

Review of visitor research for the Department of Conservation

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This report was commissioned to provide resource material in the form of a state-of-the-art knowledge review of visitor research. This was done to inform managers of current research gaps and to support the development of a social and visitor research strategy for the Department of Conservation (DOC). Its main purpose is to identify where research cover is comprehensive in the visitor management field, and also where any major gaps in cover occur. It does so by using a research typology to classify and organise the varied bodies of research into seven 'types'. Then, specific summaries of each type are provided. Elements of the approach taken by this typology will be incorporated in the final research strategy. This report is accompanied by a proposed social research strategy report, *DOC Research & Development Series 223* (Warren, J.; James, B.; Procter, L. 2005: Proposed framework for a social research strategy for the Department of Conservation).

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Review of visitor research for the Department of Conservation

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ABSTRACT

This report presents information relevant to the proposed Visitor Research Strategy for the Department of Conservation (DOC). It identifies the state of knowledge for visitor research by reviewing the New Zealand outdoor recreation research literature and selected international literature reviews. In particular, it highlights research gaps. The implications of these research deficiencies for DOC are discussed. To achieve these goals, the Visitor Research Framework is presented to define the scope of visitor research relevant to DOC and to structure the discussion. Analysis of the research literature and assessment of management information requirements highlights the need for a Visitor Research Strategy by concluding that a wide array of gaps in knowledge about recreation, its effects and management is evident. Disparate methods throughout the research literature have compounded the problem of comparison across studies and inhibited trend analysis. DOC documents fail to delimit and prioritise visitor research in a cohesive framework. Direction is required to coalesce effort and better integrate interests across the broad range of recreation researchers.

Keywords: recreation research, visitor satisfaction, visitor impacts, recreation management, research review, Department of Conservation, New Zealand.

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1. Introduction

1.1 STUDY PURPOSE

This report presents findings from a review of outdoor recreation research, with particular reference to the lands and recreation opportunities managed by the Department of Conservation (DOC). Within DOC, the purpose of research is to inform management decision-making. DOC managers require information to answer a myriad of management-related questions. These information needs may be satisfied in a variety of ways, such as through specialist advice, the collation of existing material, or research. This review focuses upon visitor research relevant to DOC.

Outdoor recreation research in New Zealand emerged in the early 1970s. Hundreds of studies have subsequently been undertaken and a comprehensive bibliography lists almost 2000 research publications (Peebles 1995). A large amount of visitor research has also been carried out internationally, with some strategic reviews undertaken (e.g. Manning 1999). However, this research effort has been largely uncoordinated and *ad hoc*, both in New Zealand and internationally. In the absence of a coherent framework to guide visitor research, DOC intends to develop its own Visitor Research Strategy in order to best respond to its visitor management information needs.

To that end, this report reviews outdoor recreation research in New Zealand, identifying what is known and highlighting research gaps. The implications of the existing state of knowledge for DOC are assessed. More specifically, the study aims are:

- To define the scope of visitor research relevant to DOC
- To provide a state-of-knowledge overview for this area of research, with a focus on New Zealand work
- To identify key research gaps by matching the research state-of-knowledge with management needs
- To provide background material for a future Visitor Research Strategy, including a New Zealand research provider inventory

1.2 STUDY APPROACH

In order to achieve its objectives, this study comprised three phases.

Research synthesis

Existing research overviews were collated and synthesised using a seven-stage Visitor Research Framework (see Section 2). Because the primary review of outdoor recreation research in New Zealand was published a decade ago (Devlin et al. 1995), an update was provided via analysis of more recent outdoor recreation and related tourism studies. Key international documents were included but the focus was on New Zealand literature (see Section 3).

Gap analysis and management implications

Research gaps were identified and the implications of these gaps for DOC visitor management outlined (see Section 4).

Research strategy foundation

Issues associated with the development of a research strategy were identified and an inventory of New Zealand researchers able to undertake outdoor recreation research presented (see Section 5).

2. The Visitor Research Framework

This section has three purposes. First, key terms used in this report are outlined. Second, the research literature reviewed for this report is discussed and key references are listed as a resource for readers. Third, the Visitor Research Framework is presented.

2.1 DEFINING 'VISITOR RESEARCH'

The scope of this review includes studies in outdoor recreation and related tourism. Outdoor recreation is defined as 'recreation occurring outside the home, in predominantly natural environments' (Peebles 1995: 1). The research reviewed in this report encompasses outdoor recreation studies across a range of settings. It includes, but is not restricted to, studies of visitors to public conservation lands and waters. Studies within other settings (such as rural land) and other contexts (such as general recreational participation) may have utility for the Department.

The Department defines visitors as 'people visiting areas managed by the department. They include people using visitor centres and clients of concessionaires, New Zealand and international visitors' (Department of Conservation 1996: 2). In this way, DOC management of recreation and tourism (terms separately specified within the Conservation Act 1987¹) is encapsulated within 'visitor' management. The research literature and other park/recreation agencies commonly use the terms 'outdoor recreation' or 'resource-based recreation'. This report adopts the DOC terminology of visitor research.

This report addresses only part of DOC's social science research needs. Other research areas are not visitor-related, for example, public attitudes towards conservation and assessment of advocacy programmes. There is a cross-over between visitor research and other areas of social science, particularly within the area of

¹ The Conservation Act 1987 (section 6(e)) states: 'To the extent that any use of any natural or historic resource for recreation or tourism is not inconsistent with its conservation, to foster the use of natural and historic resources for recreation and to allow their use for tourism'.

community assessment (which usually involves a recreation/tourism focus). This report has followed a policy of inclusion rather than exclusion for such 'grey areas'.

2.2 THE VISITOR RESEARCH LITERATURE

A major review of outdoor recreation research was published in 1995: Volume 1 reviews and synthesises the research literature (Devlin et al. 1995) while Volume 2 presents a comprehensive bibliography (Peebles 1995). This benchmark study is augmented by other research reviews, as the mid-1990s saw a small flurry of such effort. Since that time, some areas of research have flourished while others have remained static.

This report analyses reviews of the New Zealand outdoor recreation research literature, as well as key international literature reviews. Contemporary research has been analysed to update these research reviews. The purpose is to identify areas of research effort and neglect.

Appendix 1 lists New Zealand outdoor recreation and tourism research bibliographies and literature reviews. Readers interested in a synopsis of outdoor recreation research findings are referred to Devlin et al. (1995). One international review (of the North American recreation literature) also stands out as valuable for New Zealand readers: Manning (1999). Both of these reviews show that the scope of visitor research is extensive. In order to structure discussion of research material, a framework is required.

2.3 THE FRAMEWORK

This report extends Booth's (1988) Visitor Research Framework, initially developed to provide a common language for managers and researchers. The Framework comprises seven categories (or types) of visitor information that are commonly required by managers:

Type 1: Visit numbers

Type 2: Visit and visitor characteristics

Type 3: The visitor experience (from motivation to satisfaction)

Type 4: Visitor impacts

Type 5: Recreational benefits

Type 6: Recreation resource demand and supply

Type 7: Recreation management processes and techniques

3. Research review

Using the Visitor Research Framework, this section identifies and discusses visitor research undertaken in New Zealand to date. Appendix 2 presents a summary table of this discussion, using key criteria for the research and its relevance to DOC.

3.1 TYPE 1: VISIT NUMBERS

3.1.1 Description

Data on the number of visits to and within conservation areas represents the most basic type of visitor information. The term 'visits' is used rather than 'visitors', as contemporary recording equipment (e.g. track counters) measure visits without differentiating repeat visitors. Common methods used to collect visit numbers data are counters on doors, tracks and roads, facility/activity and concessionaire returns, and staff observation. Visits recorded using these methods represent different amounts and type of use, for example a five-minute stop at a visitor centre or a 10-day tramping trip. Type 1 data are limited to the record of numbers of people. The geographical scale of interest varies between visit counts for specific facilities (such as individual huts) to numbers of visits to whole parks.

Type 1 information can provide responses to the following management questions:

- How many people visit the conservation area?
- Where does this use occur?
- When does this use occur?
- What will future use levels be?

3.1.2 Summary of research status

There is a lack of rigorous data on visit numbers. Existing data suffer from erratic collection and a lack of integration into management decision-making. Technical difficulties surround the collection of data within the outdoors environment. A DOC science project is in progress that aims to overcome these problems by developing an appropriate visitor counter sensor (G. Cessford, pers. comm.).

Within an individual park, carefully designed monitoring may be required to correlate visits across multiple access points. The use of external (non-DOC) sources of data (such as tourism monitors) to identify conservation area visits has received virtually no attention. One project (Forer & Simmons 1998) has attempted to correlate data for national tourism flows with conservation area visits.

Despite the obvious potential of Type 1 data, the prediction of use has received little attention. At a national scale, a comprehensive analysis of natural area use trends was undertaken in the mid-1980s with prediction of use scenarios (Davison 1986), but this study has not been updated. Longitudinal studies on visit numbers are absent.

International visitor use of conservation areas has been surveyed occasionally. The most complete study of use of protected natural areas by this group was undertaken by the New Zealand Tourism Board (NZTB 1991). The availability of data on

concessionaire clients in protected natural areas has been improving with the development of concessions databases within DOC. The quality and provision of these data is dependent on the concessionaires who supply the figures.

