



FIGURE 10. ATTITUDE TO MANAGEMENT RESPONSES IN SUMMARY SCALE STRUCTURE.

TABLE 5. SIGNIFICANT EFFECTS ON ATTITUDE TO MANAGEMENT SCALES.

SOURCE OF SIGNIFICANT EFFECT	SIGNIFICANT MANAGEMENT SCALES	MEAN VALUES (ADJUSTED)*		
Nationality effect $F(5,537) = 6.45, p = .000$	Manipulate use conditions $F(1,541) = 25.27, p = .000$	New Zealand	Overseas	
		3.72	3.40	
	Rationing/use-limits $F(1,541) = 11.59, p = .001$	3.40	3.24	
	Limit boats $F(1,541) = 5.81, p = .016$	2.62	2.51	
	Increase accommodation $F(1,541) = 4.82, p = .028$	3.07	3.41	
Nationality/age interaction $F(5,537) = 2.76, p = .018$	Manipulate use conditions $F(1,541) = 8.69, p = .003$	New Zealand	Overseas	
		Under 40	3.69	3.42
		Over 40	3.81	3.12
	Rationing/use-limits $F(1,541) = 5.81, p = .016$	New Zealand	Overseas	
		Under 40	3.35	3.26
		Over 40	3.56	3.01
	Limit boats $F(1,541) = 4.04, p = .045$	New Zealand	Overseas	
		Under 40	2.55	2.55
	Over 40	2.83	2.19	
Crowded/age interaction $F(5,537) = 2.38, p = .037$	Rationing/use-limits $F(1,541) = 7.62, p = .006$	Uncrowded	Crowded	
		Under 40	3.32	3.25
		Over 40	3.18	3.55

* Mean values for the summary scales are divided by the number of constituent items to give a interpreted using the original question categories (e.g., 1 = Strongly agree 3 = Neutral 5 = Strongly disagree)

Nationality/age interaction

A significant interaction detected between nationality and age-group was based largely on attitudes to the management options of manipulating use conditions, rationing/use-limits, and boat limits. Younger New Zealand and overseas visitors indicated similar responses toward these management options. However, among the older age-group, New Zealand visitors were distinctly more opposed to these options while overseas visitors were distinctly more supportive of them. Additional exploration of the ‘manipulate use’ scale indicated this interaction was particularly apparent for making peak times more expensive, and to a notably lesser extent, for reducing facilities to discourage use. Other distinctions were much less prominent. Additional exploration of the ‘rationing/use-limits’ scale indicated this interaction was particularly apparent for the option of hut booking systems. Other distinctions were much less prominent. And additional exploration of the ‘boat limits’ scale indicated this interaction was particularly apparent for the option of limiting boat access to some places. For all of these more prominent options, older New Zealanders were notably more opposed while older overseas visitors were notable less opposed.

Crowded/age interaction

A significant interaction detected between age group and crowded perception was based largely on attitudes to the management options of rationing/use-

limits. Younger uncrowded and crowded visitors indicated similar responses toward these management options. However, among the older age-group, crowded visitors were distinctly more opposed to them, while the responses of uncrowded visitors remained consistent. Additional exploration of the 'rationing/use-limits' scale indicated this interaction was apparent for all the options, but was most prominent for the option of requiring permits to do the trip. Among the older visitors who felt crowded, opposition to rationing and limiting use-levels appeared to be greatest. Overall, visitor responses indicated that they were generally opposed to rationing/use-limit options, but these findings indicate that within this opposition, older crowded visitors appear distinctly more opposed to such controls.

Extreme responses

Because visitor attitudes were sometimes substantially split either for or against the management options (refer Figure 10), additional exploration of these data were undertaken. The top and bottom 25% of scores for each of the management option scales were selected, representing the more 'extreme' attitudes of those who most strongly agreed or disagreed with the options. Differences in the proportions of these extreme positive and negative attitudes were apparent according to nationality, crowding perceptions and age-group.

Among New Zealand and overseas visitors with these extreme attitudes, a greater proportion of New Zealand visitors agreed with increasing accommodation options (62% *vs* 39% for overseas visitors), while greater proportions of overseas visitors agreed with manipulating use conditions (68% *vs* 38% for New Zealand visitors) and rationing/use-limits (54% *vs* 44% for New Zealand visitors). For these visitors with extreme attitude responses, agreement with increasing accommodation options was lowest among German and Swiss visitors (16% and 24%), and highest among British visitors (75%). Agreement with manipulating use options was highest among American visitors (88%), and agreement rationing/use-limit options was also highest among American visitors (82%). Among crowded and uncrowded visitors with these extreme attitudes, a greater proportion of crowded visitors agreed with manipulating use conditions (65% *vs* 43% for uncrowded visitors), limiting boat use (65% *vs* 31%). Among older and younger visitors with these extreme attitudes, a greater proportion of older visitors agreed with increasing accommodation options (60% *vs* 45% for younger visitors).

