Multiple wilderness recreation management

Sustaining wilderness values— maximising wilderness experiences

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Wilderness is a concept that has both a physical and a perceptual meaning. Wilderness images have been collected by a number of researchers in recent years in an attempt to understand precisely what wilderness users consider wilderness to be. This research examines the wilderness perceptions held by three distinct study samples; New Zealand wilderness users (domestic users), New Zealand wilderness non-users (general public) and international visitors to New Zealand. The results of this research show that striking similarities and differences of wilderness perception exist between the different study samples. A wilderness perception mapping methodology developed by Kliskey (1992) is described, and a series of maps presented and discussed. These illustrate the extent of existing wilderness as perceived by different groups within each of three study samples.

1. INTRODUCTION

The concept of wilderness can be defined in physical, legislative and perceptual terms. Each has a different application, and it can be argued that for the purpose of visitor management, an understanding of perceptions of wilderness is most relevant. It has been suggested that recreationists may achieve wilderness experiences in any natural environment that they perceive to be wilderness (Kearsley 1990). Such perceptions may be far removed from any designated Wilderness Areas, which in New Zealand are most characterised by requiring the complete absence of any facilities or services, or any other form of human use. However, wilderness experiences for many people can be satisfied in areas somewhat removed from, or buffering core wilderness designations. Semi-remote areas providing only the most basic facilities (e.g. minimal huts and tracks) for the more primitive recreational pursuits can provide wilderness experiences for all but the purists among wilderness adventurers (Kearsley et al. 1997).

This article examines and applies this proposition to the context of New Zealand wilderness recreation. It reports on three studies that examine the wilderness perceptions held by three distinct samples: the domestic and international users of the recreational back country, and the New Zealand general public. All three studies involved the collection of primary data through the administration of questionnaires followed by the analysis of data employing

the Wilderness Perception Scaling (WPS) technique (Stankey 1973). This technique allows discrete groups to be identified within each sample based on the wilderness perceptions that they hold. Labels of 'wilderness purism' are applied to each group to illustrate the extent to which their common wilderness perceptions comply with the legislative definitions of wilderness in New Zealand. The article presents an analysis of the qualities of wilderness sought by the members of each purism group, and the similarities and differences of their wilderness perceptions are illustrated further through a series of perceptual maps.

2.   WILDERNESS IMAGES

Wilderness can be defined in several ways. One approach is to define wilderness as a pristine environment free from any human impact. Vitousek (1999) confirms that by this definition wilderness no longer exists, least of all in the Northern Hemisphere where agricultural chemicals act as an agent of environmental change. Kearsley (1997) has noted the almost universal and substantial impact of introduced species, such as deer, ferrets, rats, and opossums, on New Zealand's natural flora and fauna. Wilderness may also be defined in legislative terms. This approach recognises wilderness as an area of the earth that is affected primarily by the forces of nature. By this definition wilderness is an area of unmodified naturalness that is of a size and remoteness that makes practical its protection.

This article adopts a third approach to wilderness definition, which is based on personal perception. Wilderness is a personal construct that can be defined as an image that varies from person to person. This allows wilderness to be found in different environments by different people. If so, the most fragile places can be protected by directing people to the environments where their wilderness expectations may be satisfied. Just as attitudes to wilderness have varied over time by culture and society (Glacken 1967; Nash 1982; Oelschlaeger 1991; Shultis 1991; Hall 1992; and Kearsley 1997), so too have individual perceptions of wilderness. While wilderness environments have an objective reality as physical places, what makes that reality 'wilderness' rests very much upon personal cognition, emotion, values, and experiences. As Stankey & Schreyer (1987) point out, a wilderness environment does not so much 'give' a wilderness experience as act as a catalyst for what are essentially inherent emotional states. In this context wilderness has no commonly agreed physical reality, but it exists where personal cognition dictates. Different people will perceive wilderness in different ways and in different places.

Many attempts have been made to explore the dimensions of the wilderness image (e.g. Lucas 1964; Hendee et al. 1968; Stankey 1973; Heberlein 1973; and Beaulieu 1984). In New Zealand, Wilson (1979) showed that the general public and regular backcountry trampers held similar views as to how wilderness might be described. Both groups generally considered wilderness to be natural and unspoiled, wild and challenging. However the two groups diverged in their views about what activities are permissible in a wilderness environment. Among trampers, purists did not believe it possible to have wilderness where there was any sign of people or their activities, whereas the public exhibited a

much broader range of tolerance. Most of them (and, indeed, some trampers), believed that there was no inconsistency between a wilderness experience and the presence of such facilities as huts, tracks, swing bridges, and even toilets and picnic sites. Both samples generally agreed that vehicular access or any evidence of commercial use, were unacceptable in wilderness. Thus, it appears that while the strongly purist require a pristine ecological wilderness, the majority of people could find wilderness values in places that had been partially developed. Clearly many of those seeking to experience wilderness may find satisfaction in areas unacceptable to the purist minority. It is necessary, therefore, for wilderness managers to understand the quality of wilderness sought by different groups of users, and the extent to which those experiences can be achieved in lands buffering core designated wildernesses.