3.2 TYPE 2: VISIT AND VISITOR CHARACTERISTICS

3.2.1 Description

Type 2 data *describe* the nature of the recreational use and users of conservation areas. These data build on Type 1 visit counts, specifically, Type 2 data differentiate between different types of visits and different types of visitors. Information on frequency of use, specifically the average number of visits per person, can be used to convert 'number of visits' to 'number of visitors'.

Type 2 data can provide responses to the following management questions:

- Who are the visitors?
- What do they do in the conservation area?
- What facilities and services do they use?
- When and how often do they visit?

3.2.2 Summary of research status

Type 2 information has attracted a substantial amount of research attention and is well understood. Two approaches have been utilised: on-site visitor surveys (the most prevalent approach) and population-based surveys to measure recreational participation.

Data from a large body of site-specific visitor studies, undertaken over more than three decades, have largely answered the questions of who is visiting conservation areas, and what they are doing there. The data are site-specific and the extent of knowledge uneven, in that more is known about some areas and some activities than others, but the collective knowledge has shown a surprising degree of convergence.

The types of visitors using conservation areas have been well documented. New Zealand work augments a large international literature. However, while certain attributes characterise the outdoor recreationist, such as education level, these characteristics do not adequately predict the recreational patterns of individuals. This type of information is, therefore, of limited value in understanding and predicting use and participation. One area of enquiry that looks fruitful is family life-cycle, as researchers have suggested that this attribute may have the greatest influence upon individuals' recreational behaviour (Booth & Peebles 1995).

Participation in recreational activities is well documented and activities undertaken within protected natural areas similarly well known. Trends in recreational participation are less well documented, although several population-based outdoor recreation participation studies assist with this. No recent outdoors-focused participation study has been undertaken with sufficient depth to identify trends in commercially based recreation activities, frequency/length of participation changes, the effect of new technology on and within recreation, and other pertinent trends affecting recreational participation in natural environments. This need may be answered, in part, by a study monitoring of the public's outdoor recreational

participation as well as their attitudes towards, use, and awareness of national parks (S. Espiner, unpubl. data).

Type 2 research has been conducted mostly in response to site-specific needs, and few studies have addressed the whole network of protected natural areas. In particular, work examining the flow of visitors across sites within individual conservation areas, and across the system of conservation areas, is lacking. Similarly, there is a lack of longitudinal research on the use of conservation areas, although a 2000/01 update of a 1995/96 national survey of back-country visitors will help (Hall & Kearsley 2001). Recent large national surveys of both front-country and back-country visitors have updated our knowledge of visitors across both types of environments (Kearsley et al. 1998a, 2001). These studies have aggregated front-country data and back-country data, precluding analysis across sites. Overall, a disproportionate amount of research effort has focused on visitors to back-country areas, despite the smaller amount of use of these areas. This is consistent with international studies of wilderness users.

3.3 TYPE 3: THE VISITOR EXPERIENCE (FROM MOTIVATION TO SATISFACTION)

3.3.1 Description

Type 3 information seeks to *explain* recreational behaviour by exploring the socio-psychological dimensions of recreation, i.e. what goes on in the heads of recreationists. Researchers have focused upon visitor perceptions, expectations, motivations and satisfactions. These concepts are intertwined and cover the experience from pre- to post-visit.

Type 3 data can provide responses to the following management questions:

- Why do people visit conservation areas?
- What are their expectations of their visit?
- Are their expectations satisfied?
- What are their views on management issues?

3.3.2 Summary of research status

This area of research is fragmented. There is a dearth of longitudinal research on the visitor experience and a lack of comparability between studies owing to use of different methods. Very little is known about changes in recreationists' motivations, both for recreational participation generally and for visits to specific sites (Moore 1995). This deficiency precludes prediction of use trends. Moore (1995:90) stresses the paramount need for research to address the 'meanings that experiences, settings and activities have for recreationists and how these meanings are established'. He suggests more qualitative research be undertaken.

Factors influencing recreational behaviour have received a lot of attention from researchers overseas. There is merit in utilising these findings and testing them within the New Zealand context. Moore (1995) cautions, however, that international research findings should be used carefully because recreational behaviour is particularly sensitive to cultural, social, and environmental factors which may differ

across cultures. It is likely that the greatest contribution from the international literature is the methods employed.

A small number of studies have investigated visitor perceptions, building on international research that has explored various dimensions of the wilderness image. This research has explored visitor/tourist perceptions of natural areas and of wilderness in particular. Images of natural areas have been studied in order to examine how and why visitors discriminate among places and choose sites to visit (Kearsley et al. 1998b). The meaning of wilderness to visitors has been examined, and means to measure wilderness images have been developed (Shultis 1991; Kliskey 1992; Higham 1996). Visitor perceptions of natural hazard and risk have been explored by Espiner (2001). Greater emphasis needs to be placed upon understanding visitors' perceptions of impacts, as this research area is deficient.

Expectations research has been limited to a small number of questions within many visitor surveys. No in-depth exploration of visitor expectations of natural areas has been undertaken. Most research has been undertaken on-site, and, therefore, studies have asked about expectations after they have been altered by on-site experience.

The motivations of protected-area visitors have been studied since the mid-1970s, and certain motives are almost universal across several studies, for both international and domestic visitors (see, for example, Devlin 1976; Kearsley et al. 1998a). Moore (1995) believes a research ceiling has been reached in this area, suggesting a need for innovative methods to reveal new dimensions of the visitor experience. Relatively little is known about visitors' satisfaction with achieving motivations (Hall & Kearsley 2001). Risk as a motive has received a little attention (Johnston 1989; Espiner 2001). Moore (1995) identifies a research gap in the lack of exploration of cultural differences between Māori and pakeha recreational behaviour.

The concept of sense of place has been explored within the recreation context (e.g. Sutton 1992) and may be fruitful for exploration of the Māori dimension of recreation (Moore 1995). Matunga (1995) discusses Māori recreational participation and perspectives.

Visitor satisfaction research associated with protected natural areas 'is minimal and fragmented' (Latu & Everett 2000: 13). Little in-depth research has been conducted into satisfaction. While it is common for site-specific studies to enquire into visitors' satisfaction with a range of aspects of their visit, this research has tended to rely upon one or two questions within a large questionnaire survey. Recent application of satisfaction monitors has included measuring visitor satisfaction with aircraft effects (Booth et al. 1999) and facility standards (O'Neill 2003). Recent DOC-commissioned research has devoted attention towards the vexatious issue of how best to measure satisfaction (Latu & Everett 2000; Ryan 2002).

The substitutability of recreational activities and settings has received a small amount of attention (e.g. Shelby & Vaske 1991) but has not matched the extent to which substitution has been studied overseas.

A small amount of research exists on visitors' wants and needs for facilities (see for e.g. Cristine Angus Marketing Services 2000). This has increased with the Department's focus on visitor asset management since 1995.

3.4 TYPE 4: VISITOR IMPACTS

3.4.1 Description

This report adopts Cessford's (1997) definition of 'visitor impacts' as the adverse effects of visitors on conservation values. Positive effects of visitors are reviewed in Section 3.5.

Visitor impacts are the negative outcomes from recreation undertaken within conservation areas. These occur both on-site and off-site. On-site impacts may be upon the natural and built environment, or upon other visitors (the social environment). Off-site negative effects may be social, economic, or environmental. An example is commercial 'over-development' on park boundaries.

Type 4 information responds to the following management questions:

- What are the negative effects of visitors?
- How can these effects be measured and monitored?
- Can they be avoided or mitigated?

3.4.2 Summary of research status

Studies of the negative effects of visitors upon the natural and social environment have examined the relationship between parameters of visitor use, descriptors of the impact(s), and management objectives/responses. While individual studies have been fruitful in answering site-specific questions, an overall understanding of the visitor-impact relationship is weak. Much international research effort has been directed at understanding this relationship, so as to predict and thus prevent or mitigate visitor impacts. New Zealand researchers have increasingly focused on this area of research over the past decade.

Most 'impacts' research is related to the theoretical framework of carrying capacity, now defined within the context of thresholds or limits of change. The 'limits of acceptable change' (LAC) concept (Stankey et al. 1985) comprises research to define the relationships between use and environmental change, and management decisions about the acceptability of environmental change.

Four types of carrying capacity have been defined: biophysical, social, facility, and physical (Shelby & Heberlein 1986). Physical impacts concern space constraints, which are seldom an issue in New Zealand and so have not received any research attention here apart from where they fall within facility limits/impacts. A small amount of research has focused upon visitors' impacts on facilities and vice versa, specifically on tracks (see for example Norton 1989; Simmons & Cessford 1989; McQueen 1991).

The following sections discuss research on the two types of impact that have received attention—biophysical and social. Economic impact studies are reviewed in Section 3.5, as they emphasise positive consequences of visits.

Biophysical or ecological impacts

Key international reviews of this research area are Kuss et al. (1990) and Hammit & Cole (1998). In New Zealand, Booth & Cullen (1995), Ward & Beanland (1996), Cessford (1997), Cessford & Dingwall (1997), and Blaschke et al. (1997) provide

reviews of the literature on impacts. In particular, research has covered impacts upon soils, plant communities, wildlife, and changes in water quality and aquatic life.