Overall, these exploratory results indicate that New Zealand visitors appeared to agree more with facility development options while overseas visitors appeared to agree more with rationing and manipulating use through management controls. Crowded visitors appear more positive toward direct management controls, and older visitors appear more positive toward facility development. However, rather than representing major conclusions, these findings suggest areas for more detailed investigation.

6.2 RELATING MANAGEMENT PREFERENCE SCALES TO OVERALL TRIP EVALUATIONS

There were no significant links between the overall visit evaluations (e.g., satisfaction and crowding), and any scales of the attitudes towards management options. These results suggest that preferences for different management options were unaffected by any experiences on the track visit.

7. Summary and discussion

7.1 OVERALL VISIT EVALUATIONS

Overall levels of dissatisfaction were negligible, and very few of the track users surveyed considered the experience was below their expectations. However, perceptions of crowding were high, and many visitors saw more others than they expected. On the basis of the overall satisfaction response, it appears that there were no major use-level issues on the Abel Tasman Track at the time of the survey, and visitors had highly positive visit-experiences. However, the high crowding perception in particular suggests some compromises to the quality of the visit experience were occurring.

Clearly some caution is required when interpreting satisfaction findings on their own, particularly as most visitors surveyed were on a first visit. There is a tendency for such visitors to give approval to the status-quo of social and environmental conditions they experience on a visit. They lack previous experience of the site and any strong expectations as to what might constitute the appropriate and acceptable conditions which occur there. In a situation of changing use conditions over time, the overall satisfactions of such visitors can remain consistently high despite considerable changes in visit experiences. Those first-time visitors with strong but inaccurate expectations of social and physical conditions, or repeat-visitors with expectations based on previous conditions, are those most likely to indicate overall dissatisfaction. These types of visitors are usually also those most likely to be displaced to different sites, times or activities, and are more likely to give negative feedback about their experiences to others. However, other visitors may recognise that elements of the visit-experience may not be what they would prefer, but are prepared to rationalise some of their preferences in the interests of an enjoyable overall visit.

All these considerations suggest that reliance on overall satisfaction measures as a monitor of visit-experience quality can be misplaced. Should considerable levels of dissatisfaction become apparent in such overall satisfaction measures, it is likely that major problems are already well-established. Crowding perceptions and other more specific impacts perceptions and facility and service satisfactions will provide a more sensitive monitoring approach.

7.2 SATISFACTION WITH FACILITIES AND SERVICES

No notable levels of dissatisfaction were apparent from the survey for any of the facilities and services on the Abel Tasman Track. The high satisfactions across all the facility and service types indicated a lack of any specific visitor problems with track management infrastructure, and suggested there were no immediate needs for management interventions beyond normal maintenance. The only concerns which may possibly require some consideration related to

dissatisfactions with signposts showing distance and times, track marking, hut water supply, cooking facilities and lighting. However, these were not major sources of dissatisfaction (up to 24%), and apart from hut water supply and track marking, do not represent high priority facilities or services. They do not appear to warrant high priority for urgent management on the basis of satisfaction levels alone. Nor were the levels of any facility and service satisfactions found to vary significantly between different visitor groupings (including hut and campsite users). Overall, these findings suggest that overall levels of satisfaction with facilities and services were high, and that on the basis of these results there are not any priority issues of serious dissatisfaction. Should any additional improvements to the standards of facilities and services beyond normal maintenance programmes become a management priority, attention to hut and campsite water supplies, and signage related to track marking and route information appear likely to provide most enhancement to visitor experiences.

7.3 PERCEPTIONS OF IMPACTS

Many visitors indicated that they noticed various social and physical impacts. Prominent social impacts included seeing too many people in huts/campsites and on the track, insufficient bunk numbers, and disturbance by motorboats at beaches. Prominent physical impacts included uncertain water hygiene, track trampling of shortcuts and widened sections, overdeveloped tracks and signs, and inadequate water and toilet facilities. However, in many of these cases, most of these visitors were tolerant of these impacts rather than being bothered by them. For example, while most visitors (75%) noticed too many other people in huts, only 21% indicated that this bothered them. The remaining 54% comprised visitors who indicated they were not bothered by experiencing this impact, which is indicative of considerable impact tolerance. By contrast, visitors also appeared to have very little tolerance of some types of impacts, particularly those which very visibly represented inappropriate behaviour (e.g., seeing litter, toilet paper/waste, and wood-cutting). Litter at campsites was noticed by 48% of visitors, and 37% were bothered by it. Only 11% indicated they were not bothered by seeing litter, indicative of much lower impact tolerance. Understanding the distinction between simply noticing these different types of impacts and being specifically bothered by them appears to be an important research issue. Overall, while some impacts appeared to be widespread judging by the degree to which they were noticed, their relative importance was less apparent, judging by the different degrees to which visitors were bothered by them.

