zealand citizen/permanent resident and live in Otago	4
I am a New Zealand citizen/permanent resident and live in Southland	2
I am a non-resident	3
Other (please state)	1
(blank)	1
Grand Total	**55**

Key demographics of anglers who have stopped fishing the Caples	
Advanced	**54**
5 - 20 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1

(blank)	1
More than 20 years	**52**
I go freshwater sport fishing every year	51
I am a New Zealand citizen/permanent resident and live in Otago	23
I am a New Zealand citizen/permanent resident and live in Southland	14
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
I am a non-resident	7
Other (please state)	4
(blank)	2
I go freshwater sport fishing most years	1
I am a non-resident	1
Casual/beginner	**1**
1 - 2 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
Intermediate	**24**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
(blank)	1
More than 20 years	**23**
I go freshwater sport fishing every year	17
I am a New Zealand citizen/permanent resident and live in Otago	8
I am a New Zealand citizen/permanent resident and live in Southland	4
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	2
I am a non-resident	2
Other (please state)	1
I go freshwater sport fishing most years	5
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live in Southland	3
(blank)	1
I have gone freshwater sport fishing several times in the last 5 years	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Grand Total	**79**

Greenstone

Key demographics of anglers who fish the Greenstone less often than in the past	
Advanced	**38**
5 - 20 years	**4**
I go freshwater sport fishing every year	4
I am a New Zealand citizen/permanent resident and live in Otago	2
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	1
More than 20 years	**34**
I go freshwater sport fishing every year	34
I am a New Zealand citizen/permanent resident and live in Otago	18

I am a New Zealand citizen/permanent resident and live in Southland	6
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	3
I am a non-resident	4
Other (please state)	2
(blank)	1
Casual/beginner	**1**
More than 20 years	**1**
(blank)	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Intermediate	**19**
2 - 5 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Otago	1
5 - 20 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1
Other (please state)	1
Less than 1 year	**1**
I go freshwater sport fishing every year	1
I am a non-resident	1
More than 20 years	**15**
I go freshwater sport fishing every year	13
I am a New Zealand citizen/permanent resident and live in Otago	9
I am a New Zealand citizen/permanent resident and live in Southland	1
I am a non-resident	2
Other (please state)	1
I go freshwater sport fishing most years	2
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	1
Grand Total	**58**

Key demographics of anglers who have stopped fishing the Greenstone	
Advanced	**64**
5 - 20 years	**2**
I go freshwater sport fishing every year	2
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
More than 20 years	**62**
I go freshwater sport fishing every year	60
I am a New Zealand citizen/permanent resident and live in Otago	27
I am a New Zealand citizen/permanent resident and live in Southland	20
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	3
I am a non-resident	8
Other (please state)	2
I go freshwater sport fishing most years	1
I am a non-resident	1

I have gone freshwater sport fishing several times in the last 5 years	1
I am a non-resident	1
Intermediate	**42**
5 - 20 years	**4**
I go freshwater sport fishing every year	3
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a non-resident	2
I go freshwater sport fishing most years	1
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	1
More than 20 years	**38**
I go freshwater sport fishing every year	28
I am a New Zealand citizen/permanent resident and live in Otago	14
I am a New Zealand citizen/permanent resident and live in Southland	10
I am a New Zealand citizen/permanent resident and live outside of Otago/Southland	2
I am a non-resident	1
Other (please state)	1
I go freshwater sport fishing most years	8
I am a New Zealand citizen/permanent resident and live in Otago	4
I am a New Zealand citizen/permanent resident and live in Southland	3
I am a non-resident	1
I have gone freshwater sport fishing several times in the last 5 years	2
I am a New Zealand citizen/permanent resident and live in Otago	1
I am a New Zealand citizen/permanent resident and live in Southland	1
(blank)	**1**
More than 20 years	**1**
I go freshwater sport fishing every year	1
I am a New Zealand citizen/permanent resident and live in Otago	1
Grand Total	**107**