Researchers from a wide range of disciplines have studied visitor impacts on the biophysical or ecological environment. Occasionally research has integrated the study of visitors (social science) with their impact (ecological science) (e.g. Barton et al. 1998). This primarily has occurred as part of large research programmes, such as those funded by the Foundation for Research, Science and Technology, which draw together teams of researchers. More commonly, separate investigations of specific aspects of ecological effects have been undertaken, often lacking integration even across the ecological sciences. Managers are left to integrate findings for specific sites. This lack of coherence of data is a key problem associated with this area of work.

Ward & Beanland (1996: 31), in their critique of visitor impact research in the natural environment context, conclude that:

- Research into visitor impacts is limited in terms of the areas studied, the types of impact studied, and the length of study
- Very little continuous monitoring is being done
- The relationships between baseline conditions, type and level and use, the type and degree of impact, and management objectives/responses have not been investigated
- Most research has focused on terrestrial impacts, with very little done on the impacts on natural features, wildlife, or environmental quality
- Individual studies have focused on only one or two variables and do not provide a comprehensive study of visitor impacts at a particular site
- The studies reviewed do not provide sufficient information to demonstrate the relationship between sites with similar biophysical, use and impact characteristics [in other words, impacts are largely site-specific, making it difficult to generalise results (Kuss et al. 1990)]
- Only a limited number of available research methods have been used in New Zealand

Most research in New Zealand has studied impacts after they have occurred. The St James Walkway study is one of a few impacts monitoring programmes developed to assess change over time (Simmons & Cessford 1989). Occasional long-term monitoring has occurred associated with recreational events such as the Coast-to-Coast multi-sport race.

While a considerable amount of international research has been amassed on the ecological impacts of visitors, caution must be exercised when importing these results. New Zealand research suggests that ecological impacts are similar in nature to those recorded elsewhere, but some impacts show a different relationship to use parameters from those found in the international literature (Booth & Cullen 1995).

Environmental monitoring of the effects of visitor use on natural environments has received attention in the past ten years. Research into environmental indicators has progressed to the stage that a set of indicators has been derived specifically for visitor impacts on the natural environment (Hughey & Ward 2003).

Social impacts

The international literature on social impacts has been reviewed by Shelby & Heberlein (1986), Kuss et al. (1990), and, more recently, Manning (1999). New Zealand reviews are provided by Booth & Cullen (1995) and Cessford (1999a,b).

Cessford (1999a) discusses social impacts on natural areas in terms of two perspectives. First, visitors may affect the quality of the recreational experience for other visitors. Second, visitors may compromise socio-cultural values that are not specifically use-oriented. This includes, for example, spiritual values and visual landscape values.

Most research has focused upon the first set of social values—the quality of the recreation experience. Very little research has addressed other socio-cultural values, although currently two projects are in progress, commissioned by DOC (C. Wilson, pers. comm.), and a newly emerging area of work is cultural impact assessments of new park proposals. These studies complement, but are usually separate from, community impact assessments. Studies of the socio-economic effects of protected areas upon adjacent communities are discussed in Section 3.5. The remainder of this section discusses research concerning the recreational experience.

Cessford (1999a) has identified five social impact themes:

- Intra-group conflicts—particularly crowding
- Inter-group conflicts—for example, motorised versus non-motorised visitors, commercially guided versus non-commercial groups
- Management interventions—the effects of management actions upon visitors, for example track widening/hardening, booking systems
- Inappropriate uses and behaviours—for example, the use of new technologies or anti-social behaviour
- Off-site intrusions—for example aircraft overflights or socio-cultural values conflicts

These categories suggest overlap, and further elucidation may be useful. In this report, the effects of management actions on visitors are discussed under Type 7 information.

Studies of crowding and conflict predominate within the social impacts literature. A large body of literature exists internationally and a growing amount of research has addressed crowding and conflict in New Zealand. This work usually focuses upon the quality of the recreational experience, most commonly measured by visitor satisfaction. This section, therefore, has overlap with Section 3.3.

While a large number of visitor studies have asked respondents about their perceptions of crowding, a much smaller number of studies have *focused* on the issue of crowding. This includes site-specific research (e.g. Walton 1995) as well as the national surveys of back-country and front-country visitors (Kearsley et al. 1998a, 2001). Few researchers have addressed the issue from a qualitative perspective (see Visser 1995; Sharpe 1999). The study of conflict between recreational groups has received some in-depth exploration (see for example Horn 1994; Hawke 2000), although visitor surveys have often included a few questions about conflict (e.g. Cessford 1998). Commonly, New Zealand researchers have applied international techniques to measuring social impacts, such as the use of specific crowding scales in questionnaire surveys.

In response to crowding and conflict, visitors may employ coping strategies, including displacement and rationalisation (Manning 1999). A few studies have focused upon displacement and a project has been commissioned by DOC on this topic. Rationalisation strategies, such as product shift, have received little research attention in New Zealand.

Very little research has investigated inappropriate uses and behaviours, although visitor surveys often enquire into problems encountered during visits which may include this type of information. The primary focus of research into off-site intrusions has been aircraft overflights (see for example Sutton 1998; Booth et al. 1999).

Visitor impact research is related to visitor perceptions, in that social impact is a perceptual construct. For example, it is not the *number* of people present at a recreation site (use density) that is critical in the perception of crowding, but the visitor's *interpretation* of the acceptability of that number of people. In order to manage social impacts, visitor perceptions must be studied.

Cessford's (1999a) assessment of the social impacts research and information needs demonstrates the dependency of Type 4 information on Types 1-3 information. The research needs, identified by Cessford following a social impacts workshop, can be represented as:

- Identifying recreation use characteristics (volumes, patterns and trends of use for different recreation opportunities)
- Defining social values at recreation places
- Identifying and managing recreation conflict
- Evaluating management outcomes

The area of social impacts research is challenging. Researchers face issues of measuring satisfaction and the quality of the recreational experience, as well as understanding the complexity of the socio-psychological dimensions of the visitor experience.

3.5 TYPE 5 : RECREATIONAL BENEFITS

3.5.1 Description

Recreational benefits are the positive outcomes from recreation undertaken within conservation areas. These benefits accrue on- and off-site at different scales: benefits to the environment, the individual, the community, and the nation (e.g. an individual's improved physical fitness; reduced national health costs; or enhanced environmental awareness).

Type 5 information can provide responses to the following management questions:

- What benefits do recreationists receive from visiting conservation areas?
- What benefits flow on from recreational use of conservation areas, to the environment, communities, and the nation?
- How can these benefits be maximised?

3.5.2 Summary of research status

Within the international literature a paradigm shift has occurred whereby the focus of outdoor recreation research has been increasingly on the outcomes or benefits of that

recreation rather than simply upon the quality of that recreation on-site (visitor satisfaction). This is now a specific area of research, especially within the USA and Canada, at all levels of government. It appears to be a productive area for future research in New Zealand.

Very little research has been undertaken on the benefits, or positive effects, of visitors to protected natural areas. In New Zealand this has largely been limited to studies of economic benefit (e.g. Kerr et al. 1986; Clough & Meister 1989) and coverage of the positive experiences of recreationists within the many on-site visitor surveys. In recent years, the focus has broadened to social benefits (typically studied in tandem with social impacts) particularly of communities adjacent to protected natural areas (e.g. Kappelle 2001; Blackwell 2002; Booth & Leppens 2002; McCleave 2004). This area of research remains limited to a handful of studies and is not well developed. Recent work commissioned by DOC has given attention to this area (e.g. socio-economic benefits of tourism concessions).

As discussed in Section 3.7.2, most recreation management processes are underpinned by research. In this case, the Outcomes-Focused Approach is underpinned by recreational benefits research. The benefits/outcomes paradigm has yet to be well recognised in New Zealand. A corollary is that benefits research is just beginning to emerge as being relevant to conservation areas in New Zealand (see for example, Kappelle 2001; Blackwell 2002).

Booth & Cullen (1995) summarise economic impact studies, noting that economists have measured the size of the impact of recreation and tourism, or an event, on the economy, and the range and type of economic benefits resulting from recreation. This is often measured in terms of income levels, business turnover and employment levels. Booth & Cullen (1995) make the point that these types of studies have generally ignored the costs incurred by tourism and recreation, such as infrastructure improvements. Also lacking within the New Zealand literature is any examination of opportunity cost of land use, i.e. comparison of the economic benefits of using land for purposes other than conservation and recreation, such as agriculture or forestry.

3.6 TYPE 6: RECREATION RESOURCE DEMAND AND SUPPLY

3.6.1 Description

Type 6 information is about the recreational demand for conservation areas and recreational resources from New Zealanders and international visitors. This demand may be real (translated into recreational visits) or latent (unrealised). Latent demand recognises the non-user who may wish to visit but does not. Information about recreational demand may be matched by information about the supply of recreational opportunities, to assess whether demand is being satisfied at different geographical scales—local, regional, national. One conservation area cannot provide ‘all things to all people’. This type of information sets individual conservation areas in their broader context.

Type 6 information can provide responses to the following management questions:

- What is the recreational demand (real and latent) for conservation areas?
- What recreation resources are provided to satisfy demand?

- Are the demands of users and non-users being met?
- What else is needed?