The notion that wilderness can be encountered by various people in environments that are more or less developed has been advanced in a number of subsequent studies (Kearsley 1982; Shultis & Kearsley 1988; Kearsley 1990; Shultis 1991; Higham 1996; and Kearsley 1997). These have provided a detailed appreciation of the perceptions of wilderness held by domestic and international visitors to conservation lands, and the general public. Members of these groups were asked to state the extent to which they accepted various developments, or required specific attributes in wilderness environments. These included physical facilities, such as huts, tracks and bridges; attributes such as remoteness and solitude; or physical developments, including exotic forests and mining, in wilderness areas. Responses to such questions have been used to group people into discrete purism classes and to plot the extent to which specific environments provide wilderness for those groups (Kliskey 1992; Kliskey & Kearsley 1993).

3.   METHODOLOGY

Three studies are included in this article, the first of which is the sample used by Kliskey in his original analysis (Kliskey 1992). In this, he used data collected by Shultis from a sample of 233 back-country users, collected via the administration of an on-site survey in natural areas throughout New Zealand (Shultis 1991; Shultis & Kearsley 1988). The second sample comprised 336 international back-country users (Higham 1996). The final group is derived from 250 members of the general public whose views on wilderness were collected by Kearsley in 1995. This article reports on the key findings of each study and compares and contrasts the results generated from each sample.

All three studies collected data that could be analysed employing the Wilderness Perception Scaling (WPS) technique (Stankey 1973). This measures the extent of a person's perceptions of wilderness and makes possible a classification of wilderness users on that basis. This methodology involves four stages:

- The development of a list of 21 variables that function as indicators for the delineation of wilderness.

- The collection of quantitative data that allows respondents to indicate the acceptability of each variable (based on their personal perception of wilderness) on a five point Likert scale.

- The aggregation of the 21 item response scores (1–5) to provide a total purism score ranging from 21–105

- The clustering of the sample into four purism classes, the membership of each sharing common perceptions of wilderness.

All three studies were able to identify four discrete wilderness perception classes, which were labelled: *non-purists*, *neutralists*, *moderate purists* and *strong purists*. How the members of each purism class perceived wilderness across the three samples is presented in Table 1, where the results can be examined in two ways.

First, a column analysis within each of the three samples confirms that clear differences in perception do differentiate each wilderness purism class. It is apparent, for example, that non-purists (NP) generally consider most listed variables to be consistent with the images of wilderness that they hold. At the opposite end of the wilderness purism scale, strong purists (SP) see the same variables to be unacceptable in wilderness. In between the poles of the scale, neutralists (N) and moderate purists (MP) are also distinguished on the basis of their wilderness perceptions, particularly when considering aspects of artefactualism (human constructs in wilderness environments, such as campsites, road access, tracks and bridges). The former (N) tend to be accepting or neutral when considering these variables, whereas the latter (MP) are more likely to be neutral or non-accepting.

Secondly, a row analysis allows the similarities and differences in perceptions across purism classes and samples to be identified. So, for example, most agreed

TABLE 1. COMPARISON OF WILDERNESS PERCEPTION CRITERIA FOR THE DIFFERENT SAMPLES.

WILDERNESS PERCEPTIONS VARIABLE LIST	DOMESTIC USERS (Shultis 1991; Kliskey 1992)				INTERNATIONAL USERS (Higham 1996)				GENERAL PUBLIC (Kearsley 1995)			
	NP	N	MP	SP	NP	N	MP	SP	NP	N	MP	SP
Campsites	+	+	–	–	+	/	/	–	+	/	–	–
Exotics	/	/	–	–	+	+	+	–	–	–	–	–
Road access	+	+	+	–	+	+	/	–	+	+	/	–
Commercial recreation	+	/	–	–	+	–	–	–	+	/	–	–
Maintained tracks	+	+	+	–	+	+	/	–	+	+	/	–
Bridges	+	+	+	–	+	+	/	–	+	+	/	–
Hunting	+	+	/	–	/	–	–	–	/	–	–	–
Logging	/	/	/	/	/	–	–	–	–	–	–	–
Motorised travel	/	–	–	–	+	/	–	–	/	–	–	–
Huts/shelters	+	+	+	–	+	+	/	–	+	+	–	–
Hydro-electricity	/	–	–	–	/	–	–	–	–	–	–	–
Mining	–	–	–	–	/	–	–	–	–	–	–	–
Solitude	–	+	+	+	/	/	/	/	+	+	+	+
Remoteness	+	+	+	+	+	+	+	+				
Little human impact	+	+	+	+	+	–	–	–	+	+	+	+
Size	+	+	+	+	+	+	+	+	+	+	+	+

NP = non-purists, N = neutralists, MP = moderate purists, SP = strong purists.

+ = acceptable, / = neutral, – = unacceptable.

that wilderness should be characterised by extensive and remote natural environments. A general negative consensus was achieved when respondents considered the acceptability of commercial developments (e.g. mining, hydro-electric, logging) and commercial recreation in wilderness. The same applies to hunting and motorised transport which were generally seen to be contrary to the image of wilderness.

