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The phenomenon of risk and its management in natural resource recreation and
tourism settings: A case study of Fox and Franz Josef Glaciers,
Westland National Park, New Zealand

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of the requirements for the Degree of
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Stephen Espiner

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*In memory of my mother, who walked with me to the last bend in this road,
and with the end in reach, let me go alone*

Abstract

The significance of risk is growing in many Western societies, a phenomenon linked to increasing individualism, personal choice, and outcome uncertainty in multiple spheres of life. Despite being healthier and more physically protected from harm than any previous society, a serious concern for safety and risk control is emerging as a defining characteristic of modern social life. Within the context of a risk-averse society, this thesis investigates the nature and relevance of risk in natural resource recreation and tourism settings.

Millions of people every day visit national parks and other protected areas around the world in which natural hazards inhere. Many visitors fail to recognise these hazards, creating moral, legal, and ethical issues for natural resource managers. People travel to national parks anticipating a degree of adventure, to escape routines, and to witness the grandeur of nature. Ironically, the very qualities that attract people to natural areas may also put them at risk. Managers of natural resource tourism and recreation areas in New Zealand are confronted with a paradox born out of visitor demand for nature experiences, a legal obligation to facilitate free access, and a growing social emphasis on health and safety.

In particular, this study assesses the risk perceptions of visitors to the Fox and Franz Josef glaciers, popular tourist attractions on the West Coast of New Zealand's South Island, and explores the risk perceptions and beliefs of resource management agency staff. The study also investigates the issue of risk communication at these two sites, and the degree to which existing hazard messages are successful at encouraging appropriate visitor behaviour. Pictorial hazard warning signs are introduced to the sites and their effectiveness evaluated.

The findings show that many visitors (especially international visitors) have relatively poor awareness of natural hazards, and behave in ways which potentially compromise physical safety. It is argued that perceptions and behaviour are a consequence of diverse individual and situational factors including limited knowledge of the sites, beliefs about management, poor comprehension of hazard warning signs, and freedom from the normative constraints of everyday life.

In contrast to visitors, managers at the glacier sites consider the risks to be significant, and, potentially, severe. It is argued that managers' perceptions of risk are influenced by several important social and site-specific factors, including their own experiences of hazards at the glaciers, perceived legal and moral obligations, the organisational culture, and impressions of high societal expectation concerning safety. The situation is further complicated by the freedom of access principle in national parks, and increasing tourist demand for nature-based experiences. These factors governed beliefs about the subject of risk.

This study identifies several dimensions of risk in nature-based recreation and tourism settings. Visitors are at risk of personal accident or injury at certain tourism attractions. Awareness of hazards is limited, visitor behaviour compromises safety, and existing communication strategies are only partially effective. Risk is also apparent in the agency responsible for management of outdoor recreation areas. Site managers perceive a risk in their failure to prevent visitors from harm, whereas senior managers identify risk as primarily financial, legal, and political. Collectively, these factors demonstrate that the phenomenon of risk is increasingly important in the tourism and recreation context, and has the potential to influence significantly both management and experience of protected natural areas in New Zealand.

Key words: Risk, perception, communication, warning signs, management, natural hazards, safety, national parks, tourism, recreation, Fox Glacier, Franz Josef Glacier.

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¹ All photographs presented in this thesis are the work of the author.

Chapter 1 Introduction

1.1 Introduction

Recent changes in the global economy have significantly restructured social relations both within and between societies (Castle & Haworth, 1993; Le Heron & Pawson, 1996). New modes of production, the development and expansion of a consumer society, and changes in the labour market have altered the way people see themselves in the world, raising both their awareness of the world around them, and their lifestyle aspirations. These changes have dramatically affected individuals' leisure times and experiences, and contributed to the creation of a massive, commercial leisure industry.

Economic change, in combination with technological advances, globalisation, and altered social and individual expectations, has equipped a growing number of people with the motives and means for travel. Every week, millions of people now travel the world for no other reason than for pleasure, making tourism the greatest movement of people in history. For tourism destinations (present and future), the social, economic, and biophysical implications of this phenomenon should not be underestimated.