3.6.2 Summary of research status

Recreational demand studies require population-based data, usually collected via household surveys, in order to address the public rather than only existing users. Few outdoor recreational demand studies have been undertaken in New Zealand. Most population-based research effort has focused upon recreational participation, so its data are shaped by the existing provision of recreation opportunities and do not measure latent demand (the unrealised desire to participate). Even these studies are few in number—Booth & Peebles (1995) summarise nine studies, across both the national and regional scales. Methodological differences (such as different question designs) inhibit comparability and reduce the opportunity for identifying trends.

Demand studies focused on the general population's use of, awareness of, and attitudes towards conservation areas are particularly lacking. A small concentration of research activity took place in the mid-1980s (e.g. Murphy 1981; Booth 1986). Market research surveys and surveys of international visitors have confirmed the proportions visiting protected natural areas and activity-based figures (e.g. Heylen Research Centre 1992; AGB McNair 1993; New Zealand Tourism Board 1996). The focus has been on quantifying use across the population.

There is a dearth of contemporary research on Māori outdoor recreation (see Matunga (1995) for a review of studies and contextual factors for such research). One study was found that examined Māori outdoor recreation participation in protected natural areas (Lomax 1988).

Related to the small number of studies, is a resultant superficial understanding of outdoor recreation demand. The predominant focus has been quantitative—on numbers/proportions participating in activities and visiting areas. Qualitative research to understand these patterns of demand is missing.

Research into latent demand (non-users) is scarce (see for e.g. Booth 1989; Cassels-Brown 2002). Leisure constraints form a focus of research overseas, but only a few studies in New Zealand have addressed this issue. Specifically, work on constraints to visiting protected natural areas is very poorly developed, both in number of studies and depth of exploration.

A comprehensive review of demand and supply of recreational opportunities in natural areas was undertaken in the mid-1980s (Davison 1986). Demand/supply analysis was used to predict future use scenarios and their implications. This benchmark study is overdue for an update. A smaller-scale use-projection exercise was undertaken for international visitors to the conservation estate in 1993 (New Zealand Tourism Board and DOC 1993). In short, demand (rather than simply participation, which is strongly influenced by current provision), and matching it to the supply of recreation opportunities, is an area of research deficiency.

Owing to the small number of studies in recreational demand and the different methods and approaches employed, participation and demand trends are difficult to ascertain.

3.7 TYPE 7: RECREATION MANAGEMENT PROCESSES AND TECHNIQUES

3.7.1 Description

Type 7 information expands the Visitor Research Framework from previous renditions (Booth 1988; DOC 1992) to include information about management actions. This type of information has been added for three reasons: to stress the link between research and recreation management processes and techniques; to recognise a specific area of research—the evaluation of management processes and actions; and to recognise that managers' perceptions of visitor behaviour, and managers' subsequent actions, influence visitor behaviour and the quality of the recreational experience.

Type 7 information can provide responses to the following management questions:

- What systems have been developed to manage visitors?
- How successful are they?
- What new systems are required?
- How do managers' actions and perceptions influence recreationists?

3.7.2 Summary of research status

This area of research has received little attention in New Zealand despite being a growing research area internationally. One reason for identifying Type 7 information separately in the Visitor Research Framework is to help rectify this deficiency. Researchers and managers need to turn their attention to how managers' actions influence the recreational experience.

Research-based recreation management processes

Several recreation management processes have been derived from robust research, developed in response to managers' needs for tools. In many cases they were designed via close collaboration between researchers and managers. For example, the Recreation Opportunity Spectrum (ROS) was developed after a solid basis of research established predictable relationships between the type of activity undertaken, the nature of the setting chosen, and the experience preferences of visitors. Because of their close link to research, these management approaches are discussed in this section.

DOC has adopted few national-level recreation management techniques. The ROS is one exception. Its use by DOC has been assessed recently (Clelland 2001), and a project redefining it for departmental application is in progress.

The Limits of Acceptable Change (LAC) and related visitor impact planning processes (such as Visitor Impact Management and Visitor Experience and Resource Protection (VERP)) have not been adopted by DOC. Booth & Cullen (1995) claim that impact management remains *ad hoc* and intuitive as a result. Although the processes themselves have not been used, their philosophy is evident in both recreation and concessions management within DOC.

Outcomes-Focused Management (also called Benefits Based Management) has developed from the research on recreation benefits but has not been integrated into New Zealand conservation management. A review of this approach for DOC

concluded that it is worthy of adoption (Booth et al. 2002). The approach considers positive and negative outcomes of recreation and its management and, therefore, has a broader scope than most visitor impact planning frameworks. It encompasses outcomes at the individual, social group, community and national levels.

Development of DOC's Visitor Asset Management Programme in the mid-1990s has focused recreation management within DOC around asset management. This tool is an adaptation to conservation management of the Total Quality Management concept, which developed in the management literature.

Evaluation of recreation management processes and techniques

Processes and techniques for managing visitors vary from the most basic provision of facilities and services, such as tracks and interpretation, through to national planning approaches such as the ROS. Seldom have visitor management processes and techniques been assessed in New Zealand in terms of effectiveness, efficiency, and/or equity. Exceptions exist primarily within the area of information and interpretation (see Meylen 1995; Espiner 1999; MacLennan 2000). A growing body of international literature exists on the effectiveness of recreation management techniques, including information and education programmes, use allocation techniques, and pricing (Manning 1999). Findings from these studies can inform New Zealand visitor management, given the similarity of management practices across countries, although visitor responses may vary.

Effects of managers' perceptions and actions

The perceptions and actions of managers affect the recreational experience. A small number of New Zealand studies have explored this area of management-related research, including managers' perceptions of natural hazards and risk in the outdoors (Espiner 2001). International research has focused on the differences between managers' and visitors' perceptions with respect to visitor motivations, and perceptions of impacts and attitudes to management purposes/practice. This research has shown that managers' perceptions are at variance with those of the visitors themselves—managers are poor predictors of visitor perceptions (Manning 1999).

4. Research gaps and management implications

This section summarises the research gaps and discusses the implications of these for DOC management and research directions. The section is based on analysis of the literature as well as the author's assessment of the relevance of the research for DOC. Recommendations for future research are made. The section is structured around the Visitor Research Framework.

4.1 TYPE 1: VISIT NUMBERS

Managers do not have the data on use counts they need. This information deficiency does not result from a lack of research—the problems with implementing a rigorous visit monitoring system are technical and managerial in nature. The contribution of research is primarily the analysis and integration of surrogate data series (such as tourism monitors) and intra-park correlations between sites. Only preliminary work has been undertaken for both areas of work.

Departmental interest in visit counts is evident from several attempts to design a systematic DOC approach to the collection and analysis of visit numbers (Adam & Brooks 1987, 1992, n.d. a). The primary value of these data for managers is the identification of trends in use and the prediction of future visit numbers. Such a monitoring programme needs to be established to respond to managers' needs for Type 1 data. Correlation with external tourism data series will allow more sophisticated analysis of these data.

DOC's 2003 Statement of Intent (DOC n.d. a) indicates that DOC expects the number of people using protected areas to increase. Performance measurement requires visit counts. The Statement commits DOC to the development of a visit monitoring methodology during 2002/03 and the monitoring of a sample of visitor sites in the same year.

Visit counts are used to allocate resources across DOC sites and facilities. For example, DOC's Visitor Asset Management Programme and the ROS require use counts to define site priority and recreational opportunity class, respectively. Where data are not available, managers' estimates are used. Given the link to resource allocation, estimates may be inflated.

In summary, the lack of adequate use time-series data has meant that potentially inaccurate data are used and future planning is limited by a lack of prediction of use levels. From a research perspective, Type 1 data are a basic building block required to design research for other information types, for example, on-site visitor surveys. Research designs are therefore forced to rely upon use estimates also.

Summary and conclusions for Type 1

Type 1 data are counts of people visiting conservation areas and sites within them.

Mechanical or electronic counters are commonly used to collect these data.

Data on visit numbers are inconsistent in their quality and availability (over time and by place).

As a result, managers lack valid and reliable data for basic decision-making, such as the required size of facilities.

Inadequate time-series data inhibits the ability to predict trends in use.

Visit numbers should be collected regularly and systematically via a monitoring programme.

Correlations should be established between DOC visits data and external tourism monitors.

4.2 TYPE 2: VISIT AND VISITOR CHARACTERISTICS

Type 2 information provides a description of who is visiting protected natural areas and what they are doing during their visit. Such data are valuable for a range of site management decisions, such as the type and positioning of facilities. For example, knowledge of the nationality of visitors will assist with the design of signage by suggesting appropriate language and cultural messages.

While a substantial amount of Type 2 data has been amassed, this area of research has suffered from a lack of systematic application over time, limiting the analysis of use trends. Establishing a monitoring system for this descriptive visitor data would provide insight into the social effects of management actions, like changes in track standards or user charges, and identify use changes resulting from shifts in recreational behaviour, technology or society. To achieve this, a standard approach to the collection and analysis of data is needed, with this method then applied periodically at selected sites. Such a monitor would enhance prediction of future use trends and assist managers to respond to changing use.

Several areas invite further research. More knowledge of the structure of visitor flows, both on-site and prior to visiting individual conservation areas, would assist with information provision (where and when to provide it) to manage visitor behaviour and influence the choice of visit locations. Investigation of family life cycle may provide further insight into recreational behaviour.