Row analysis also allows the identification of variables where the views of various purism groups are substantially different. Most particularly, those differences in wilderness perceptions related to human developments in wilderness areas. Road access, tracks, campsites, bridges, walkwires, huts and shelters were viewed quite differently. Non-purists were most accepting of these developments and many considered them essential to the wilderness experience. Indeed some of the more extreme non-purists members considered further developments, such as flush toilets and hot water, as being consistent with their personal views of wilderness. By contrast, neutralists tend to be generally accepting of facility development, moderate purists more selective, and strong purists wholly opposed. These variables most clearly differentiate between the membership of different wilderness purism classes. Wilderness purism groups can also be distinguished on the basis of the perceptions of solitude that they hold. New Zealanders (both domestic wilderness users and the general public) agree that solitude is an important aspect of the wilderness experience. International visitors to New Zealand are, by contrast, neutral towards solitude as a quality of wilderness experience. It is important to note that these results tell only of perceptions of solitude, without identifying precisely what solitude is considered to be. It is possible that different respondents have quite different feelings about the experience of solitude.

The variation in relative size of purism classes between samples is also noteworthy. Table 2 illustrates that purism class membership varies considerably between samples. The general public tended to be much less strict in their perceptions. Some 83% of Kearsley's public sample were neutral or non-purist, compared with only 48% of domestic and 33% of international wilderness users. Viewed the other way, this showed that 52% of domestic users and 67% of international visitors were in the moderate and strong purist classes, compared with only 13% of the public sample. It is clear that there are wide divergences, as well as the similarities, in wilderness perceptions of different

TABLE 2. PURISM CLASS MEMBERSHIPS FOR THE THREE SAMPLES (percentages).

SAMPLE	NON-PURISTS	NEUTRAL-ISTS	MODERATE PURISTS	STRONG PURISTS
Domestic users (Shultis 1991; Kliskey 1992)	11.0	37.0	34.0	18.0
International users (Higham 1996)	4.4	28.7	45.0	21.9
General public (Kearsley 1995)	40.4	42.9	15.9	0.8

groups. This raises some interesting questions relating to the wilderness experiences of international visitors to New Zealand. The strong purism of international visitors to the New Zealand back country may be a consequence of marketing campaigns such as the recent '100% Pure' campaign. It is also possible that the majority of international visitors achieve qualities of wilderness experience in the recreational front country while only the strong purists among international visitors visit back-country settings.

4. WILDERNESS IMAGE MAPPING

Wilderness perception maps are produced by 'buffering' or excluding those areas of a specific environment that do not accord with a particular group's view of wilderness (Kliskey 1992). This research employs a multiple wilderness perception mapping methodology that was developed by Kliskey (1992) in the production of a doctoral thesis. This is a multiple step methodology that involves:

- The collection of wilderness perception data from distinct user and non-user samples (Domestic users, International users, and the New Zealand general public)

- Data analysis using wilderness perception scaling (WPS) (Stankey 1973) to segregate each sample into four discrete classes based on commonly held perceptions of wilderness.

- Analysis of variables that are considered to violate wilderness conditions as perceived by each purism class, within each study sample

- Specification of buffers that define the borders of areas viewed as having non-wilderness features (Table 3).

TABLE 3. WILDERNESS PERCEPTION BUFFERS (IN KILOMETRES).

WILDERNESS PERCEPTION VARIABLES*	DOMESTIC USERS (Shultis 1991; Kliskey 1992)				INTERNATIONAL USERS (Higham 1996)				GENERAL PUBLIC (Kearsley 1995)			
	NP	N	MP	SP	NP	N	MP	SP	NP	N	MP	SP
Campsites	–	–	1	2	–	1	1	2	–	1	2	2
Exotics	–	1	1	2	–	–	–	1	1	2	2	3
Road access	1	1	2	3	1	2	3	3	–	–	2	3
Maintained tracks	–	–	–	1	–	–	1	2	–	–	1	2
Bridges	–	–	–	1	–	–	1	2	–	–	1	2
Logging	1	1	2	3	1	2	3	4	2	2	3	4
Motorised travel	1	1	2	3	–	1	1	2	1	2	2	3
Huts/shelters	–	–	–	1	–	–	1	2	–	–	2	3
Hydro	–	1	2	3	–	1	2	3	1	2	2	3
Mining	1	1	2	3	–	1	2	3	2	2	3	3
Solitude	–	1	1	1	1	1	1	1	2	2	3	3

* Excluding those wilderness attribute variables that can not currently be mapped.

NP = non-purists, N = neutralists, MP = moderate purists, SP = strong purists.

- Creation of a series of maps each illustrating areas perceived to provide qualities of wilderness experience, based on the personal perceptions held within the four discrete purism classes within each of the three study samples.

This methodology provides much scope for analysis and interpretation. In the first instance, as discussed above, it allows the detailed appreciation of distinct wilderness perceptions, both within and between study samples. Secondly, these data outline the environmental qualities that are considered appropriate or inappropriate to the experience of wilderness. These are shown to vary significantly within samples and between them. Multiple perceptions of wilderness can then be transposed onto a series of maps that illustrate both the extent of remaining wilderness (as perceived by the members of each sub-sample) and the reasons why some areas are considered to lack wilderness quality. Clearly, the more purist the perception, the less extensive the perceived wilderness.