The most negative impact was uncertain water hygiene, which bothered over half (65%) the visitors. This may well represent a perceived social impact rather than a specifically experienced physical impact. However, while there was no indication from these data that this perception directly represented any specific conditions experienced on the track, other physical issues related to hygiene were apparent from perceptions of insufficient toilets and water supply, and seeing toilet paper/waste. While around half the visitors perceived the first two as being insufficient, only around 20% were bothered by this. Fewer visitors indicated they noticed toilet/paper and waste (30%), although most of those

who did were bothered by it (21%). Clearly some concern is evident with the toilet and water conditions experienced, particularly among younger visitors. However, it is less likely that the widespread uncertainty of water hygiene is justified. This suggests some focus on water and toilet facilities by managers is required, and that there is some need for investigation of why water hygiene is so widely doubted. Litter also appeared to be an issue with around 50% of the visitors noticing litter around huts and on the track, and around 30% of visitors being bothered by this. These results indicated that there was very little tolerance for seeing litter, suggesting that it may be a particularly sensitive management issue. Beyond normal maintenance procedures, further investigation to better isolate any litter 'hot-spots' may be appropriate.

The most negative social impacts indicated by visitors related to motorboat disturbance at beaches, seeing too many people on the track, insufficient bunk numbers, and noise in huts. Each of these social impacts bothered over 25% of visitors, representing a series of notable but not extraordinary impact issues. Many other visitors noticed these and other social impacts, but were not bothered by them. Overall, a variety of social impacts were being noticed by most visitors, but a substantial tolerance for these types of impacts was indicated by the low proportions of visitors bothered by them. It appears that visitors have higher levels of tolerance for social impacts related to congestion than for physical impacts related to inappropriate behaviour.

While overall impact perceptions highlighted mainly physical impact issues, variation in the impact perceptions of different visitor groupings highlighted a variety of impact issues relating to crowding perceptions, age-group and nationality. In summary, crowded visitors were significantly more bothered by most types of impact perceptions, and social impacts in particular; younger visitors were more bothered than older visitors by impacts related to water, toilet, and hygiene conditions and facility over-development; and while older overseas visitors were most bothered by impacts related to boat disturbance and physical damage, older New Zealand visitors were least bothered.

While most types of impacts were perceived more negatively by crowded visitors, social impacts related to overall congestion and hut congestion were perceived most negatively. The greater perceptions of overall congestion among crowded visitors featured seeing too many people at campsites, too many on the track, and too many big groups. Greater perceptions of hut congestion among crowded visitors featured all hut-related social impacts. And to a lesser extent, perceptions of disturbance by boats, at beaches in particular, were more prominent among crowded visitors. While the negative perceptions of these social impacts were not high overall, those impacts related to overall congestion were weakly linked with greater perceptions of crowding. If crowding perceptions increase in future, it appears that any compromises to the quality of visit-experiences may be first apparent from perceptions of impacts related to seeing too many visitors on the track, at campsites, and in big groups. This relationship will require further investigation before more conclusive statements could be made. While they were only weak, the indications of such a link suggest further investigation may be important. To a lesser extent, perceptions of impact from physical damage and over-development were also higher among crowded visitors. However, the lack of any link between higher

perceptions of these impacts and higher crowding scores suggests that these perceptions may not necessarily increase should use pressures grow.

The effects of age-group and nationality also suggest further areas of interest. Younger visitors were generally more bothered by perceptions of inadequate water/toilet/hygiene conditions and over-development of facilities. In particular, water supply and toilet conditions were of greater concern among these younger visitors, suggesting perceptions of what comprises adequate standards that differ from those of older visitors. When nationality and age effects were considered together, older New Zealand visitors appeared least bothered by impacts from boat disturbance and physical damage, while older overseas visitors were most bothered. These effects emphasised disturbance by boats at beaches, and perceptions of littering in general. While New Zealand visitors appeared more sensitive to these impacts in the younger age-group, they were distinctly less sensitive in the older age-group. Again, these results indicate different perceptions of what conditions are considered acceptable, and suggest that investigation of the different expectations and perceptions of these different visitor groupings is warranted. This distinction may be particularly relevant if the proportions of older New Zealand and overseas visitors are expected to change due to domestic population ageing or changes in tourist age-group patterns.

Some distinctions in the impact perceptions reported between hut and campsite users were suggested by exploratory analyses. These appeared to feature greater perceptions of impacts related to boat disturbance and physical damage by campsite users. Hut users perceived these impacts at lower levels, particularly those from overseas. Limitations to the data mean that no explanation for these results is appropriate, and they will require further investigation and specific analysis before any conclusive statements can be made.

Overall, while the perceptions of uncertain water hygiene were prominent, this response most likely represents a perception rather than an expression of actual experiences. Few other physical impacts were notable, although tolerance of the levels of littering was low. Many social impacts were noticed, and significant proportions of visitors were bothered by these. The particularly negative perceptions of social congestion impacts among crowded visitors suggest that this group will require most attention, should the number of visitors increase. If the age and nationality mix of visitors should change, attention to other types of impacts may be more worthwhile, although additional investigations will be required.