Summary and conclusions for Type 2

Type 2 data describe the nature of the recreational use and users of conservation areas.

Data are collected primarily via on-site visitor surveys and sometimes via population-based surveys of recreational participation.

A large amount of data has been collected, especially on back-country visitors.

Data are patchy: data availability varies geographically and time-series data are unavailable.

Data collection methods vary and inhibit comparison across studies.

Type 2 data are required for operational decisions such as facility type/location and to measure the effects of management actions on use.

In the absence of time-series data, managers lack the ability to predict trends in use and user patterns.

An on-site visitor survey programme should be developed and implemented periodically at representative 'indicator' locations.

Off-site recreation participation studies should be encouraged.

4.3 TYPE 3: THE VISITOR EXPERIENCE (FROM MOTIVATION TO SATISFACTION)

Type 3 data provide an understanding of why people visit conservation areas and why they behave as they do. This area of research has been addressed by a variety of disciplines within the social sciences and suffers from confused terminology. Together with the lack of replication of method, the complexity of the research has meant that the work done has not always provided knowledge that has been transferable into management use. It has, however, answered site-specific questions.

Perception of wilderness has direct management implications. Research suggests that many people find wilderness qualities within modified environments. This suggests that the wilderness requirements of many visitors can be accommodated within less pristine areas, preserving the most remote environments for the few visitors who demand 'pure' wilderness. Awareness of visitors' perceptions of risk in natural resource settings allows managers to take effective action on visitor safety and natural hazard communication. Similarly, knowledge of how visitors perceive their impacts will assist managers to alter visitor behaviour to reduce such impacts.

Managers can influence visitor expectations and motivations—those aspects of the recreational experience that have been partly formed pre-visit—via off-site information provision. Through appropriate information, visitors may choose the best settings and activity combination to meet their expectations. DOC seldom manipulates expectations prior to visits. In order to do so, more information on visitor expectations would be required, as well as appropriate means and places to provide information to future visitors.

The lack of research directed at visitor satisfaction is surprising because the concept is a common measure of the quality of the visitor experience. DOC's Statement of Intent 2002–2005 (DOC n.d. a) commits it to measuring visitor satisfaction at specific places and to developing a nationally consistent visitor satisfaction monitoring approach. While research has been undertaken towards the goal of establishing a departmental method of satisfaction measurement, this aim has yet to be realised.

Using satisfaction as a measure of performance has an inherent flaw. This flaw, or 'satisfaction trap', means that measures of satisfaction will always remain high despite changing conditions. There are two reasons for this. First, on-site satisfaction measures miss people who have been displaced owing to high dissatisfaction. Second, sites with high proportions of first-time visitors are likely to record high levels of visitor satisfaction because people tend to form their expectations on their first visit (the 'last settler syndrome'). First-time visitors to a recreation site typically accept what they find as 'normal' and base future expectations (and satisfaction) on this experience. So, visitor satisfaction alone cannot be the sole determinant of quality recreation provision and resultant management action, as it is influenced by coping strategies that alter (upwards) reported levels of satisfaction. Satisfaction is not an appropriate basis for managing use levels and crowding.

In summary, research has not met Type 3 information needs. In-depth studies on all aspects of the visitor experience are needed—visitor perceptions, expectations, motivations, and satisfactions. Qualitative research may be the most fruitful approach.

Summary and conclusions for Type 3

Type 3 data are socio-psychological and seek to explain recreational behaviour via the study of visitor perceptions, expectations, motivations, and satisfactions.

Available data provide a broad understanding of some parts of the visitor experience. Few in-depth studies have been undertaken.

The body of data is fragmented and limited. Many gaps exist for Type 3 data across all aspects of the visitor experience.

Managers lack adequate explanations of visitors' behaviour (an understanding of why they behave as they do). As a result, managers' ability to influence or control visitor behaviour is limited.

In-depth studies on all aspects of the visitor experience are needed. Qualitative research may be the most fruitful approach.

4.4 TYPE 4: VISITOR IMPACTS

The primary challenge for managers is how to apply relevant research in order to reduce or control visitor impacts in natural areas (Kuss et al. 1990). This challenge is exacerbated by the disparate nature of impacts research. Researchers have left the task of integrating findings from impact studies across different disciplines to managers. Planning frameworks should be implemented in order to guide impacts research and its relationship to management objectives and management responses to impact problems. Ideally, managers should be able to predict these impacts on the ecological, historical and social environment from potential use/management scenarios.

The primary issue for researchers concerns identifying patterns of use that will result in an environmental and visitor experience that is consistent with impact standards identified for a given area (Booth & Cullen 1995). The relationship between different facets of use (e.g. numbers, activities, and visitor behaviour), impact characteristics, and management responses (and associated effects) is complex. The need for an integrated multi-disciplinary approach presents a further research challenge.

It is not surprising, therefore, that the research base on visitor impacts in New Zealand is small and incomplete (Booth & Cullen 1995). Researchers have applied international techniques and identified New Zealand-specific results. Because many findings are site-specific, especially ecological impacts, it is often impossible to generalise results. The literature concentrates on what parameters are impacted and the short-term implications of these impacts (Booth & Cullen 1995). The crucial link to use parameters is very weak, and no predictable relationship has been identified.

With respect to ecological impacts, Ward & Beanland (1996: 31-32) suggested that DOC:

- Identifies the gaps in understanding of biophysical impacts and decides which gaps are of highest priority
- Undertakes a comprehensive search of international literature on monitoring and specifically the development of indicators

- Undertakes long-term, low-cost monitoring of priority 'hot spots', linked to management objectives and responses, to provide data that can direct site and visitor management

In the absence of a coherent set of data to guide the management of visitor impacts, management responses have been intuitive, with a considerable reliance on site 'hardening' and facility expansion. Management actions themselves, in response to impact problems, affect the biophysical environment and the visitor experience. Therefore research needs to consider the recreational experience sought by visitors, site-specific impacts, effective management techniques, and their consequent effect upon the visitor and the natural values of the site.

DOC's Statement of Intent 2002–2005 (DOC n.d. a) highlights the importance of visitor impact research to the Department. It sets an objective of decreasing adverse visitor effects on natural and historic heritage, measuring this change via the development of a systematic monitoring programme and achieving the outcome by identifying measures to avoid and remedy impacts. Some researchers consider that acceptable limits for social impacts (crowding) will often be reached before ecological limits are recognised.

Summary and conclusions for Type 4

Visitor impacts are the negative outcomes from recreation undertaken within conservation areas. These impacts occur both on-site and off-site.

Research in New Zealand has focused on biophysical impacts and social impacts.

The Type 4 information base is small and incomplete in New Zealand. The site-specific nature of impacts inhibits the development of generalisable conclusions, especially for biophysical effects.

Most biophysical impact studies address one aspect of the use/impact/management relationship. There is a lack of integration across studies, making the transfer of findings to management decision-making difficult.

Social impact studies have focused on impacts on other visitors. Few studies have examined impacts on non-recreational social values (e.g. spiritual values).

In the absence of adequate data, managers' responses to visitor impacts have been intuitive, with reliance upon site hardening and facility expansion.

Multi-disciplinary studies offer the greatest benefit, but few such studies have been undertaken.

Long-term, low-cost monitoring of 'hot spots' is required.

Study of use/impact/management relationships is needed for specific problem areas (e.g. aircraft noise).

Some means to guide and link research and management of visitor impacts is needed. Application of a visitor impacts planning system (e.g. LAC) would provide a framework for managers and researchers to address the problems of visitor impact.

4.5 TYPE 5: RECREATIONAL BENEFITS

Few New Zealand studies of benefits from/for visitors to protected natural areas exist. This area of work has the potential to shift DOC's view of recreation from on-site considerations of visitor satisfaction to the wide array of benefits provided for and by these visitors and by the management actions that support their use, including off-site benefits to the environment, the economy, individuals, communities, and society. DOC's contribution to wider governmental aims can be recognised from this shift, in that multiple social outcomes may be realised through the provision of outdoor recreation opportunities on public conservation lands. This may include, for example, increased employment in adjacent communities and reduced juvenile crime.

An understanding of the benefits that accrue from recreation is the first step towards optimisation of the net benefits of management actions. Desirable outcomes may be targeted and maximised. By openly identifying and targeting benefits, DOC may be more accountable and responsive to visitors and other stakeholders. This type of recreational outcomes approach can augment the process developed to maintain and improve biodiversity (DOC 2001).

The focus upon benefits (outcomes) emphasises that management outputs, such as visitor facilities, are not the end point in the recreation management process. Outputs are the means to provide a range of recreation-related benefits which result from the production and use of these outputs. For example, the provision of huts (output) may result in enhanced visitor safety and increased local employment (outcomes).

A review of studies undertaken elsewhere will be fruitful for Type 5 information, as this may be sufficient to draw conclusions about likely benefits from recreation in New Zealand conservation areas. There is now considerable international documentation of the wide scope and magnitude of the benefits of recreation (Driver et al. 1991; Canadian Parks and Recreation Association 1997). Most of those reports present the results by categories of benefits, such as psychological, physiological, sociological, economic, and environmental.

Summary and conclusions for Type 5

Recreational benefits are the positive outcomes from recreation undertaken within conservation areas. They encompass on-site and off-site benefits, including the environment, the economy, individuals, communities, and society.