5. WILDERNESS IMAGES IN KAHURANGI NATIONAL PARK

Using the buffers outlined in Table 3, a series of maps were created for the purism classes in each of the three samples using ARC INFO mapping software. When the resulting maps were compared (e.g. Fig. 1), it was clear that there were common similarities and differences across the different purism classes. The maps presented below are illustrative and relate to the wilderness perceptions held by domestic wilderness users only. Similar maps presenting the wilderness perceptions held by the New Zealand general public and international visitors to New Zealand are also available and may be viewed in electronic animation at the Wilderness Research Foundation website.[1]

Figure 1 presents four maps that illustrate the wilderness perceptions held by domestic New Zealand users of the north-west Nelson ecological area. Each map presents the wilderness perceptions held by members of distinct purism classes, they being non-purists, neutralists, moderate purists and strong purists. It is apparent, in the first instance, that non-purists perceive much of this area to provide qualities of wilderness experience. Only areas buffering roads and settlements are excluded and the majority of Abel Tasman National Park including the coastal track are considered by non-purist New Zealand users to be settings within which wilderness may be experienced. This group represents 11.0% of domestic back-country users.

A further 37% of domestic back-country users, those who are classified as neutralists, hold very similar views of wilderness (Table 1). The points of distinction between these purism classes is that neutralists consider solitude to be an important aspect of wilderness experience (unlike non-purists), and commercial recreation is generally considered unacceptable. However, when

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[1] These maps, and details of other related research, were accessible at time of publishing at http://www.commerce.otago.ac.nz/tourism/wilderness/default.htm .

NP

Legend

☐ Perceived wilderness
⊗ Mines
⊕ Air strips
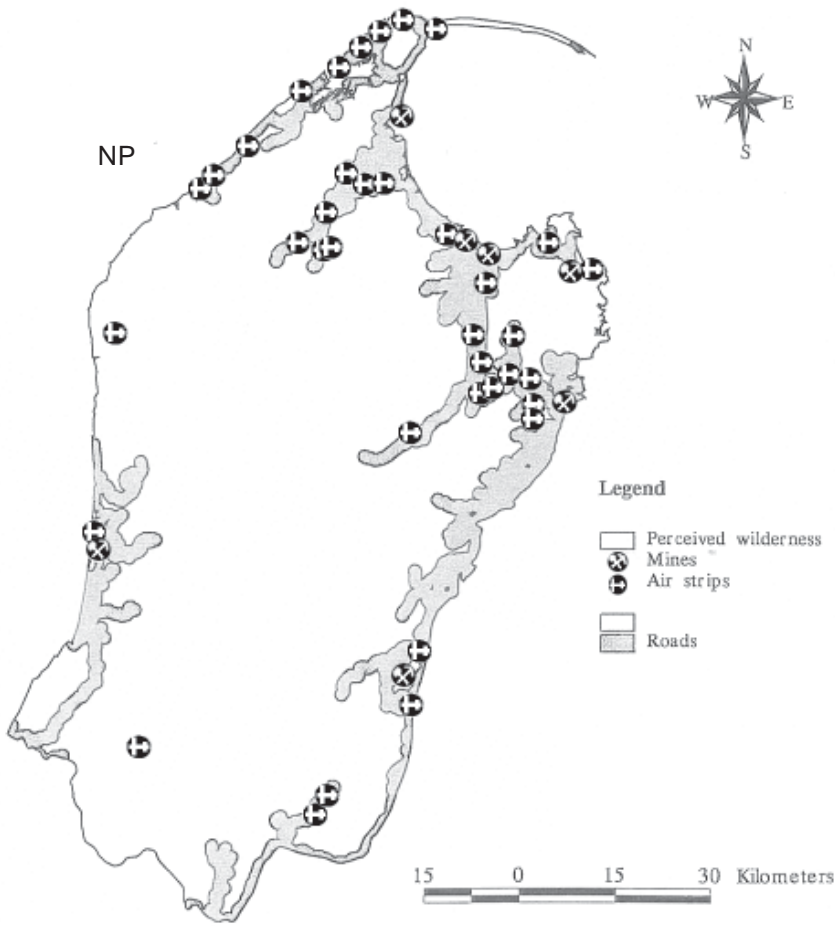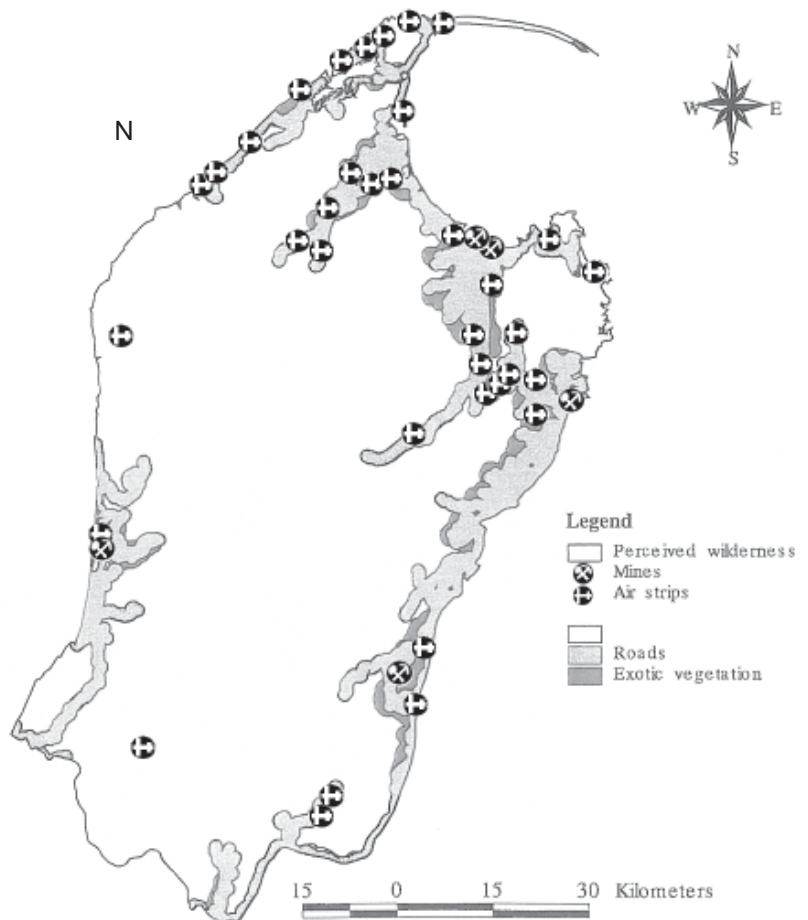
☐ Roads