7.4 ATTITUDES TOWARD MANAGEMENT OPTIONS

When considering management options for addressing future increases in visitor use-levels, most visitors were highly positive toward information management. They favoured the strategic use of information to better match visitor expectations to likely experiences. That is, to give prospective visitors a better basis upon which to choose a visit timing and location that better suits their preferred visit experiences. This may be a particularly important component of any general improvements undertaken in visitor information services. These

results indicate clearly that such information management approaches were most preferable among all types of visitors. The main question this poses for managers is whether such information management approaches represent an effective tool of practical value. This is an area where additional investigation should be encouraged, as it offers the possibility of developing management approaches which will enjoy a high degree of visitor (and public) support.

An issue of recreation conflict was also indicated from the preferences of many visitors (over 40%) that there be limitations to motorboat access and water-taxi use. This may reflect both the direct actions of motorboats and motorboat visitors when ashore, and the day-time operation pressures related to water-taxi use. The possible conflicts between boat-related activities and the experiences of overnight walking visitors will require further investigation. As much of the current (and future) pressure on facilities, services, and visit experience quality will arise from growth in these other activities, as will come from growth in the numbers walking the track.

Most visitors were highly opposed to the other management options related to development of increased accommodation capacity on the track (e.g., more huts, more bunks in huts, more camp options, new tracks, guided trips), to rationing use-levels (e.g., booking systems, permits), and to manipulating use conditions to channel or reduce visitor numbers (e.g., peak pricing, cheaper options, one-way walk, reduce facilities). The strength of apparent opposition to these approaches indicates considerable background research and ongoing consultation with visitor-groups would be required before any of them could be implemented ahead of the more acceptable information-based options. Booking systems for huts and campsites, which have been considered as management options for controlling visitor numbers on many of the Great Walks, were opposed by around 50% of visitors, and supported by around 30%. This notable split in visitor preferences for booking systems suggests any future management action in this area may have negative effects on visits by some potential future visitors. However, these analyses do not provide any explanation of the generally negative attitudes of visitors toward added management controls. It appears that specific investigation of visitor attitudes towards control of their freedom to visit would be appropriate.

While most visitors appeared opposed to additional management, significant differences in these attitudes between different visitor groups highlighted issues relating to nationality, age-group, and crowded perception. In summary, New Zealand visitors were more opposed than overseas visitors to manipulating use-conditions, rationing/use-limits, and limiting boat use, but less opposed to increasing accommodation options. Older New Zealanders were distinctly most opposed to manipulating use-conditions, rationing/use-limits, and limiting boat use, while older overseas visitors were distinctly least opposed. Older crowded visitors were distinctly most opposed to rationing/use-limits. While this is a quite simplified summary of complex interactions, these points highlight areas where attitudes to management options were most variable. Only in attitudes toward information services were visitor responses consistent across the different visitor groupings investigated.

Differences between New Zealand and overseas visitors highlighted two different patterns of visitor attitudes. New Zealand visitors were more resistant

than overseas visitors towards options related to manipulating use conditions, rationing/use-limits and limiting boats. Additional exploration of these analyses indicated New Zealanders were particularly more resistant to encouraging smaller group sizes, reducing facilities to discourage use, making peak times more expensive, booking systems for campsites, and limiting use of water taxis. The relatively greater support for boat use indicated by New Zealand visitors suggests the options of using boats as part of a trip on the Abel Tasman Track were more acceptable to them. In general, it appeared that New Zealand visitors were more negative towards management options that might constrain visit freedom by limiting and manipulating use, or reducing services. Comparison of extreme responses supported this response pattern. This distinction was further emphasised by the interaction of nationality and age-group, which highlighted that resistance to these same management options was greatest among the older New Zealand visitors. By contrast, older overseas visitors were relatively the most supportive.

In a contrasting pattern, New Zealand visitors were more positive than the overseas visitors toward the management options related to developing increased accommodation. Additional exploration of this analysis indicated New Zealand visitors were more supportive of all accommodation development options, and toward more camping facilities in particular. In general, it appeared that New Zealand visitors were more positive than overseas visitors toward facility development to increase accommodation capacity and options. Comparisons of extreme attitudes supported this response pattern.

An additional interaction of visitor responses according to age-group and crowded perception found that while younger visitors indicated consistent levels of disagreement with options related to rationing/use-limits, responses differed among older visitors, where older crowded visitors were distinctly more supportive of such use-limits. Comparison of extreme responses also suggested that older visitors may be more positive toward increasing accommodation options, and crowded visitors were more positive toward manipulating use and limiting boats. If use-level increases accompanied by an ageing visitor-group structure are anticipated, these distinctions may be a worthwhile topic for further investigation. But given the high overall resistance to such direct management approaches, no immediate attention to these inter-group distinctions appears necessary. A focus on the possible ways to successfully apply information-based methods appears more worthwhile.

Overall, attitudes toward management options tended to be strongly positive or negative, and any inter-group differences were relatively minor. However, these distinctions highlight the more 'management-resistant' sectors among the visitor groupings, and identify some visitor groupings where the negative attitudes towards some management options are more variable. These results suggest where further investigations may be required to help minimise conflicts arising from any proposed management changes.