New Zealand is a small player on the tourist destination field. Of the world's 625 million tourists in 1998 (World Tourism Organization [WTO], 1999), New Zealand attracted a 0.25 per cent share of the market. Despite this small proportion, international tourism to New Zealand is significant in terms of its small resident population (3.8 million inhabitants), and the more than four billion dollars in foreign exchange earnings that it generates each year (Collier, 1999). Tourism is currently New Zealand's largest export earner, generating 16 per cent of total exports in 1998 (Collier & Harraway, 2001) and, as such, is acknowledged as a very important sector of the New Zealand economy.

Considerable efforts have been made to encourage greater numbers of visitors to New Zealand. Tourism New Zealand (formerly the New Zealand Tourism Board [NZTB]) has the primary responsibility of selling New Zealand's tourism product to overseas markets. Advertising campaigns emphasise themes promoting the destination as 'clean and green', '100% pure', and 'safe and friendly' (NZTB, 1997; Tourism New Zealand, 2000). These

marketing strategies appear to have been effective. Tourist numbers to New Zealand have increased by nearly 50 per cent since 1991.

The centrality of international tourism in New Zealand makes tourism an important and intriguing area of study. While market segments, tourist spending patterns, and geographic distributions and flows are beginning to be understood, little is known about some other aspects of the New Zealand tourism phenomenon. No existing research examines visitor perceptions of, and attitudes towards risk and safety, or the moral and legal responsibilities of New Zealanders as the facilitators of the tourist experience. In particular, the salience of national parks and other protected natural areas (PNAs)² as tourist attractions warrants further investigation.

The present study is about risk in natural resource recreation and tourism settings. Throughout the world, millions of people every day visit national parks and other protected areas in which natural hazards inhere. Many visitors are either unaware of, or fail to recognise, these natural hazards. People travel to national parks anticipating a degree of adventure, to escape routines, and to witness the grandeur of natural landscapes. Ironically, the very qualities that attract people to natural places may also put them at risk (Bean, 1989; Martin, 2000; Greenway, 1996).

In order to understand the nature and significance of risk in the parks, recreation and tourism context, it is useful to identify and examine three interrelated dimensions: i) the perceptions of individual park visitors; ii) the perceptions and beliefs of those responsible for the park settings; and iii) the social context in which individuals and organisations operate. The three dimensions of the research can be identified as separate entities, yet they are also part of a single whole. How visitors perceive risk is likely to be influenced by the ways in which managers present it, as well as the social and cultural norms of their societies. How managers perceive risk will, in turn, be affected by their interpretations of social acceptance and tolerance of risk, their understanding of legal obligations, and their beliefs about visitor hazard awareness and competency.

² Protected Natural Areas (PNAs) is a generic term used to describe largely unmodified lands which have protected status under New Zealand law. The term PNA encapsulates national and conservation parks, the various reserves, and other (mostly) public lands administered by the Department of Conservation (Devlin, Dingwall, & Lucas, 1990). Dingwall (1981, p. 8) describes PNAs as those areas “in which the preservation or protection of nature is either the principle or a major objective of management”.

The topic of risk in this dissertation is examined in relation to each of the three dimensions, drawing primarily from the disciplinary perspectives of social psychology, sociology, and tourism studies. The adoption of a multi-disciplinary approach is appropriate to the topics of risk and tourism, given the range of social science contributions to the understanding of these concepts. For instance, Graburn and Jafari (1991, p. 7-8) claimed that “no single discipline alone can accommodate, treat, or understand tourism; it can be studied only if disciplinary boundaries are crossed and if multidisciplinary perspectives are sought and formed”. A very similar multidisciplinary stance has been articulated by some authors on the subject of risk (Holzheu & Wiedemann, 1993; Lupton, 1999).

This chapter describes the nature of the research problem, identifies the key research objectives, and outlines the importance of the study. The research context is explained, and relevant terminology is discussed. In Section 1.4, the glaciers of Westland National Park are introduced as the physical locations for this study of risk and tourism. The chapter is concluded following a brief description of the thesis structure.