15   0   15   30 Kilometers

Figure 1. (*Continued on facing page*) Wilderness perceptions of North-west as held by two of the four purism groups (NP, N) within domestic back-country users.
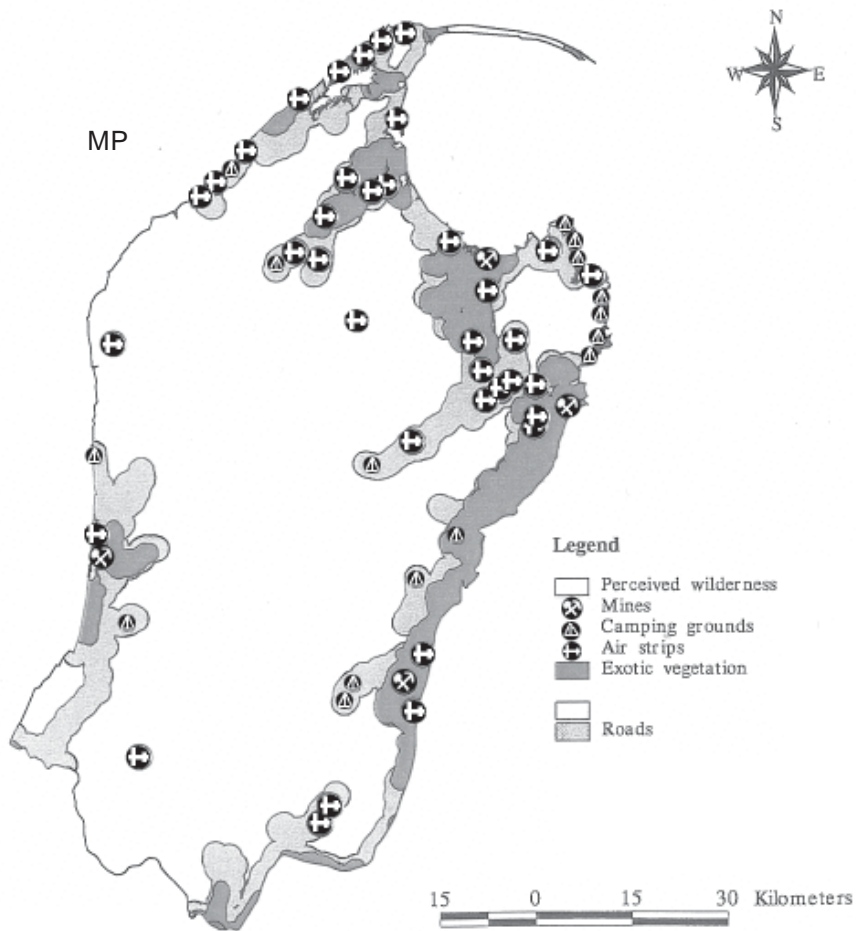
N