7.5 CONCLUSIONS AND RECOMMENDATIONS

Visitors indicated they noticed a wide variety of physical and social impacts. However, analyses indicated these conditions did not substantially compromise their evaluations of their visit experience. On the basis of maintaining visitor experiences, these conditions do not appear to represent urgent problems which require immediate management attention, beyond normal maintenance and management processes. At most, they indicate areas for preventative action, or where improvement to the quality of current visit experiences may be best achieved. While there were no urgent needs for immediate management actions, other visitor responses did indicate that perceptions of track congestion, campsite congestion, and seeing too many big groups were linked with overall crowding perceptions. These impacts appeared to be largely tolerated, with many visitors indicating they were not bothered by them, but their more negative evaluations among crowded visitors suggests that evaluations would become even more negative in conditions of greater crowding potential. This may be an important issue should future use levels increase.

Overall, these results indicated that preventative actions to minimise future compromises to the quality of visit experiences will need to be considered, particularly with regard to general congestion of huts, campsites, and the track, but that these are not critical at present. If management control is required, visitors indicated a preference for such actions to be based most upon information use to guide visitor choices, rather than any more direct regulation/manipulation approaches to limit or channel visitor opportunities. Initially some development of long-term information approaches could be undertaken, as stringent controls do not yet appear essential. However, different visitor groupings indicated varying patterns of support for the different types of management options. Any proposed actions would need to allow for the different effects of management options on the perceived sense of recreational freedom of different visitor groupings. In summary, the main management actions which could be undertaken include:

- Identifying any physical impact 'hot-spots' related to littering, and initiating any additional problem-solving management beyond normal maintenance processes to reduce the scale of any notable problems
- Within any ongoing maintenance programmes, reviewing the status of water supplies at huts and campsites, and taking any actions required to improve these
- Within any ongoing maintenance programmes, improving the standard and consistency of track marking, and including more time and distance details on track signage
- Providing information on water hygiene (including some pre-visit information approaches)
- Provision of general information about the features of the Abel Tasman Track, and for planning visits
- Provision of information approaches which forecast visitor numbers and hut/campsite loadings in advance. Indicate where and at what times on-track 'bottlenecks' are most likely. Indicate where, when, and how boat activity

may influence visit experiences. Outline what alternative trip patterns may be followed, and provide general suggestions on visit timing and organisation to minimise any 'crowded' visit experiences.

Most initial gains should be made by concentrating on reducing any physical impact 'hot-spots', and making whatever simple improvements are possible in the use of campsites and huts, with water supplies being an early priority. This may involve initiating investigations of visitor preferences for the standards of facilities and services at huts and campsites. The information options require generating more long term behavioural change among the visitors. This may relate to both track users and boat users. Promoting beneficial behavioural changes will be based largely on pre-visit information, and may require greater involvement with external agencies and recreational users of lands and waters outside the immediate control of the Department. Any consideration of these approaches will require additional investigations in a number of areas to assess the potential effectiveness of information use as a practical management tool. Although specific facility and service dissatisfactions were not prominent, future investigation of the expectations of different visitor groupings should be considered. Particular emphasis should be placed on the distinction between preferences for hut and campsite use, the perceived quality of toilet and water services, perceptions of water hygiene, perceptions of littering, and the possible contents of time/distance information signs.

More regulatory management options were not highly favoured, and do not appear to be necessary in the short term. However, given the possibility of such options being considered in the future, additional investigations should be encouraged to explore the reasons for the largely negative visitor attitudes toward management options, and the extent to which perceived freedom from external controls is an element of preferred recreation experiences. Due to the high levels of crowding and impact perception, such investigations would be appropriate on the Abel Tasman Track, particularly including reference to the issues of boat and related walking use (day-only and overnight). Specific investigation of possible distinctions between the visit experiences of hut and camp-based visitors may also be important, as some results indicated that campsite users perceived greater levels of impacts related to boat use and physical damage.

Monitoring of the quality of visit experiences should not rely on overall visit satisfaction scores. Crowding scores offer a more sensitive overall measure. Any specific monitoring of visit-experience quality should concentrate first upon congestion conditions at key campsites and huts, and at key sections of the track. For the Abel Tasman Track, this could initially concentrate upon visitor experiences at the main hut or huts where visitors spend the last night on their trip. Some additional investigation of the different trip patterns on and around the Abel Tasman Track may be appropriate (including boat-based trips and day-use patterns), and may require additional monitoring of visitor numbers. To allow for pressures from boat-based use and day-use, any monitoring of visitor experiences should address congestion issues both on the track and at huts and campsites.

Appendix 1

Summary of Abel Tasman Coastal Track questionnaire responses (n=657)

This presents the basic response percentages for the questions asked in the survey. These percentages are presented in the format of the original questionnaire, although some lists of responses are attached where their format is incompatible with this approach. Where appropriate, some distinction is also made between the responses of hut and campsite users (at least 1 night).

ATTACHED QUESTIONNAIRE RESPONSES

These responses are presented here as they do not fit the questionnaire format used in this appendix.