1.2 Research context

The context for the current study can be explained in terms of the three dimensions identified above.

1.2.1 Society

In recent decades, social expectations concerning safety standards have increased, while tolerance for risk and danger appear to have diminished (Furedi, 1997; Taig, 1996). In many Western societies, this can be observed in a variety of spheres, from maternity care to disease prevention, and from cell-phone technology to the provision of walking tracks in national parks. Modern Western societies are predominantly urban, and their citizens are often sedentary, highly regulated, and physically protected. New technologies have improved the ability to predict many natural phenomena including droughts, floods, landslides, volcanic eruptions, and so on. Human reliance on technology, and the protections of urban living, have insulated many people from direct experience with natural hazard and physical risk. Individual ability to detect, or disposition to expect, hazards in the natural environment may

have dimmed as a consequence of these changes in lifestyle. Furthermore, the identification and control of hazard and risk appear to have moved away from the responsibility of individuals and become the specialist responsibilities of agencies and institutions (Gregory, Loveridge, & Gough, 1997; Johnston, 1995). This shift contradicts the increased individualism evident in some other aspects of Western life such as personal responsibility for economic welfare, health, education, and financial independence in retirement. This apparent paradox, among others, is a feature of discussion in Chapters 2 and 4.

1.2.2 Management

The management of visitors to natural attractions is a considerable challenge for public and private agencies throughout the world. Increasingly, people from many parts of the globe wish to experience natural and cultural features far beyond their everyday life spheres. Developments in mass communication and transportation have enabled access to areas previously unknown or sufficiently remote to prevent human contact, excepting occasional traders and explorers. In the mid twentieth century, when travel became more feasible and popular, tourists typically remained passive receivers of the experience, rather than active participants in it (Urry, 1990). Tourism in the 1990s, however, appeared to undergo a transformation, including a change in tourist expectation. Many visitors were no longer content to ‘gaze’ upon the natural vistas or cultural villages encountered *en route*, demanding instead a more interactive, authentic travel experience (Higham, 1996; Perkins & Thorns, 2001). These developments in taste and opportunity can be witnessed in the prolific rise of nature tourism as a substantial commercial business (McKercher, 1998), appealing to the traveller’s desire to see, smell, taste and touch the ‘real’ rather than the contrived (MacCannell, 1976; Urry, 1990).

The increasing numbers of people travelling to PNAs, and the ways in which these visits are conducted, have created a new set of challenges for management agencies with responsibilities for natural areas visited by the public. Among these are concerns about the social and physical impact of visitors in culturally or environmentally sensitive areas, and, at some attractions, concern for visitor health and safety. The present discussion primarily focuses on the latter challenge.

As tourism to New Zealand has become less institutionalised, the safety of visitors in a range of urban and natural settings is potentially compromised. The emergence of Free Independent Travellers (FIT)³ as the dominant tourist group in New Zealand (NZTB, 1991; Parr, 1989), suggests that *where* visitors go, *when* they go there, and *what* they do, is far less constrained than for many visitors in the past. The availability of rental cars and camper vans has increased the flexibility and range of travel options for visitors to many countries including New Zealand. Land management agencies, such as New Zealand's Department of Conservation (DOC), charged with the responsibility of minimising harm to natural environments and the safety of people who come to visit them, have been forced to develop strategies to address a growing number of visitors, and increasing diversity of activities and behaviour. Some of these issues are developed later in the thesis.

1.2.3 Tourists

Relative control over many aspects of Western life has created the potential for travel and exploration. Financial security, mass communication, and a desire for temporary departure from the routine and mundane, also contribute to the tourism motive. It is reasonable to assume that, unlike the travellers of centuries past, tourists today have a solid sense of security based on the controlled, predictable, and urban communities in which most people now live, and the relative comfort in which they travel. In contrast, the natural attractions to which tourists to New Zealand are invited are often *not* entirely controlled or predictable - or, at least, they have the potential to become inhospitable or dangerous. This has implications for safety, risk, dissatisfaction, and liability in relation to New Zealand's tourism 'product'.