Legend

☐ Perceived wilderness
⊗ Mines
⊕ Air strips

☐ Roads
▨ Exotic vegetation

15   0   15   30 Kilometers

MP

SP

Legend

Perceived wilderness
Mines
Camping grounds
Air strips
Exotic vegetation

Roads

Legend

Perceived wilderness
Mines
Huts
Camping grounds
Air strips

Tracks
Exotic vegetation

Roads

15   0   15   30 Kilometers

15   0   15   30 Kilometers

Figure 1. (*Continued from facing page*) Wilderness perceptions of North-west as held by two of the four purism groups (MP, SP) within domestic back-country users.
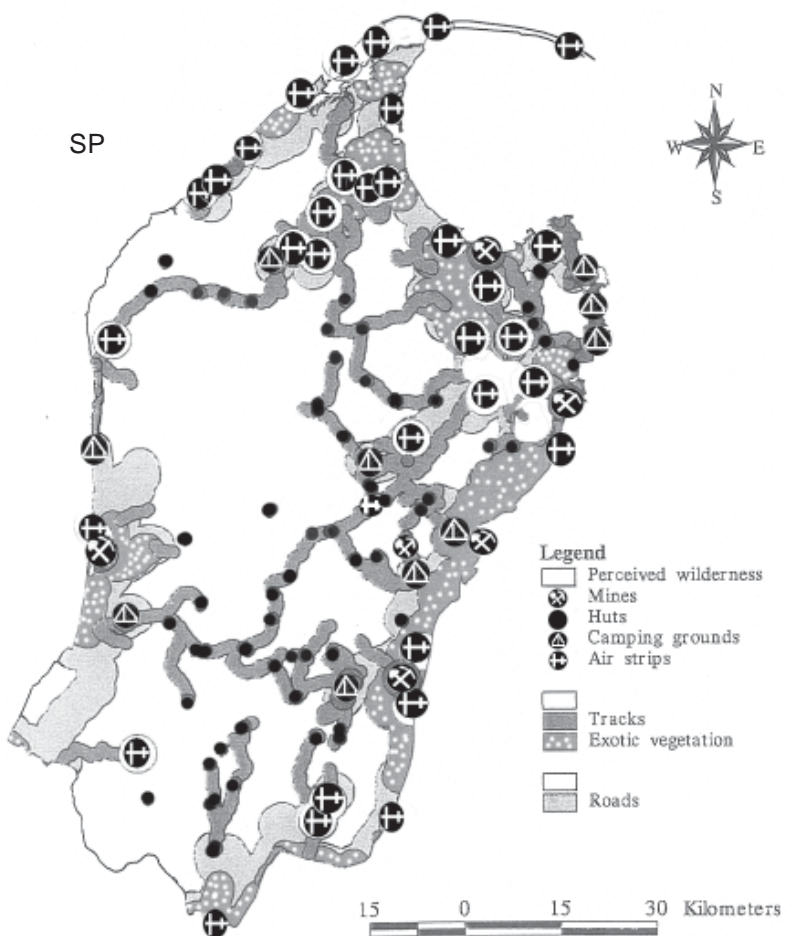
mapped, the wilderness perceptions held by neutralists closely reflect the non-purists views of wilderness recreation resources.

Moderate purists represent 34.0% of New Zealand back country users. Unlike the aforementioned sub-samples, moderate purists find campsites, exotic vegetation, hunting and any form of commercial development to violate wilderness quality. The final 18.0% of the domestic back country user sample is represented by strong purists for whom size, absence of human impact, remoteness and solitude are important aspects of the wilderness experience. All other variables identified in the research project, including maintained tracks, campsites, road access and huts/shelters, were considered unacceptable. The last of the four maps presented in Figure 1 illustrates that these users consider wilderness resources in the north-west Nelson ecological area to remain only in the most remote pockets of the region.