A. Question 1. Nationality breakdown

NATIONALITY	NO'S	%
New Zealand	216	33
Germany	142	22
Great Britain	72	11
United States	63	10
Australia	28	4
Switzerland	57	9
Netherlands	13	2
Canada	24	4
Denmark	19	3
Israel	0	0
Japan	5	1
Other Europe*	16	2
Other Asia	2	0
Other	0	0

* 5 Belgium, 4 France, 3 Italy, 2 Austria, 1 Finland, 1 Greece

B. Question 1. Nights on trip and at huts/camps

(i) Trip Duration

No. of nights on Abel Tasman Coastal Track

	1 nights	2 nights	3 nights	4 nights	5+ nights
% trips of this duration	20	36	27	9	7

(ii) Nights at Huts and/or Campsites

Overnight accommodation

	Huts only	Hut and 1 camp	Multiple huts/camps	Camps and 1 hut	Camps only
% trips	28	5	3	10	54

C. Question 3. Locations of Crowding Focus

Overall, (69%) of visitors (n=437) considered some places on the visit were more crowded than others. They were asked to indicate whether this occurred in huts, at campsites, on the track or elsewhere, and then relative to these, specifically where. These specific responses are summarised here. Note that multiple responses were allowed for.

Huts — 303 specified huts as a focus of crowding (69% of 437). Of these, the specific focus responses highlighted the following main sites:

40% — Anchorage Hut 31% — Bark Bay Hut 31% — Awaroa Hut
10% — Torrent Bay Hut

Campsites — 100 specified campsites as a focus of crowding (23% of 437). Of these, the specific focus responses highlighted the following main sites:

31% — Anchorage camping	16% — Bark Bay camping
14% — Awaroa camping	10% — Torrent Bay camping

On the track — 98 specified areas along the track as a focus of crowding (22% of 437). Of these, the specific focus responses highlighted the following main sites:

24% — Bark Bay area	23% — Anchorage area
19% — Totaranui road-end area	15% — All along track
10% — Torrent bay area	9% — Awaroa area

Other — 26 specified 'other' areas as focus of crowding (6% of 437). Of these, no particular areas were prominent.

Appendix 2

Details of Abel Tasman principal components analysis

Principal Component Analysis (PCA) was carried out upon selected subsets of response-list items from 657 respondents to the Abel Tasman Track sample from the Great Walks survey. These subsets related to response lists for visitor perceptions of impacts (Q. 5), visitor satisfactions (Q. 7), and visitor preferences for possible management responses (Q. 8) to increasing visitor numbers. The PCA defined a reduced number of summary scales which could then be used for more complex analytical procedures. The following material describes the summary scales, and demonstrates the degree to which they are representative of their component variables. Items were included in the scale if their removal reduced the value of the scale reliability co-efficient (Kronbachs alpha).

SATISFACTION SCALES (from Question 7)

SCALE NAME (and description)	RELIABILITY (Kronbachs Alpha)	COMPONENT LIST VARIABLES (from original questionnaire Q.7 lists)	LOADINGS (from PCA)
Hut conditions	0.8661	Hut heating facilities	0.748
		Hut lighting facilities	0.742
		Hut drying space/facilities	0.723
		Hut washing up space/facilities	0.675
		Hut cooking space/facilities	0.673
		Space to relax in huts	0.655
		Number of bunks in huts	0.565
Water/toilet	0.7876	Water supply at campsites	0.808
		Water supply at huts	0.722
		Toilets at huts	0.642
		Toilets at campsites	0.598
Track conditions	0.8316	Smooth/easy surfaces	0.746
		Gentle slopes/not steep	0.736
		Boardwalk over wet/fragile areas	0.720
		Steps	0.705
		Drainage of water	0.702
		Bridges over rivers	0.624
Information services	0.8391	Material from visitor centres	0.877
		Advice from visitor centres	0.818
		Quality of maps/brochures	0.793
		Maps/brochures in the huts	0.567
		Advice from wardens	0.554
Track marking/signs	0.7644	Track marking	0.763
		Information signs by the track	0.748
		Distance/time signs	0.713
Campsite facilities	0.8236	Camp washing up space/facilities	0.667
		Camp cooking space/facilities	0.653
		Rain shelters at campsites	0.649

IMPACT PERCEPTION SCALES (from Question 5)

SCALE NAME (and description)	RELIABILITY (Kronbachs Alpha)	COMPONENT LIST VARIABLES (from original questionnaire lists)	LOADINGS (from PCA)
Physical damage	0.8307	Litter around hut	0.755
		Litter on track	0.750
		Litter around campsites	0.708
		Seeing human waste/toilet paper	0.685
		Litter on beaches	0.646
		Seeing where wood cut for fires	0.600
		Seeing where campsites have formed	0.526
		Seeing trampling around wet areas	0.500
		Seeing shortcuts off tracks	0.466
Hut congestion	0.8493	Insufficient bunk space in huts	0.790
		Too many people in hut	0.719
		Having to rush for bunk in huts	0.714
		Noisey people in huts at night	0.642
Boat disturbance	0.8430	Disturbance by boats at beaches	0.800
		Disturbance by boats at huts/camps	0.759
Overdevelopment	0.8493	Too much development of tracks	0.829
		Too much development of signs	0.773
		Too much development of huts	0.732
		Too much development of campsites	0.709
Camp/track congestion	0.7251	Too many others at campsites	0.707
		Noisey people at campsites	0.705
		Having to rush for campsite space	0.644
		Seeing too many big groups of people	0.603
		Seeing people on guided trips of track	0.487
		Seeing too many on the track each day	0.372
Water/toilet/ hygiene	0.5623	Uncertainty in water hygiene	0.752
		Inadequate toilet facilities	0.627
		Inadequate water supply	0.586