Adding to the potential for liability and dissatisfaction, is the possibility that tourists and recreationists have high expectations concerning levels of service and accountability, including those which relate to safety and risk. Boerwinkel (1995, p. 241) observed that visitors to recreation and tourist destinations may feel "less guests than rightful buyers of a recreational product. The host in such places is now, more than in the past, considered ... as just a provider of a recreational product". If this is accurate, there are important implications for the management of many nature-based recreation and tourism settings, especially if there

³ FITs are those travellers not part of organised 'package' tours, who make many of their own arrangements concerning accommodation, food, attractions, and so on (Parr, 1989).

is unwillingness among visitors to accept personal responsibility for any undesirable outcomes of their experiences.

1.2.4 Parameters of the current research: Some definitions

This study is concerned with recreation and tourism in natural resource settings. A variety of terms have been applied to this phenomenon, including ‘outdoor recreation’ (Devlin, 1995; Manning, 1999), ‘resource-based recreation’ (Devlin, 1993), ‘resource-based tourism’ (Ewert & Shultis, 1997), and ‘nature-based tourism’ (Valentine, 1992). Ewert and Shultis (1997, p. 95), for instance, defined resource-based tourism as “tourism activities and experiences dependent on the attributes associated with natural and relatively undeveloped settings”. Similarly, Valentine (1992, p. 108) described nature-based tourism as “primarily concerned with the direct enjoyment of some relatively undisturbed phenomenon of nature”. While each of the terms may imply subtle differences in context, they have in common a focus on natural settings predominantly unmodified by human influence. People are motivated to visit these areas at least partly because they offer an alternative to densely populated or facility-oriented urban environments (Pigram, 1993). Natural resource settings for recreation and tourism typically include mountain lands, coasts, lakes, rivers, beaches, and the sea.

The settings of particular interest to the present study include those defined above, yet it is important to emphasise that there is a continuum of visitor involvement in nature-based or natural resource recreation and tourism. While the terms can refer to physically challenging and adventure tourism activities such as mountaineering, bungee-jumping, and white-water rafting, the vast majority of participants in natural resource recreation and tourism are satisfied with more passive involvement with nature, such as short walks and sight-seeing in front-country⁴ areas (DOC, 1996b; NZTB & DOC, 1993). The dominant focus of the present research is on this latter group of tourists.

It is also important to clarify use of the terms ‘recreationist’, ‘tourist’, and ‘visitor’ in the current study. As above, each of these terms reflects something of the context for the discussion. Whether an individual is deemed to be a ‘tourist’, a ‘recreationist’, or a ‘visitor’

⁴ Front-country recreation areas are “settings within relatively easy reach of vehicle access that are serviced by such facilities as car parks, picnic and camping areas, toilets, water supplies, signs, ...and easy walking tracks (DOC, 1999b, p. 29).

rarely affects the individual, yet this topic has been the subject of considerable attention in leisure and tourism studies (Moscardo, 1999; Simmons & Leiper, 1993; Smith & Godbey, 1991; Theobald, 1998), and in more technical contexts (Collier, 1999; Collier & Harraway, 2001; United Nations [UN] & WTO, 1994). Naturally, formal definitions exist, especially for ‘tourist’, as there can be important financial implications associated with its measurement. Many definitions of ‘tourist’ depend on the dimensions of time and residence (Collier, 1999; UN & WTO, 1994) and, to a lesser extent, distance (Theobald, 1998). For instance, the UN and WTO (1994, p. 20) stated that temporary visitors to regions outside their own (nationally or internationally) can be considered tourists, but only where the main purpose of the visit is “other than the exercise of an activity remunerated from within the country visited”. To qualify, inter-region visits must also be of at least 24 hours duration and, in the case of domestic tourists, not greater than six months.

