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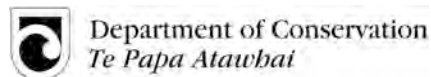
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## **New Zealand's natural environment: a review of visitor research**

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### **Abstract**

Since the late 1960s, researchers have studied visitors to New Zealand's natural environment, and over 2,000 publications have been produced. Characteristic of this literature is its wide scope: from historical accounts of tourism within individual parks to investigations of visitors' effects upon wildlife. Research resources and effort have been ad hoc and uncoordinated, suffering from a lack of funding, methodological consistency and systematic application to management problems. This paper describes the nature of the visitor/natural environment literature and highlights gaps in knowledge. It identifies the need for a New Zealand Outdoor Recreation Research Strategy.

**Key words:** literature review, natural environment, New Zealand, protected area, recreation, tourism, visitor

## Introduction

The purpose of this paper is to provide a review of New Zealand recreation and tourism research ('visitor' research). The paper describes the extent and nature of the visitor/natural environment literature and highlights gaps in knowledge – what has been studied, what has not. It concludes by presenting arguments in support of a New Zealand outdoor recreation research strategy.

The term 'visitor' as used in this paper follows the convention adopted by the Department of Conservation (DOC) in 1996. DOC's Visitor Strategy (DOC 1996:2) 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". In this way, the Department avoided making a distinction between recreation and tourism, and hence sidestepped a potentially divisive debate, the beginnings of which were apparent at the Outdoor Recreation Summit held in September 2006. Policy interpretation of section 6(e) of the *Conservation Act 1987*, with its differentiation between recreation (which is to be fostered) and tourism (which is to be allowed), remains wanting.

Research discussed within this paper encompasses visitor studies in all outdoor settings, including: (1) protected areas (administered by DOC or local government), (2) the countryside (non-urban areas), (3) marine and coastal regions, (4) lakes and rivers, (5) mountains, (6) natural landscape features (such as waterfalls, glaciers, caves, streams and bays), and (7) flora and fauna (such as native plants, dolphins, shorebirds, kiwi and fur seals).

## An overview of the visitor/natural environment literature

Outdoor recreation research emerged in New Zealand in the late 1960s. Since that time, well over 2,000 publications have been produced. In a recent review of recreation and tourism research associated with New Zealand natural areas, Booth and Mackay (2007) identified 602 publications<sup>1</sup> between 1990 and mid-2006. Over one third of these publications specifically related to protected areas (n=218). Topic areas range from tourism history to visitor impact monitoring.

Researchers have reviewed this literature. A synthesis of outdoor recreation research was published in 1995 (Devlin et al. 1995, Peebles 1995). This benchmark assessment is augmented by more recent research reviews (e.g. Bassett 1996, Parliamentary Commissioner for the Environment 1997). Two relevant literature critiques were undertaken in the early-mid 2000s (Booth 2006, Booth and Mackay 2007), upon which this paper draws heavily.

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<sup>1</sup> The number of studies will be smaller in number, owing to multiple publications from single studies. However, this will be tempered by studies which have not been published.

## Characteristics of the literature

The New Zealand visitor/natural environment literature can be described by its key characteristics.

### *Scope and breadth*

There is a large and growing body of natural environment visitor-related research. The number of studies published annually has leapt from seven in 1990 to 20 in 2005. A flurry of publication activity is evident in the mid-late 1990s. Within this body of knowledge, breadth overwhelms depth. The collective of research effort is spread thinly across a small number of researchers dealing with multiple areas of investigation (24 themes of enquiry were identified by Booth and Mackay 2007 – see Table 1). Lack of depth is a characteristic of this literature; many research areas are one or two publications 'deep'. Studies are overwhelmingly site and time specific. Very little longitudinal research has been undertaken, which has inhibited the analysis and prediction of trends. Similarly, few use projections have been derived to assess future scenarios for visitor use of natural areas.