Most information on benefits relates to visitors' satisfaction with on-site experiences, which represents only one type of benefit. Few New Zealand studies have addressed other recreational benefits, but where they have, it has been mainly limited to economic benefits.

The largest research gap surrounds off-site benefits.

Without benefits-related data, managers will undercount the positive outcomes of DOC work—the opportunity to maximise net social benefits is missed.

Literature should be reviewed to identify DOC-related benefits.

Research on off-site benefits should be encouraged.

Articulation of the benefits from recreation may assist in gaining funding for this area of management. By explicit statement of the many and varied benefits from recreation and its management, it may be shown that recreation is about more than just visitor enjoyment. The economic benefits from projected increases in use of proposed parks has been a strong incentive to adjacent communities to support new park designations.

4.6 TYPE 6: RECREATION RESOURCE DEMAND AND SUPPLY

Type 6 information is currently poorly served by research. The strong research focus upon existing visitors responds to DOC's recreation and tourism mandate but does not take account of the Department's responsibility to the public of New Zealand. The question of whether DOC is best serving the outdoor recreation needs of the New Zealand public remains unanswered.

The increasing reliance upon market research within this area has resulted in an emphasis upon numbers, which corresponds to national-level needs for quantitative indicators of use (e.g. what proportion of New Zealanders/international visitors go to national parks or use back-country huts). Beyond these simplistic data, we do not know very much about why people choose *not* to visit protected natural areas. Insight is required into the equity of recreation opportunity provision, via investigation of who is visiting conservation areas and who is not. Until research addresses questions such as whether there are 'barriers' discouraging use, we will not know whether there is a management problem or not (Devlin 1987).

As noted by Booth & Peebles (1995: 54), 'an understanding of the non-user is vital if management wants to avoid perpetuation of a management focus that perhaps (unintentionally) excludes certain people'. By focusing upon existing users exclusively, DOC risks providing 'more of the same' in terms of recreational opportunities. Currently, visitors are attracted by the provision of opportunities, and so are likely to support further supply of these opportunities. Non-users may not visit because the conservation areas do not offer them the facilities and services they require. A corollary is that non-users may include dissatisfied previous visitors.

The current emphasis on site-specific research, often a reaction to particular management problems, has meant that studies of demand and supply have rarely been pursued at system-wide, regional, or national level. As a consequence, generic issues may be overlooked when focusing upon the detail.

As with other information types, there is a need for trends analysis. This requires the development and implementation of longitudinal measures. Currently trends cannot be identified owing to the dearth of studies and the differing methods used in them.

Summary and conclusions for Type 6

Type 6 data cover the public's demand for recreation and how public conservation lands may provide opportunities to meet this demand. Demand may be realised as visits, or be latent (non-use) as a result of constraints on use.

Type 6 data are commonly collected via population-based surveys.

Few studies of recreational demand have been undertaken in New Zealand and fewer have addressed public use of, and awareness and attitudes towards, conservation areas.

The primary research gap is the lack of information about latent demand (non-users). Little is known about constraints to visiting conservation areas.

As a result, it is unclear whether DOC is best serving the needs of the public. This raises equity issues.

Research into why people do not visit conservation areas is required.

4.7 TYPE 7: RECREATION MANAGEMENT PROCESSES AND TECHNIQUES

Most research effort has been directed towards the biophysical and social setting for recreation. Very little New Zealand research has focused upon the management setting for recreation, i.e. the provision (or absence) of facilities, services, access and regulations. More emphasis needs to be placed on the three facets of recreation management highlighted in this report:

- Evaluation of recreation management processes and techniques
- Managers' perceptions of recreation issues and their influence upon management actions
- The effects of management actions (e.g. site hardening, provision/absence of facilities, booking systems) upon recreational opportunities and recreationists

Evaluation of recreation management practices would provide insight into the effectiveness, efficiency, and equity of these practices. Without assessment, poor practice may be inadvertently replicated. This research gap can be filled by implementation of evaluation as a standard part of management practice, as well as the adoption, as appropriate, of international research findings.

One consequence of the lack of research into managers' perceptions and the effects of management actions on recreationists, is the risk of replicating existing opportunity provision. International research suggests that managers' perceptions of visitors' needs are inaccurate. This reinforces the need for objective measurement of visitors' perceptions (Type 3 data) and indicates the importance of investigating how managers' perceptions and actions influence recreation opportunities and use.

Summary and conclusions for Type 7

Type 7 data are about managers' actions. This includes research that underpins management processes (e.g. ROS, VERP), evaluation of visitor management techniques, and the effects of managers' perceptions and actions on visitors.

Many recreation management frameworks have been developed from sound research bases. These frameworks offer the means to integrate research and management (e.g. LAC).

More use should be made of these visitor management frameworks in New Zealand.

Visitor management techniques used in New Zealand are seldom evaluated for effectiveness, efficiency and equity.

International research evaluating visitor management techniques should be reviewed and adapted for New Zealand.

Evaluation should form part of any management action.

Managers' perceptions differ from visitors' perceptions. Managers should not rely on their own views of visitors' needs, but instead seek objective research data.

The effects of management actions on visitors deserve research attention.

5. Towards a Visitor Research Strategy

This report has highlighted issues that are pertinent to the development of the DOC Visitor Research Strategy. These issues are presented in this section.

5.1 DOC VISITOR RESEARCH NEEDS AND PRIORITIES

DOC has undertaken work to review its visitor information and research needs, available in the form of unpublished reports and notes from workshops (see Appendix 3). Analysis of these documents failed to identify DOC's research needs and priorities, owing to: the wide range of research needs presented, encompassing all information types; and the lack of articulated priority within this broad spectrum of research needs.

Despite the absence of clear priorities, several themes are apparent from DOC's statements of research needs and from its Statement of Intent 2002-2005 (DOC n.d. a). First, an emphasis is given to the impacts of visitors on both the biophysical and social environment. Mention is made of impacts on the natural and historic heritage, as well as on visitors, communities, and stakeholder groups. Within the reports from the two 'visitor impact' workshops (Cessford 1997, 1999a,b; Cessford & Dingwall

1997), detailed research needs are listed and research and information conclusions are presented.

Second, the identified research needs vary from the basic to sophisticated. This includes requirements for baseline data, such as monitoring visitor characteristics, through to challenging research questions, such as assessment of the effectiveness of visitor-related management actions. Concomitantly, the sophistication of the required research varies from standard monitoring methods to issue- and place-specific research.

Third, particular information needs are identified—specifically, the effects of concessions, assessment of disturbance to natural quiet, non-users' wants and constraints to their use of protected natural areas, effective interpretation methods, international visitors' impacts, and the needs of specific recreationists differentiated by activity (e.g. mountain bikers, horse riders, four-wheel drivers).

Fourth, reference is made to the link between science and management. This link includes both the ability of managers to influence the research being undertaken and the need for research findings to be disseminated to managers together with policy and advice associated with the management implications of research findings.

Fifthly, research needs are often poorly articulated in DOC documents. This occurs if research needs lack definition and/or are confused with management actions. This may be a result of the nature of the documents analysed, many of which are unpublished internal papers presenting ideas from workshops and initial thinking.

5.2 NEED FOR THE STRATEGY

The need for the Visitor Research Strategy is evident in three ways. First, existing DOC documents fail to delimit and prioritise visitor research. Clear priorities must be developed because DOC's research needs are wide in scope. Furthermore, a wide array of gaps in knowledge about recreation, and its effects and management is evident. In part this reflects the newness of this area of study in New Zealand, as well as the complexity of recreation management, spanning disciplines from sociology to economics and plant ecology. It is not possible to attempt to fill all research gaps at once—a staged programme is required. This should be driven by management needs.

Second, direction is required to provide synergy across the broad range of researchers. In particular, a clear statement of research needs would maximise the utility of academic research, given the reliance on student research. Several researchers have called for a planned and co-ordinated research programme (Aukerman & Davison 1980; Bignell 1984; Booth & Peebles 1995). Given the importance of public conservation lands for outdoor recreation, a DOC-led approach would help to achieve this.

Third, disparate methods throughout the research literature have compounded the problem of comparison across studies and inhibited trend analysis. Standardisation of research methods is needed (Booth & Peebles 1995). Implementing programmes of visitor-related monitoring would identify use trends and aid prediction of future management needs (in particular, monitoring of use counts, visit and visitor characteristics and impacts).

5.3 VISITOR VERSUS RECREATION RESEARCH

DOC terminology 'visitor research' has been adopted in this report because of DOC's previous decision to define recreation and tourism in this way (DOC 1996). This terminology presents two issues. First, the term is not inclusive of non-users; as stated above, non-use is an important part of a visitor research strategy. Second, within other government agencies the term 'recreation research' is more commonly used. However, use of the term 'recreation research' raises the issue of whether the term includes tourism. It is suggested that the title of the Research Strategy be carefully considered.

5.4 FRAMEWORK AND APPROACH

The Research Strategy will require a framework to organise and discuss research needs. It is suggested that the seven-phase framework used in this report be adopted. The framework is based on managers' information needs and, therefore, will help to ensure that research addresses management questions.