Intuitively, ‘visitors’ can be considered as a broad class of people who spend time in regions beyond their own. This includes those visiting regions for recreation and tourism. People who visit national parks and other PNAs for the purposes of recreation can be difficult to differentiate on the basis of their status as recreationists or tourists, other than the important distinction of national origin. If the technical definitions are adopted, most participants in the current study can be considered as visitors *and* tourists since the majority originate from outside the West Coast region, and the glaciers cannot be considered a “usual habitat” (Collier, 1999, p. 2) for most of the people who visit.

The focus of this study is on people who visit conservation and recreation areas, at their leisure, for the purposes of recreational and tourist activities such as sightseeing, walking, and heritage appreciation. For the purposes of the remaining discussion, the technical definitions of the terms are less significant. To this extent, and unless specified in literature reviewed, the terms ‘tourist’ and ‘visitor’ are used interchangeably.

Finally, it is important to emphasise the parameters of the study in relation to risk and leisure, recreation, and tourism. In the literature, the concept of risk is raised in a variety of contexts including youth at risk, thrill-seeking and adventure tourism, organisational risk, and the negative consequences of risk-taking in outdoor recreation environments (for New Zealand examples see Haddock, 1995; Johnston, 1989b, 1992; Morgan, Moore, & Mansell, 1997, 2000). For some of these participants, risk is actively sought, forming a critical part of the

experience (Apter, 1992; McAvoy & Dustin, 1990; Priest, 1992). Much of this literature provides important context, but is not at the core of the current study, which focuses on those risks that are not deliberately sought. These ideas about risk stem from a wider interest in how visitors are managed in the protected natural areas of New Zealand.

1.3 Risk and safety in natural resource settings: An outline of the research problem

The dilemma of risk in recreation and tourism settings has several levels, including visitors' demand for natural experiences, and the risk averse society in which tourism occurs. This section outlines the research problem, the associated research objectives, and the importance of the study.

In promotional literature and picture postcards, the central themes or images through which New Zealand is sold as a tourism destination are those of landscape and nature, and mountains in particular (Cloke & Perkins, 1998; Dilley, 1986). Shultis (1989, p. 329) observed that “for both domestic and international markets, the major *raison d'être* of New Zealand as a tourist destination is its landscape”. Approximately 60 per cent of all visitors to New Zealand enter a forest or national park (NZTB, 1993), and 33 per cent undertake a short bush walk⁵ (NZTB 1996). At some natural attractions, up to 75 per cent of all visitors are of international origin (NZTB & DOC, 1993). The scenic theme is augmented by an attempt to market New Zealand as a clean, friendly and safe destination (Ministry of Commerce, 1996; NZTB, 1997; Page, 1997), an image that presents something of a paradox when aligned with the risk and adventure activities that are also promoted to tourists in New Zealand.

Although New Zealand's tourism industry is built upon its natural attractions, little is known about the risks perceived by visitors to these areas. That genuine physical hazards are inherent in some environments such as the glaciers of Westland National Park, presents managers of these areas with a number of challenges related to the health and safety of visitors. At the glaciers, the issues include visitor safety, the ethics and feasibility of restricting access within a national park, and behavioural compliance with warning messages. It is from both the general ‘problem’ of tourists and risk, and the more specific issues evident at the glaciers, that the research aim and objectives for this study are drawn.

1.3.1 Objectives of the current research

The primary aim of the research is:

- To examine the nature and significance of risk in the management of parks, recreation, and tourism in New Zealand.

More specifically, the research objectives are:

- To identify and evaluate visitor awareness and perception of natural hazard and risk at Fox and Franz Josef glaciers on the South Island's West Coast.
- To identify and evaluate visitor attitudes toward individual responsibility for safety at the glaciers.
- To assess the extent of behavioural compliance with hazard warning signs among visitors to the glaciers, and to measure the relative effectiveness of introduced pictorial warning messages.
- To determine the perceptions, attitudes, and beliefs of agency staff with regard to their roles as risk managers, both at the glacier sites, and within New Zealand more generally.
- To identify and assess how the Department of Conservation presents and communicates risk and safety messages in natural resource recreation settings such as the glaciers, and to examine what perceived legal and moral obligations form the basis of these strategies.
- To explore the relevance of the theory of the 'risk society' (Beck, 1992) to understanding risk perceptions and risk management in the New Zealand tourism and recreation context.