Extra items

Plane noise

MANAGEMENT PREFERENCE SCALES (from Question 8)

SCALE NAME (and description)	RELIABILITY (Kronbachs Alpha)	COMPONENT LIST VARIABLES (from original questionnaire lists)	LOADINGS (from PCA)
Rationing/use limits	0.8152	Bookings for spaces at campsites Bookings for bunks in huts Require permits, and limit these	0.893 0.863 0.727
Information management	0.7640	Provide info on different track options Provide info on crowding conditions Provide info on physical impacts Provide info on social impacts	0.798 0.782 0.713 0.663
Increase accommodation	0.7139	Build more huts Provide more campsite/camping facilities Allow more guided trips/facilities Provide more bunks in huts Provide more alternative tracks Increase freedom for camping by tracks	0.754 0.745 0.713 0.623 0.531 0.476
Boat limits	0.7214	Limit access by boats to some places Limit use of water taxis	0.839 0.783
Manipulate use conditions	0.6423	Make other track options cheaper Make peak use times more expensive Make track one-way only Remove some facilities to discourage use Encourage small groups/discourage large	0.681 0.651 0.589 0.543 0.373

Appendix 3

Details of Abel Tasman crowding scores

Crowding was assessed using a widely used nine-point crowding scale (Question 2), and Table A3.1 presents the responses from Abel Tasman Track visitors.

Shelby *et al.*(1989)¹ summarised and evaluated the accumulated results from this method, and developed an interpretation method to highlight the management significance of these responses. These interpretations, which can be considered carrying capacity judgements related to the quality of visitor experiences, apply to the ‘crowded’ respondents (e.g., those scoring 3 or more). Table A3.1 shows that the proportion of ‘crowded’ visitors on the Abel Tasman Track was 69%.

TABLE A3.1. ABEL TASMAN TRACK CROWDING SCORES.

DEGREE OF CROWDING	(scores)	TOTAL % (n=657)
NOT CROWDED	(1)	15
	(2)	16
CROWDED — slightly	(3)	23
	(4)	14
	(5)	9
CROWDED — moderately	(6)	11
	(7)	9
CROWDED — extremely	(8)	3
	(9)	1

Table A3.2 (next page) presents a range of results from the other Great Walks and from studies summarised by Shelby *et al.* (1989). Accompanying these results are the interpretations applied to different crowding scores. The interpretation of 69% crowding on the Abel Tasman Track in summer is that use is at ‘more than capacity’. The interpretation of this crowding is that management actions are necessary to preserve the quality of visit experiences, particularly if low density impacts are important components of desired visitor experiences. These interpretations represent informed, but subjective, guidelines based upon extensive accumulated knowledge.

Comparing the Great Walk crowding scores in Table A3.2 and Figure A3.1 indicates that crowding is relatively high on the Abel Tasman Track, and preventative management to minimise effects from increasing use will be required there before most other tracks.

¹ Shelby, B., Vaske, J.J., Heberlein, T.A. 1989. Comparative analysis of crowding in multiple locations: Results of 15 years of research. *Leisure Sciences* 11: 269-291.

TABLE A3.2 DIFFERENT LEVELS OF 'CROWDED' RESPONSES. (AFTER SHELBY ET AL. 1989)