6. WILDERNESS IMAGES OF FIORDLAND

The same mapping technique has been carried out for a substantial part of the Southwest of the South Island (Figs 2 and 3). This area includes the Fiordland and Mount Aspiring National Parks, and adjacent natural areas. In this article
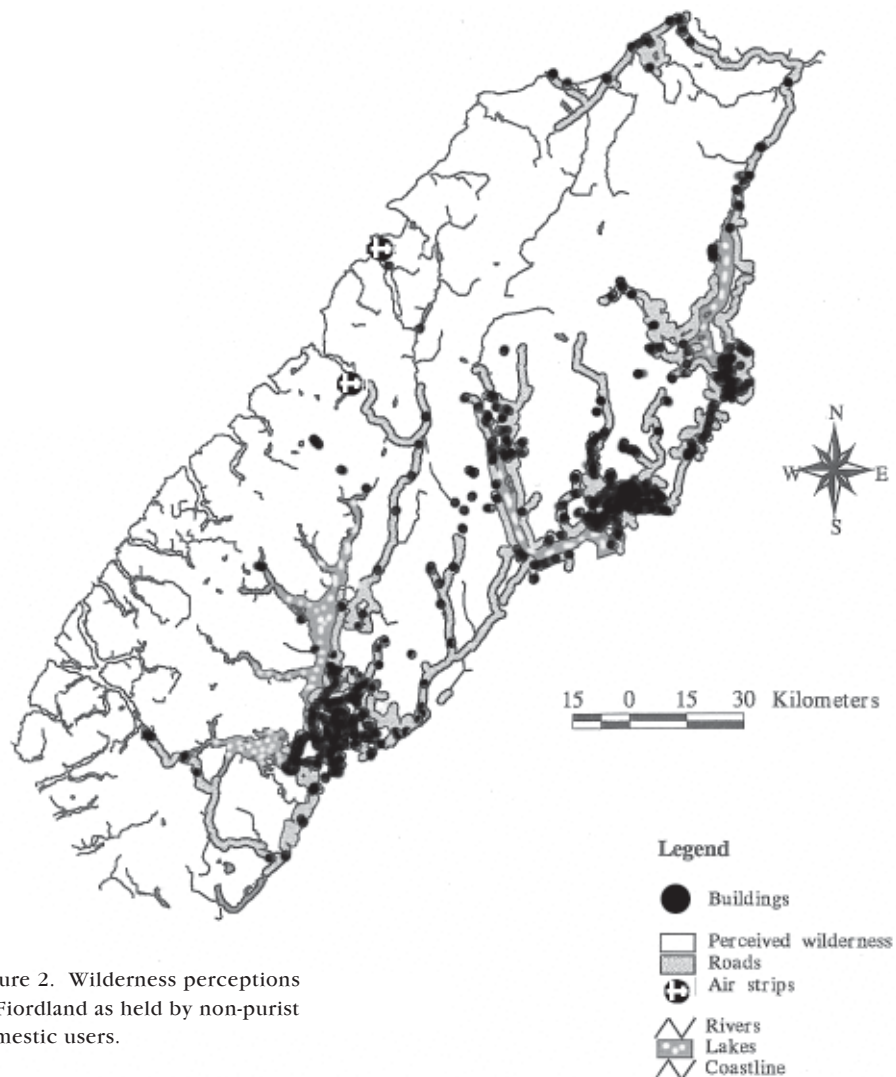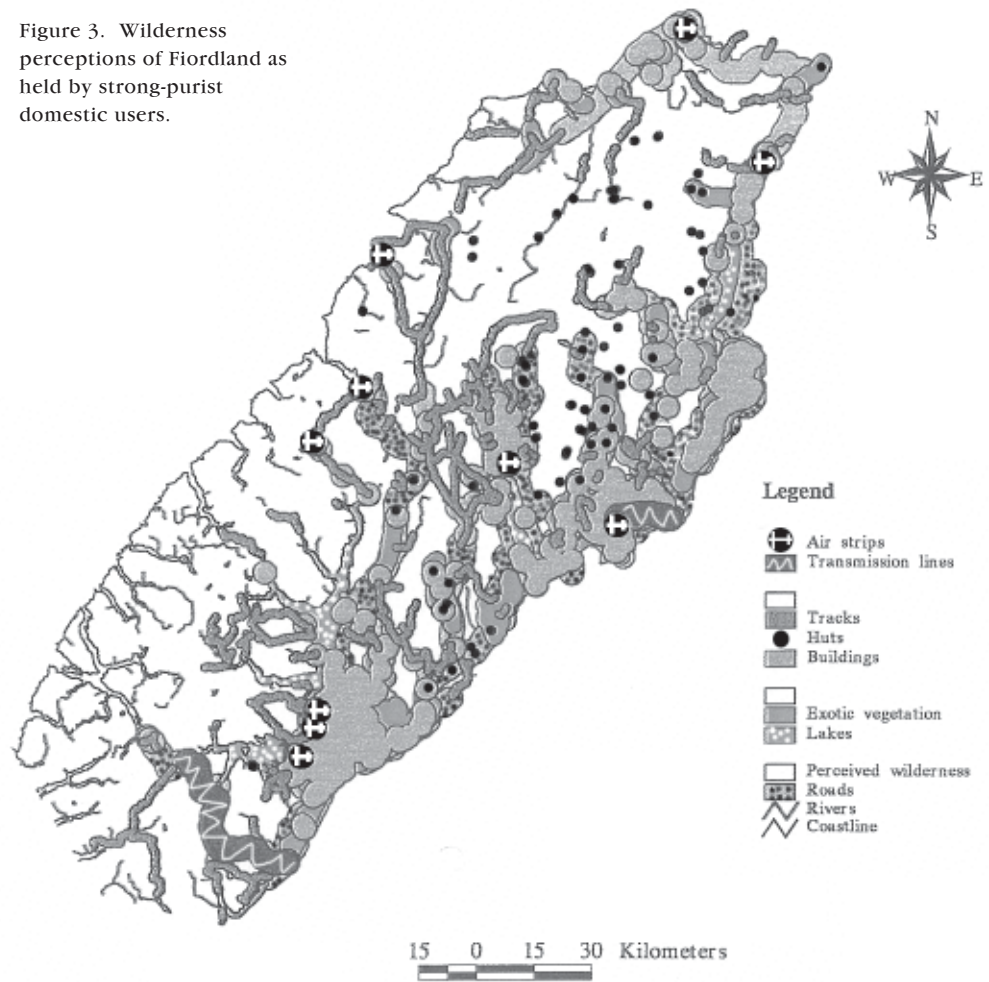

Figure 2. Wilderness perceptions of Fiordland as held by non-purist domestic users.

Legend

● Buildings

☐ Perceived wilderness
▨ Roads
⊕ Air strips

⋀ Rivers
▦ Lakes
⋀ Coastline

Figure 3. Wilderness perceptions of Fiordland as held by strong-purist domestic users.