These objectives are deliberately broad in scope, indicative of the exploratory nature of the topic, and the researcher's commitment to a multi-disciplinary approach. The methods used to address the objectives include a survey questionnaire and quasi-experimental component, observations, short interviews, and in-depth interviews with key informants (refer to Chapter 5).

⁵ A short bush walk was defined as less than half a day, but more than half an hour (NZTB, 1996).

1.3.2 Importance of the study

Leisure tourism is a discretionary activity, and most tourists will not spend their hard earned money to go to a destination where their safety and well-being may be in jeopardy (Pizam & Mansfield, 1996, p. 1).

The management of visitor safety is an issue of paramount importance to outdoor recreation and visitor service agencies. In New Zealand, the topic is especially salient in the wake of the most serious outdoor recreation accident in its history: *Cave Creek* (an accident in which 14 people fell to their deaths when a platform over-looking a gorge collapsed). With visitor numbers to many protected natural areas increasing each year, and with a significant proportion of these visitors originating from countries overseas, the issues of safety, risk management, and liability need intensive research.

Further, given the importance of natural attractions in terms of New Zealand's international market niche, it is crucial that aspects of risk, safety, and liability are understood. Tourists are likely to be vulnerable to risk owing to the situational and affective characteristics of this leisure context. If tourists are more vulnerable to risk, this has implications for international visitor management and the wider issues of moral obligation and social contract, particularly in an increasingly globalised world (McLuhan & Powers, 1989).

Despite the growing number of visitors to nature-based attractions world-wide, and the evident management challenges in risk communication, little is known about the effectiveness of hazard messages presented to visitors in protected natural areas. McCool and Braithwaite (1992, p. 319), for instance, observed that:

Message effectiveness with regard to hazards in dispersed and natural recreation settings remains a largely ignored area of inquiry.... [The lack of] hazard/risk research is unfortunate because the consequences of ineffective messages can be significant in terms of injury or death to visitors as well as financial loss to recreationists and to managing agencies.

One could add to this the costs to the industry in general, including the potentially negative impacts on promotional efforts.

The present study aims to address this current gap in the literature. While studies on risk, risk perception and, to a lesser extent, risk in recreation and tourism abound, few attempt to

address the multiple dimensions of risk perception and risk management. To this extent, the current work is unique in combining aspects of the attitudes, beliefs, and perceptions of both tourists and managers within a wider social and cultural context.

1.4 The physical context for the investigation of risk: The study sites

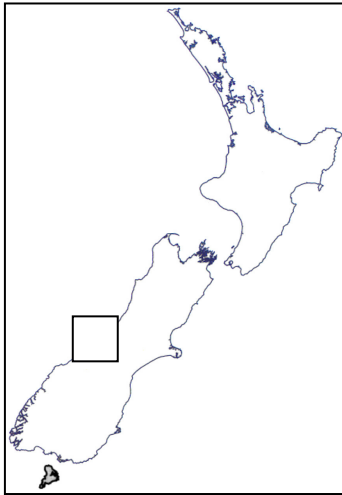
This study uses the popular attractions of Fox and Franz Josef glaciers as a setting through which to explore the nature and significance of risk in recreation and tourism areas. This section provides important background and other contextual information about the glaciers of Westland National Park. The section also includes a brief introduction to the Department of Conservation, the government agency responsible for the management of national parks and other protected natural areas in New Zealand. This agency becomes the focus of discussion in Chapter 7.

1.4.1 Westland National Park: Fox and Franz Josef glaciers

The physical focus of the present study is Westland / Tai Poutini National Park⁶, an area of approximately 120,000 hectares situated in South Westland, New Zealand (Figure 1.1). The Park was formally established in 1960, and is one of 13 national parks administered by the Department of Conservation⁷. Westland National Park is also included within the 2.6 million hectare South West New Zealand World Heritage Area, recognised by the United Nations Educational Scientific and Cultural Organisation (UNESCO) as one of the world's outstanding natural areas (DOC, 1999b; Shackley, 2000).