CROWD (%)	POPULATION	RESOURCE	STATE OR COUNTRY	RESOURCE CONDITIONS	CARRYING CAPACITY JUDGEMENT
100	Boaters	Deschutes River	Oregon	Weekends section 1	Much more than capacity (80 - 100%) Manage for high density recreation experiences, or treat as a 'sacrifice area', allowing quantity of activity to compromise quality of experiences. Could be a localised compromise to reduce pressure on other areas.
94	Anglers	Colorado River	Arizona	Thanksgiving weekend	
91	Boaters	Raystown Lake	Pennsylvania	On the lake	
89	Pheasant hunters	Bong Hunting Area	Wisconsin	Opening day	
88	Boaters	Deschutes River	Oregon	Weekdays section 1	
87	Riparian landowners	Lake Delavan	Wisconsin	Overall rating	
86	Goose hunters	Grand River Marsh	Wisconsin	Firing line	
85	Pheasant hunters	Public Hunting Area	Wisconsin	Opening day	
* 76 *	Walkers (GW)	Routeburn Track	New Zealand	Summer	
76	Trout anglers	Gun Powder River	Maryland	Opening day	
75	Salmon anglers	Waimakariri River	New Zealand	At river mouth	
75	Boaters	Raystown Lake	Pennsylvania	At attraction sites	
74	Salmon anglers	Rakaia River	New Zealand	At river mouth	
73	Canoers and boaters	Boundary Waters C.A.	Minnesota	Moose Lake	
72	Rafters	Grand Canyon	Arizona	1985 Summer	
70	Anglers	Klamath River	California		
70	Climbers	Mt. McKinley	Alaska		
* 69 *	Walkers (GW)	Abel Tasman Track	New Zealand	Summer	
69	Boaters	Door Country	Wisconsin		
* 68 *	Walkers (GW)	Tongariro Crossing	New Zealand	Summer (Easter 86%)	
68	Rafters	Rogue River	Oregon		
68	Rock climbers	Seneca Rocks	West Virginia		
66	Boaters	Raystown Lake	Pennsylvania	At put-in location	
* 63 *	Walkers (GW)	Kepler Track	New Zealand	Summer (Easter 86%)	High normal conditions (50 - 65%) Should be studied if increased use is expected, allowing management to anticipate problems. Represents the best time to establish more long-term management, as once higher crowding perceptions exist, there is difficulty in managing use 'down' to levels more
63	Boaters	Raystown Lake	Pennsylvania	At take-out location	
* 62 *	Walkers (GW)	Milford Track	New Zealand	Summer	
62	Deer hunters	Sandhill	Wisconsin	1988 High-density hunt	
61	Goose hunters	Fishing Bay	Maryland	Firing line	
61	Floaters	Wolf River	Wisconsin		
59	Salmon anglers	Rakaia River	New Zealand	All anglers	
* 58 *	Sea Kayakers (GW)	Abel Tasman Coast	New Zealand	Summer	

	Walkers (GW)	Heaphy Track	New Zealand	Summer (Easter 71%)	appropriate for the main recreation experiences desired.
* 55 *	Walkers (GW) Wildlife photographers Recreationists Anglers Rafters Rafters Backpackers Canoers	Heaphy Track Sandhill Lake Delavan Brule River Grand Canyon Snake River Mt. Jefferson Brule River	New Zealand Wisconsin Wisconsin Wisconsin Arizona Oregon Oregon Wisconsin	Summer (Easter 71%) One-day visit 1975 1985 Winter In Hell's Canyon High-use period	
50	Deer hunters	Sandhill	Wisconsin	1982 High-density hunt	Low Normal Conditions (35 - 50%) A problem situation does not exist at this time.
49	Backpackers	Eagle Cap Wilderness	Oregon	Late season	As with the above category, these may offer
48	Pheasant hunters	Bong Hunting Area	Wisconsin	No specific resource	unique low-density recreation experiences.
46	Deer hunters	State-wide	Wisconsin	Upstream	These are likely to change with any increase
45	Salmon anglers	Rakaia River	New Zealand	No specific resource	in social or physical impacts resulting from
44	Turkey hunters	State-wide	Maryland		increasing numbers of users, or from changes
43	Tubers	Brule River	Wisconsin	Summer	in activity types.
* 43 *	Walkers (GW)	Travers-Sabine Track	New Zealand	Summer	
* 42 *	Canoeists (GW)	Wanganui River	New Zealand	Summer	
* 42 *	Walkers (GW)	Waikaremoana Track	New Zealand	Summer	
42	Sail-boaters	Apostle Islands	Wisconsin	Summer 1985	
41	Tourists and drivers	Stockings Park	Michigan	Presidential Range	
39	Backpackers	White Mt. Nat. Forest	New Hampshire		
38	Floaters	Klamath River	California	1985 Low-use period	
37	Canoers	Brule River	Wisconsin		
* 35 *	Walkers (GW)	Rakiura Track	New Zealand	Summer	Suppressed Crowding (0 - 35%) Crowding here is limited by certain
32	Anglers	Colorado River	Arizona	Midweek	management or situational factors, which
31	Hikers	Dolly Sods Wilderness	West Virginia	Low-use period	allow particular low-density recreational
27	Goose hunters	Tuckahoe State Park	Maryland	Low-density hunt	experiences. These are likely to be unique,
26	Rafters	Illinois River	Oregon		and managers should be concerned with
25	Trout anglers	Savage River	Maryland	Low use period	maintaining them. Changes likely to increase
24	Backpackers	Great Gulf Wilderness	New Hampshire	Low use period	visitor numbers/impacts should be considered
24	Deer hunters	Sandhill	Wisconsin	1982 Low-density hunt	carefully.
23	Trout anglers	Gunpowder River	Maryland	Late season	
20	Canoeists	Wanganui River	New Zealand	Summer (Easter 68%)	
17	Goose hunters	Grand River	Wisconsin	Managed hunt	
12	Deer hunters	Sandhill	Wisconsin	1988 Low-density hunt	

** and bold type identify the crowding responses for the tracks included in New Zealand's Great Walks.