**Table 1:** New Zealand visitor/natural environment research between 1990 and mid-2006 catalogued by theme (after Booth and Mackay 2007:10).

Research theme	Number of publications <sup>2</sup>
Protected areas	218
Impacts: Social	106
Impacts: Environmental	82
Impacts: General	4
Visitor characteristics & experience	93
Wildlife tourism	83
Management, policy & planning	76
Marine tourism	72
Walkways, tracks & trails	44
General/overviews	39
River & lakes	34
Methods & research tools	32
Access	29
Hunting & fishing	29
Aircraft	26
Boating	26
Mountains & ski-fields	21
Facilities & services	19
Interpretation	14
Safety & risk	13
Bibliographies & literature reviews	12
Adventure tourism	8
Caves	7
Sub-Antarctic Islands	3

<sup>2</sup> Publications may be listed within multiple categories.

The research effort is uneven across geographical areas and by topic. The primary geographical focus is protected areas (especially national parks), while marine tourism (especially the impacts of wildlife-viewing upon marine mammals) is also well represented in the literature. The dominant research topic is visitor impacts, while many studies have examined the nature and type of visitors and their experience. Within those research themes, comprehensive coverage has not been achieved. Some areas have received recent attention, such as methods to measure visitor impacts and satisfaction, and assessment of the effects of natural area tourism upon local communities. Other areas are notable by their absence within the research literature, for example, evaluation of visitor management techniques, and studies of national resource demand and supply.

#### *Type of research*

Existing research ranges from the basic measurement of numbers of visits to sophisticated studies to develop appropriate monitoring methods. However, much basic-level research remains unpublished (e.g. DOC visitor monitoring reports). Most visitor/natural environment research is applied in nature, rather than 'blue skies'. While only 13 percent of publications have a strong management/planning component, many more address management problems. For example, about one third of the research effort has focused upon the effects of visitors on the environment (social, economic, natural). Few *programmes* of research are evident (notable exceptions are the Foundation of Research, Science and Technology (FoRST) funded programmes). One-off, short-term research projects abound.

#### *Methods*

The wide variety of methods employed within the literature reflects the broad scope of work, encompassing, for example, impact monitoring techniques and economic analysis. A greater focus upon developing research methods is evident since the late 1990s, especially associated with monitoring visitor impacts and facets of the visitor experience. A lack of consistency in method (e.g. different survey questions or sample design) has inhibited longitudinal and spatial comparisons. Furthermore, the failure of disciplines to engage in collaborative research has left end users with the challenge of integrating findings.

#### *Research providers and funders*

The published tourism-related research is primarily funded by the public sector. Several large FoRST-funded tourism research programmes have been natural area focused or included an environmental component. DOC is a major contributor to research about protected areas and protected species, although visitor research is only a small component of this. Universities support the primary research providers of tourism/environment research. A few active researchers stand out, while others have made contributions from time to time, across a range of disciplines.

Dependence upon student research is apparent: 30 percent of the Booth and Mackay (2007) bibliographical entries are theses/ dissertations, with other entries attributable to publications derived from theses. Dominant within the university scene is Lincoln University and the University of Otago.

Clusters of publications derive from New Zealand tourism conference proceedings. Student conference papers often provide the most 'readable' version of their research (rather than the thesis). Some studies presented at conferences are not published elsewhere.

### **State of knowledge: Research gaps**

Areas of research deficit have been identified based on: (1) review of the New Zealand literature, (2) consideration of research typologies, particularly Booth (2006), discussed later in this paper, as these suggest areas of research need, and (3) topics canvassed within the international literature. Some research gaps are evident and are now discussed.

#### *Knowledge about visits and visitors*

There is no comprehensive national monitoring and collation of visits data across natural sites for New Zealand (in contrast, for example, to the commercial accommodation monitor for the tourism accommodation sector). Figures derived from on-site visits remain unpublished or geographically inconsistent in their availability, which inhibits the prediction of use trends. The International Visitor Survey and Domestic Travel Survey provide relevant data (available via the Ministry of Tourism website) but these data are not comprehensive with respect to the use of natural areas.