⁶ The name Tai Poutini derives from the Maori *Te Tai o Poutini* (the tides of the West Coast) (DOC, 1999).

⁷ At the time of writing, a 14th national park, at Stewart Island, was in the final stages of establishment.



The physical nature of the Park is characterised by diversity, with lowland forest, coastal, and wetland areas in the west, and steep alpine zones to the east. A prevailing westerly air stream combines with a sharp change in gradient between the coast and the mountains to produce a high level of precipitation (exceeding ten metres annually in the mountains), much of it falling as snow in the areas of greatest altitude (Coats & Chinn, 1992; McCaskill, 1966; Potton, 1985; Sara, 1970). The regular rainfall and relatively mild temperatures in lowland areas (11°C yearly average (DOC, 1999b)) contribute to the region’s lush, dense rainforest, fast-flowing rivers, and deep lakes.

Figure 1.1: Westland National Park, New Zealand

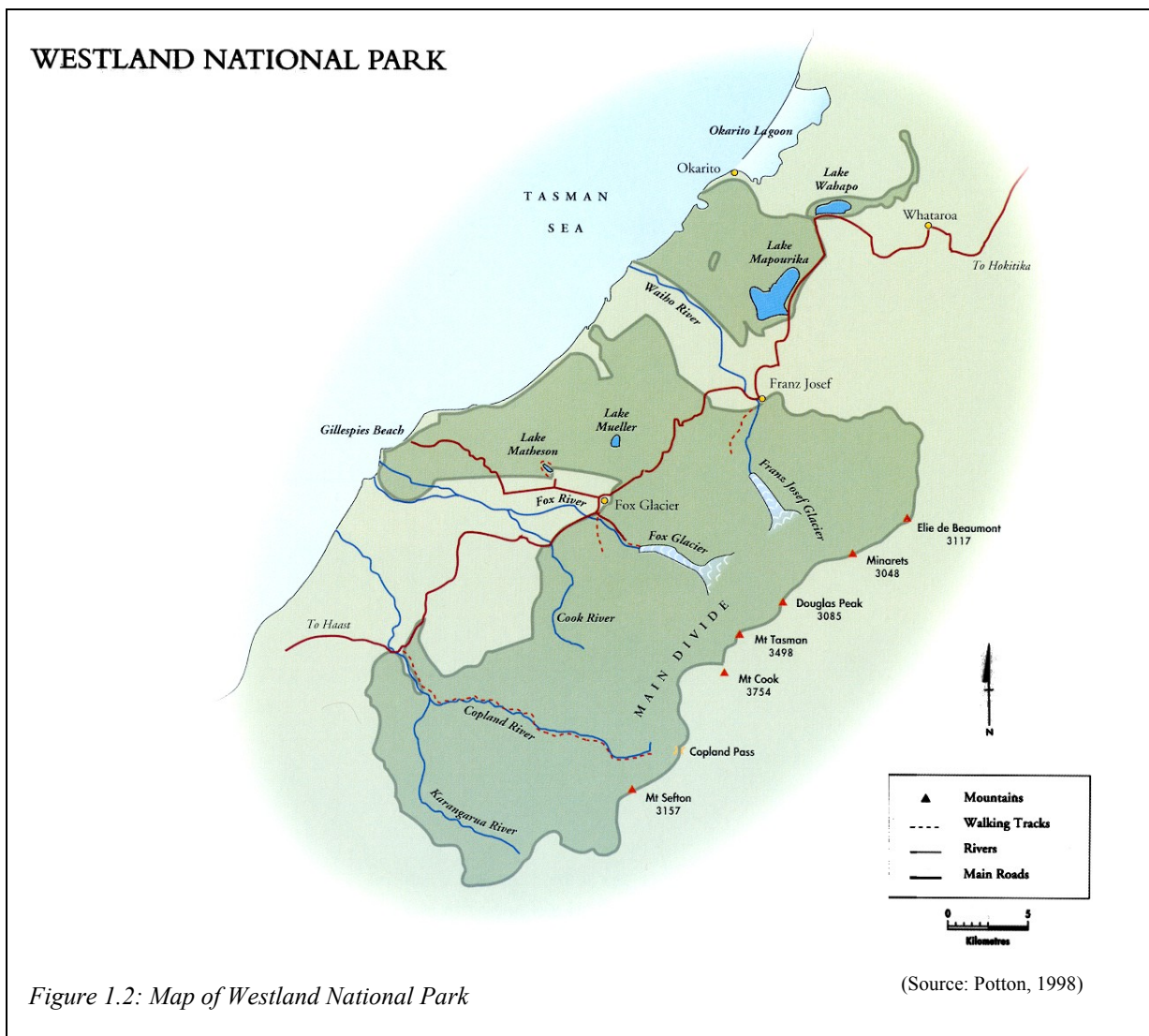


Figure 1.2: Map of Westland National Park

Road access is limited to a single highway, which dissects the Park from the northeast to the southwest (State Highway 6). The highway is a critical part of the South Island tourist route, linking the West Coast to visitor attractions in Canterbury (via the Lewis Pass to the north), and Queenstown and the Lakes (via the Haast Pass to the south).

The service towns of Franz Josef and Fox Glacier are located along the main highway through the Park (Figure 1.2), legacies of a gold rush that swept the West Coast during the 1860s and 1870s. While the prospect of gold initiated many to the area, it was for farming, timber milling, and recreation and tourism that people stayed (Alexander, 1994; DOC, 1999b). The area's popularity grew throughout the twentieth century, with improvements to road access, available accommodation, and new recreation opportunities. Today, the Park is used by increasing numbers of domestic and international visitors, who participate in activities ranging from short walks to scenic flights, and from guided glacier hikes to alpine tramping and climbing.