It is suggested that the information needs of managers first be identified and the research needs then isolated. The rationale is that, first, managers are most easily able to articulate their information needs, but may not be aware of the means to answer these needs, i.e. whether a research response is appropriate. Second, it will ensure that the resultant recommended research is management-driven and will clarify the contribution of research to meeting managers' information needs. Third, the process will be transparent to both managers and researchers.

5.5 SCOPE AND TIMING

Research may take several years to answer management questions. For this reason, a planned long-term research programme is needed. Two forms of research have been identified in this report—ongoing monitoring of selected data at selected sites, and in-depth studies of specific phenomena. Staging may be required, in that certain data may be a prerequisite for later, more sophisticated studies. For example, knowledge of visit numbers and visitor characteristics will be required for social impact studies.

Analysis of DOC expenditure suggests that a small percentage of the funds spent on recreation management by DOC is allocated to research to support this management. One role of the Visitor Research Strategy may be to support advocacy for more funding for visitor research.

5.6 PRELIMINARY WORK

Several DOC documents are precursor papers to the preparation of a Visitor Research Strategy, suggesting principles and direction. Of particular value are Department of Conservation (n.d. b), and James & Booth (1989).

Considerable work has been completed identifying the research needs for visitor impacts. This information is contained in Cessford (1997, 1999a,b) and Cessford &

Dingwall (1997). These reports, which were prepared from workshops, establish a framework for developing a research plan for visitor impacts.

5.7 RECREATION RESEARCHERS

DOC requested that research providers—those people with the necessary skills to undertake recreation research, and thus implement the proposed Visitor Research Strategy—be identified in the current report. This section responds to that request.

DOC has maintained an in-house social science presence since its inception in 1987. This has expanded from one social scientist in 1987 to two equivalent full-time staff members (plus occasional short-term contract staff) in 2003. Approximately half of this staff-time is spent on visitor research. Given the limited research capacity in-house, the primary role of the social scientists is to offer scientific advice to DOC staff and coordinate research. External sources of research cannot substitute for ongoing and accessible social science capacity within the Department. The needs of DOC for in-house social science personnel should be addressed within the Visitor Research Strategy.

An inventory of recreation researchers in New Zealand is provided as Appendix 4.

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Appendix 1

RESEARCH REVIEWS AND BIBLIOGRAPHIES FOR OUTDOOR RECREATION AND TOURISM IN NEW ZEALAND

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Appendix 2

RESEARCH REVIEW SUMMARY

Tables 1-7 are predicated on the demand/supply framework. The left-hand column represents criteria associated with the existing supply of knowledge available from the research literature. The right-hand column assesses criteria associated with the demand for this knowledge by DOC. The assessment is based on the opinion of the author.

KEY TO TABLES: DESCRIPTION OF CRITERIA

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	The nature of the conclusions reached and the remaining research gaps	Work needed	The research required to meet DOC managers' information needs
Amount	The quantity or amount of research	DOC priority	Whether DOC has signalled it is a priority area
Quality	The quality of this research	Transferability	How easily can research findings be applied by managers? Does further work need to be undertaken first?
Currency	Assessment of both age of research and relevance to current situation	Integration	Whether research findings have been used in management practice
Activity	The nature of the research undertaken in this area in the past 3 years	DOC activity	The nature of DOC-commissioned research in this area in the past 3 years

TABLE 1. TYPE 1: VISIT NUMBERS.

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Site-specific count data available on an uneven geographical basis. Absence of a DOC visit monitoring system is the primary deficiency. Inability to predict use trends owing to a lack of longitudinal data.	Work needed	Need for use counts and systematic data monitoring. Primary value of data for managers is the identification of trends in use and the prediction of future visit numbers.
Amount	Existing data collection erratic. Data deficiency stems from technical and managerial problems rather than a lack of research. Research contribution associated with correlating DOC visits to external tourism monitors and intra-park correlations between sites. Very little of such research has been conducted.	DOC priority	High priority—to develop a visits monitoring methodology and implement at selected sites.
Quality	Counts data lack validity and rigour. Data on commercially-based visits reliant on figures supplied by concessionaires.	Transferability	Directly transferable.
Currency	Current where data exist.	Integration	In terms of the system of conservation areas, poor integration. Some integration of site-specific data.
Activity	Research activity primarily management-driven. Foundation for Research, Science & Technology (FRST)-funded national tourism flows project.	DOC activity	Current projects: visitor counter design; linking tourism flow data to DOC data; establishing a system-wide monitoring system.

TABLE 2. TYPE 2: VISIT AND VISITOR CHARACTERISTICS.

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Characteristics of visitors well known, especially for backcountry. Knowledge of visit characteristics variable by site and unevenly distributed. Lack of time-series data inhibits prediction of use changes.	Work needed	Establishment of a systematic visitor survey programme to provide trends data to: facilitate prediction of use changes; measure effects of management actions. Knowledge of visitor movements would assist targeting of information to redirect choice of visit location.
Amount	Substantial body of research. Type 2 data collected in most recreation studies. Lack of systematic data collection over time.	DOC priority	Not indicated.
Quality	Variable. Many student theses.	Transferability	Directly transferable.
Currency	Data availability uneven across sites and over time. Some areas frequently studied, others lack data.	Integration	Good integration where data exist.
Activity	Ongoing—management-driven as well as student research.	DOC activity	Site-specific studies undertaken as required.

TABLE 3. TYPE 3: VISITOR EXPERIENCE.

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Some understanding of why people visit, but large gaps in knowledge.	Work needed	In-depth, qualitative research across all aspects of the visitor experience—perceptions, expectations, motivations, satisfactions.
Amount	Fragmented. Lack of comparability between studies owing to differences in method.	DOC priority	High priority—for measuring visitor satisfaction and developing a national visitor satisfaction monitoring approach.
Quality	Variable. Very reliant on student theses.	Transferability	Some interpretation of management applications may be required. Beware of the 'satisfaction trap' (level of satisfaction likely to remain high over time despite changing conditions).
Currency	Variable.	Integration	Poor.
Activity	Ongoing but not co-ordinated	DOC activity	Projects that contribute to the development of a national satisfaction monitoring methodology.

TABLE 4. TYPE 4: VISITOR IMPACTS.

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Findings are site specific, especially ecological impacts, so little generalisability of results. Existing data concentrate on parameters that are impacted and the short-term implications of impacts. An overall understanding of the visitor-impact relationship is weak. No predictable relationship of impacts to use parameters has been identified. Lack of long-term monitoring.	Work needed	Co-ordinated multi-disciplinary research of greatest value. Apply visitor impact planning frameworks to provide a systematic approach to impacts research and management. Need for long-term, low-cost monitoring of priority 'hot spots', linked to management objectives and responses. Require ongoing study of the use-impact relationship and links to management actions to mitigate/avoid impacts.
Amount	A small number of disparate studies across many disciplines. Uneven in geographic coverage and the nature of the impacts addressed.	DOC priority	High—for development of a systematic visitor impacts monitoring programme and identification of measures to avoid and remedy impacts.
Quality	Good.	Transferability	Gap between research findings and management application owing to lack of integration across research studies from different disciplines.
Currency	Research findings remain current.	Integration	Integration patchy—uptake of research where it has contributed to understanding site-specific problems
Activity	Ongoing examination of the relationship between parameters of visitor use, descriptors of the impact(s) and management objectives/responses.	DOC activity	Active for both social and ecological impacts and values.

TABLE 5. TYPE 5: RECREATIONAL BENEFITS

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Research focus is upon wide range of benefits, both on- and off-site, to the environment, individuals, communities and society. Emphasis has been upon recreational benefits for visitors. A handful of studies on benefits to adjacent communities—too few to generalise results. Some knowledge of economic benefits of conservation areas.	Work needed	Need for a shift of focus away from solely on-site outcomes to prompt examination of benefits of conservation management off-site and to non-users. Desirable social benefits can then be maximised. Review existing literature to identify DOC-related benefits.
Amount	Small number of studies. Data on benefits to visitors covered superficially in many visitor surveys.	DOC priority	Not indicated.
Quality	Good.	Transferability	Directly transferable.
Currency	Most research is recent so data remain current, except economic benefits research which is now dated.	Integration	Poor—primary application is at the national level.
Activity	Increasing focus upon outcomes for communities adjacent to conservation areas.	DOC activity	Current projects: identification of social values of conservation areas; socio-economic benefits of tourism concessions.

TABLE 6. TYPE 6: RECREATION RESOURCE DEMAND AND SUPPLY.

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Proportions of domestic population and international visitors using conservation areas identified. Little knowledge beyond basic quantification about recreational demand for conservation areas and the recreation opportunities they offer. Lack of knowledge about why people do not visit conservation areas (non-users).	Work needed	The question of whether DOC is best serving the outdoor recreation needs of the New Zealand public remains unanswered. Issue of equity (across society) raised by this research gap. Need to examine whether barriers are restricting public use of conservation areas.
Amount	Limited number of recreational demand studies. Only one comprehensive study matching demand and supply. Lack of longitudinal data.	DOC priority	Not indicated.
Quality	Good, but limited depth of inquiry.	Transferability	Directly transferable.
Currency	Data out of date.	Integration	No integration apparent.
Activity	Very little.	DOC activity	ROS project to redefine supply of recreational opportunities. Proposed non-user study not funded.

TABLE 7. TYPE 7: RECREATION MANAGEMENT PROCESSES AND TECHNIQUES.