The prediction of use has received little attention. Longitudinal studies on visit numbers are absent, with a few exceptions, and a lack of comparability between studies exists, owing to different methods.

While a substantial amount of visit and visitor characteristics data has been amassed, this area of research has suffered from a lack of systematic application over time, limiting trends analysis. No recent outdoors-focused participation study has been undertaken with sufficient depth to identify trends in commercial-based recreation activities, frequency/length of participation changes, the effect of new technology on and within tourism/recreation, and other pertinent trends affecting tourism/recreational participation in natural environments. Little is known about Maori tourism/recreation patterns.

Little in-depth study has been undertaken about the nature of the visitor experience (expectations, perceptions, motivations, satisfactions, values). The body of data is fragmented and limited.

Adequate explanations of visitor behaviour are lacking (an understanding of why visitors behave as they do). As a result, the ability to influence or control visitor behaviour is limited.

*Knowledge about resource supply and demand*

Regional and national level studies of demand and supply (capacity) are absent. This type of information requires population-based data (household survey, International Visitor Survey) rather than data collected on-site. Such research could identify tourism/recreation participation and demand for natural settings and how well natural areas meet this demand. To achieve this, knowledge about the implications for natural areas of projected changes in demography and tourism processes and patterns is required.

A comprehensive review of demand and supply of recreational opportunities in natural areas was undertaken in the mid 1980s (Davison 1986). The demand/supply analysis was used to predict future use scenarios and their implications. This benchmark study is overdue for an update. Smaller scale use-projection exercises were undertaken for international visitors to the conservation estate in the early 1990s (Duncan and Davison 1991, NZTB and DOC 1993).

Most population-based research effort has focused upon recreational participation, which is strongly influenced by the existing provision of recreation opportunities and does not measure latent demand (the unrealised desire to participate). A research gap concerning New Zealanders is the lack of information about latent demand (non-users) and constraints to visiting natural areas.

*Knowledge about impacts and benefits*

Despite the emphasis upon this area of research within the visitor/natural environment literature, many questions remain unanswered. In order to reduce or control visitor impacts in natural areas, managers require knowledge about the relationship between visitor numbers/types, impacts and management responses. This challenge is exacerbated by the disparate nature of impacts research. Few inter-disciplinary studies have been undertaken and there is a lack of integration across studies, making the transfer of findings to management decision-making difficult. While some impact research overviews have proposed co-ordinated impact research frameworks (e.g. Cessford 1997, 1999, 2000), these have not yet translated into wider research strategies.

Related to this, is the need for planning frameworks to guide impacts research and its relationship to management objectives and management responses to impact problems. Ideally, managers should be able to predict the impacts upon the natural and social environment from potential use/management scenarios. Because many findings are site specific, especially ecological impacts, the ability to generalise results is thwarted. The existing database concentrates on what parameters are impacted and the short-term implications of these impacts (Booth and Cullen 1995). The crucial link to use parameters is very weak and no predictable relationship has been identified.

Biophysical studies of environmental impact have paid greater attention to certain types of place and parts of the environment than others. Most address one aspect of the use / impact / management relationship. Social impact studies have focused on impacts upon other visitors. Few studies have examined impacts upon non-recreational social values (such as spiritual values). Research on visitor impacts needs to consider the recreational experience sought by visitors, place values, site-specific impacts, and effective management techniques and their consequent effect upon the visitor and the natural values of the site.

A goal of impact research is prediction – we are a long way from this situation in New Zealand. Processes to involve stakeholders in decision-making about appropriate environmental and social conditions are required, but are lacking. Similarly, processes are required to define ‘values in place’, which form the basis of meaningful impact assessments.