Legend

- ⊕ Air strips
- ∿ Transmission lines
- Tracks
- ● Huts
- Buildings
- Exotic vegetation
- Lakes
- Perceived wilderness
- Roads
- Rivers
- Coastline

15 0 15 30 Kilometers

two figures illustrating the perceptions held by the two poles of the purism class continuum (non-purists and strong purists) are presented.

Roads and settlement form the eastern perimeter of this region for both non-purists (Fig. 2) and strong purists (Fig. 3). However, for the non-purists, only the Te Anau to Milford Sound highway interrupts what would have otherwise been predominantly considered a continuous wilderness. Comparing these perceptual maps demonstrates the extent to which the perceived wilderness diminishes. For the strong purists, the presence of tracks and any other infrastructure reduced wilderness values over large areas, so that only two continuous core wildernesses remain. One is in the north and encompasses the Alpine peaks of the Mount Aspiring area, while the other lies along the coastal flank of Fiordland. It should be noted that the variable lists employed in these studies did not include perceptions of boat traffic. Previous studies confirm that mechanised traffic is widely considered to erode wilderness values (e.g. Kearsley 1982). With this in mind, it is quite possible that increasing waterborne traffic in the fiords of Fiordland National Park may threaten the wilderness status of this part of the study area. This area is otherwise considered to be wilderness, but is least extensive for the strong purists among all three samples.

7. DISCUSSION

The following discussion points arise from this article.

7.1 Consistency of non-purists' wilderness perceptions

Those who hold non-purists wilderness perceptions perceive an extensive area of wilderness to exist in the perimeter zones of both study areas. Non-purists in all three samples agree that facility developments are acceptable and indeed necessary aspects of the desired wilderness experience. Hardening and extensive recreational facilities including road access, commercial recreation, maintained tracks, bridges, and huts are considered compatible with wilderness experiences. These visitors are also accepting of relatively high levels of use without the diminishing of wilderness values. This summary describes a high proportion of the New Zealand public (40.4%), 11.0% of New Zealand users, but relatively few international visitors (4.4%). The perceptions of neutralists are not dissimilar to non-purists. They too perceive wilderness to exists in developed peripheral areas. Collectively non-purists and neutralists comprise 83.3% of the New Zealand public sample (non-users).

7.2 Contrasting experiences sought by moderate and strong purists

Moderate and strong purists represent 52.0% of domestic users, 16.7% of the general public and 66.9% of international visitors. These visitors seek more challenging and undeveloped wilderness experiences. They report a desire to escape from human constructs (particularly facility developments) although this is less so for domestic users than for international visitors. Strong purists are unanimous in their need to escape all facility developments in order to experience wilderness.

7.3 Strong purism status of international visitors

International visitors demonstrate a strong propensity towards the moderate and strong purism classes. It is important to note that the majority of international visitors to natural settings in New Zealand are front-country users. The minority who access back-country settings do so generally with the intention of experiencing wilderness free of facility developments. This is perhaps a reflection of New Zealand tourism marketing campaigns that emphasise the pristine quality of the New Zealand environment.

8. CONCLUSIONS

In New Zealand, as in many other countries, difficult decisions regarding the designation of wilderness areas and rights of access need to be made, if the resource base is not to be impaired. While government and tourism organisations such as the New Zealand Tourism Board, continue to focus on encouraging visitation, insufficient attention is being given to maintaining the wilderness resource. This article focuses on the 'demand' side of wilderness management. It draws together samples from three distinct studies and confirms that different groups of wilderness users can not be viewed or treated

by wilderness managers as homogeneous. Similarities and differences between study samples are outlined in the first part of this article. Most notably, remoteness was seen by most to be fundamental to wilderness, and commercial development, commercial recreation, and motorised transport were viewed as generally unacceptable. Perceptions of wilderness were also found to vary across purism classes and study samples, particularly in terms of facility development. This article also confirms that the relative membership of discrete purism classes varies considerably between samples. These findings serve to emphasise that wilderness perceptions vary among individuals. This fact must be recognised by wilderness managers and reflected in the management of different environments to meet the wilderness interests and demands of different active and latent user groups. The perceptual approach to wilderness management should serve the additional function of protecting designated Wilderness Areas from overuse by meeting the majority of wilderness recreation demand in non-wilderness environments.

Images of wilderness can be translated into maps that depict the spatial extent of wilderness for a specific place, according to the standards and expectations of each wilderness purism class. The results show that there are substantial numbers of people—domestic users, general public, and overseas visitors alike—who perceive wilderness in the extensive areas of front-country. On the other hand, those who hold purist perceptions see much less wilderness overall. The management implication of this is that if substantial numbers can be satisfied in their expectations of wilderness in accessible locations (where management can harden and protect well-used sites without diminishing their wilderness value), then those people should be encouraged to make maximum use of those places. Those who require more stringent wilderness conditions may choose to access increasingly remote and primitive environments if they are prepared to brave them. This research also provides a detailed insight into what may be considered to degrade wilderness quality in these areas. As such, it is hoped this work will provide the basis for the preservation of wilderness on one hand, and the opportunity to maximise wilderness experiences for as many as possible, on the other.

9. ACKNOWLEDGEMENTS

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