ANALYSIS OF NZ RESEARCH		UTILITY OF RESEARCH FOR DOC	
State of knowledge	Very limited area of research. Recreation management techniques seldom evaluated/ studied, including the effect of management actions upon visitors. Some assessment of NZ applicability of international recreation management approaches—ROS, LAC, Outcomes-Focused Management. Occasional study of managers' perceptions of recreation issues.	Work needed	Three areas of research are required: evaluation of recreation management processes and techniques; investigation of managers' perceptions of recreation issues and their influence upon management actions; investigation of effects of management actions upon recreational opportunities and recreationists.
Amount	Very little.	DOC priority	Priority action in <i>Science Counts!</i> (see Appendix 3—DOC n.d. c)—methods to monitor and evaluate the effectiveness and outcomes from visitor-related management actions.
Quality	Good.	Transferability	Directly transferable.
Currency	Variable.	Integration	No integration apparent.
Activity	Very little.	DOC activity	ROS project.

Appendix 3

DOCUMENTS ANALYSED TO ASSESS DOC VISITOR INFORMATION AND RESEARCH NEEDS

- Booth, K.L. 1988: Recreation and tourism research for conservation. *Science and Research Internal Report 10*. Department of Conservation, Wellington.
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- Cessford, G.R. 1999a: Social impacts of visitors to conservation lands: Part 1. Research and information needs. *Science & Research Internal Report 171*. Department of Conservation, Wellington.
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- Cessford, G.R.; Dingwall, P.R. (Eds) 1997: Impacts of visitors on natural and historic resources of conservation significance: Part 1. Workshop proceedings. *Science & Research Internal Report 156*. Department of Conservation, Wellington.
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- Department of Conservation [n.d. b]: Visitor research strategy: management information needs and the contribution from research. Unpublished internal paper. Department of Conservation, Wellington. 23 p.
- Department of Conservation [n.d. c]: Science Counts! National strategic science & research portfolios, programmes, priority actions 2003/04 and beyond. Department of Conservation, Wellington. 6 p.
- Department of Conservation [n.d. d]: Science needs for concessions. Unpublished internal paper. Prepared from Concessions Workshop, Nelson Lakes National Park, 2001. Department of Conservation, New Zealand. 2 p.
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- Department of Conservation 2002a: Summary of visitor-related research programme. Unpublished internal paper. Department of Conservation, New Zealand. 10 p.
- Department of Conservation 2002b: Identified visitor research needs: identified by recreation planners 19 June 2002. Unpublished internal paper. Department of Conservation, New Zealand. 1 p.
- Devlin, P.; Espiner, S.; Hutchings, R.; Parkin, E. 1996: Department of Conservation visitor management information needs: scoping the state of knowledge. Prepared for the Department of Conservation by Lincoln University, Canterbury.
- James, B.; Booth, K. 1989: Proposal for a social science programme. Unpublished internal paper. Department of Conservation, Wellington. 13 p.

Appendix 4

OUTDOOR RECREATION RESEARCH PROVIDERS

Recreation researchers within New Zealand are spread across the public and private sectors. No social science Crown Research Institute exists, instead there is an active research base within, particularly, universities and the consultancy community.

DOC is unusual within government departments/Crown agencies to have maintained its own social science capacity. This capacity is small (two equivalent full-time staff members plus occasional short-term contract staff) and external sources of research cannot substitute for ongoing and accessible social science capacity within DOC.

The listed researchers/agencies have an established outdoor recreation research track record. Other researchers with the potential to undertake outdoor recreation research are noted where relevant. The list focuses upon social scientists and recreation consultant researchers. It does not include economists nor natural scientists who have studied recreation, including recreation impacts on natural and historic heritage.

Given the relative stability of the tertiary education sector, specific individuals are named by institution (September 2003). However, this approach was not favoured for the private sector, owing to greater turnover of personnel. Instead, firms, most of which are small in size, are listed. For this reason, the departure of one consultant researcher may result in the loss of recreation research capacity within that firm.

While care has been taken in compiling this inventory, it is subject to change. Omissions are regretted.

Universities

Five universities specialise in recreation research: Lincoln, Otago, Waikato, Massey, and Victoria. Lincoln and Otago have been the most active in the area of outdoor recreation research with FRST- or DOC-funded research contracts in recent years. As the list of academics is potentially extensive, key contact people for each university are listed.

Other academics may also contribute to the outdoor recreation literature. Social scientists are housed within a range of departments on tertiary campuses. Relevant departments include geography, sociology, psychology, recreation and tourism, Māori studies, economics and anthropology. From time to time academics within these disciplines may undertake recreation research. This list highlights researchers/institutions with a proven track record in outdoor recreation research.

Lincoln University

Social Science, Parks, Recreation and Tourism Group—Contacts: Kay Booth, Stephen Espiner.

Environmental Management Group—Contact: Ken Hughey.

Massey University

Department of Management Systems—Contacts: Keith Dewar, Mark Orams (both Albany campus).

University of Otago

Department of Tourism—Contacts: Michael Hall, James Higham.

School of Social Sciences—Contact: Geoff Kearsley.

Victoria University of Wellington

Victoria Management School (tourism)—Contact: Doug Pearce.

Leisure and Heritage Studies—Contact: Michael Volkerling.

Waikato University

Sport and Leisure Studies Department—Contact: Bevan Grant.

Other tertiary institutions

Auckland University of Technology

Tourism Research Institute—Contact: Simon Milne.

Waiariki Institute of Technology

School of Tourism and Hospitality—Contact: Glen Croy.

Consultants

Most New Zealand recreation/tourism consultants undertake recreation research in some form. The firm's location is provided for contact purposes but does not delimit geographic areas of work, as New Zealand consultants usually work throughout the country. Individual's names are given in some instances to assist recognition.

APR Consultants (Deryk Shaw), Rotorua

Australis (Vicki Johnson), Christchurch

Bev James, Wellington

Boffa Miskell Partners, Auckland, Wellington, Christchurch

Breakout (Gill Genet), Wellington

Centre for Research, Evaluation and Social Assessment (CRESA), Wellington

Contours (Paul McGahan), Christchurch

Corydon Consultants, Wellington

Cristine Angus Marketing Services, Wellington

David Clelland, Wellington

Deloitte Touche Tohmatsu, Christchurch

Diana Parr, Nelson

Gareth Moore-Jones and Associates, Bay of Plenty

Jackie Gurden, Greymouth

Kay Booth and Associates, Christchurch

Kennett Bros, Wellington

Leisure Matters (Patrick O'Neill), Christchurch

Parks and Open Spaces Management Consultancy (Barry Chalmers), Wellington

Quigg Consulting (Robin Quigg), Dunedin

Richard Balm, Taupo

Rob Greenaway and Associates, Christchurch

Scorpius Consultants (Jason Leppens), Christchurch

Sonia Frimmel, Pirongia

Strategic and Project Planning (Karen Johnston), Christchurch

Strategic Leisure (Dave Allan), Nelson

The Tourism and Leisure Group (Ray Sleeman), Christchurch

Tourism Resource Consultants, Wellington
Taylor Baines and Associates, Rangiora
Wrighton Doorne and Associates, Wellington

Consultants who do not have a specific recreation focus may occasionally study outdoor recreation or tourism. Market research companies provide a research service relevant for certain types of recreation investigations.

Government agencies

Two advantages of collaborating with other central and local government agencies exist. First, liaison with agencies likely to fund recreation/tourism research is suggested. Key agencies are Sport and Recreation New Zealand and the Ministry of Tourism. Other relevant agencies include the Ministry of Health, Ministry of Education, Department of Internal Affairs, Ministry of Social Development, Ministry of Economic Development, Transit New Zealand.

Second, people with recreation and tourism research skills exist within other central and local government agencies. An example of possible synergy between DOC and other agencies was the secondment of a Ministry of Economic Development staff member to the Science and Research Unit in 2003/04 to work on a concessions-related research project.

Non-government organisations

A wide range of non-governmental organisations undertake, commission or cooperate on recreation research within their area of interest. These organisations include Fish and Game New Zealand, Local Government New Zealand, Mountain Bike New Zealand, New Zealand Recreation Association, New Zealand Recreational Canoeing Association, Public Access New Zealand, as well as others. The Department would benefit from closer liaison and potential sharing of research resources with these organisations when research aims coincide. Similarly, state-owned enterprises and private companies commission outdoor recreation research for consent applications for projects such as hydro schemes and mines.

International researchers

The New Zealand recreation literature has benefited from visiting international researchers. Often they are attracted to New Zealand on sabbatical leave or for joint holiday/work visits. More could be done to attract reputable international researchers to further a particular area of research. This includes utilising existing university research fellowships and working with local researchers to foster links and encourage visits.

Some international consultancy consortiums have also undertaken work within New Zealand. These include the Global Leisure Group and SGL, for example.

Department of Conservation

An in-house resource exists with some DOC staff, outside the Science and Research Unit, holding postgraduate research degrees in recreation/tourism. These staff could be facilitated to work with university staff on specific projects under a 'sabbatical' type of arrangement. This has two primary advantages. First, the project would benefit from strong input of DOC's needs and context relevant to implementation of research findings. Second, the research period could act as a time of refresher/personal development for the individual staff member.