Few New Zealand studies of benefits from / for visitors to natural areas exist. An understanding of the benefits that accrue from tourism / recreation is the first step towards optimisation of the net benefits. Most data relate to visitors’ satisfaction with on-site experiences, which represents only one type of benefit. Few New Zealand studies have addressed other recreational benefits and this has been mainly limited to economic parameters. The largest research gap surrounds off-site benefits, including effects upon local host communities.

#### *Knowledge about management processes and techniques*

Most research effort has been directed towards the biophysical and social setting for tourism / recreation. Very little research has focused upon the management setting, including the evaluation of visitor management processes / techniques, and the effects of managers’ perceptions and actions on visitors. For example, despite its importance, no comprehensive evaluation of the DOC concessions system has been published.

Research overseas has focused upon the differences between managers’ and visitors’ perceptions with respect to visitor motivations, perceptions of impacts and attitudes to management purposes / practice. This research has shown that managers’ perceptions vary from those of the visitors themselves - managers are poor predictors of visitor perceptions (Manning 1999). Furthermore, attention needs to be given to how managers’ actions influence the tourism / recreational experience. Yet this area remains largely untouched by New Zealand research.

Seldom have visitor management processes and techniques been assessed in New Zealand in terms of their efficacy. Exceptions primarily exist within the area of visitor information and interpretation. 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.

Given the complexity of managing protected areas, which serve multiple objectives (protection/use), the lack of research-based management approaches, especially with respect to involvement of multiple stakeholders with differing values, represents a gap.

### **Addressing the 'so what?' question: the need for an outdoor recreation research strategy**

The primary conclusion drawn from this analysis of the literature is the need for co-ordination of visitor research. For over two decades, researchers have called for a planned and coordinated research programme (Aukerman and Davison 1980, Bignell 1984, Booth and Peebles 1995, Cessford 2000), but research effort remains largely ad hoc. Support for a national-level Outdoor Recreation Strategy has gained momentum in recent times (most particularly as a result of the 2006 Outdoor Recreation Summit), with Sport and Recreation New Zealand and DOC seen as lead agencies. A corresponding Outdoor Recreation Research Strategy is needed for several reasons.

First, a wide array of gaps in knowledge about recreation/tourism, its effects and management is evident. In part this reflects the youthfulness of the area of study in New Zealand, as well as the complexity of recreation management, spanning disciplines from sociology to economics. The identified research needs vary from 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. It is not possible to attempt to fill all research gaps at once – a research programme is required to make best use of limited resources. This should be driven by management needs. Clearly articulated research priorities will be required to focus effort.

Second, research may take several years to answer some management questions. For this reason, a planned long-term research programme is needed. 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.

Third, direction is required to coalesce effort owing to a broad range of researchers. The strong reliance on student research suggests that research is largely provider-driven and that the utility of academic research could be enhanced with clear statements of requirements to coalesce effort. Communication between researchers and research users will be critical for an effective Outdoor Recreation Research Strategy. Inter-disciplinary studies should be encouraged. Given the importance of public conservation lands for outdoor recreation, DOC involvement is crucial.

Fourth, 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 and 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, visitor characteristics and impacts).

Fifth, a knowledge framework is necessary to provide a structure for the Research Strategy. A seven-phase framework has been developed for the Department of Conservation, based on conservation managers' information needs. This framework is summarised in Table 2.

**Table 2:** A visitor research framework (Booth 2006:8).

Type	Information descriptor
1	Visit numbers
2	Visit and visitor characteristics
3	The visitor experience (from motivation to satisfaction)
4	Visitor impacts
5	Recreational benefits
6	Recreation resource demand and supply
7	Recreation management processes and techniques

## Conclusions

A considerable body of research literature has developed over the past 35 years in New Zealand focused upon recreation and tourism in natural areas. This paper has characterised the nature of this work and emphasised gaps. While much has been achieved, the critical 'missing link' is standardisation of methods and systemisation of effort. The development of an Outdoor Recreation Research Strategy would be a positive step toward maximising the benefit from future research.

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