The Fox and Franz Josef glaciers are two features of the region that have evidently captivated travellers and explorers since the earliest observations were made (Haast, 1879; cited in Sara, 1970; Morland, 1916). Today, the glaciers, each situated a few kilometres to the south of the respective townships, are the premier tourist attractions on the South Island's West Coast, and play a critical role in tourism to the region generally (DOC, 1999b; Moore, Simmons, & Fairweather, 2001; Moran, Sleeman, & Simmons, 2001; Tourism Resource Consultants [TRC], 1995). It has been estimated that 20 per cent of all international tourists to New Zealand visit the West Coast, and more than half of these visit the glaciers (Gough & Ball, 1995; NZTB, 1996). The Fox and Franz Josef glaciers attract approximately 400,000 visitors annually, with the latter receiving about two thirds of this use (DOC, 1999b). The two sites can be regarded as front-country recreation sites at which high numbers of visitors, along with some facilities are present. The glaciers are described in the Westland National Park Management Plan as "intense interest sites", and represent two of three such sites in the Park (DOC, 1999b, p. 30).

To a significant extent, the popularity of the glaciers is dependent on the maintenance of relatively easy foot access to within close proximity of the ice. The terminal ice face at both Fox and Franz Josef Glacier is currently within 30 minutes walk of the respective car parks, and situated at only a few hundred metres above sea level. The



Plate 1.1: Franz Josef Glacier

walkways that lead to the attractions are sufficiently short and level to allow unimpeded access for able-bodied visitors, including those with no outdoor recreation experience. The consequence of this accessibility is that visitors can get very close to both glaciers with minimal effort, and without exposure to alpine conditions. Unless visitors elect to climb on the glacier⁸, no specialist equipment is required, and many visitors will alight from vehicles and embark upon the walk to the attraction with little or no modification to their clothing or footwear.

The Fox and Franz Josef glaciers provide excellent study sites to examine the subjects of risk, hazard, and safety perception among a range of visitors. As key components of the South Island tourism trail, the glaciers attract a broad cross section of the visitor market, although the majority of visitors are short term, and from regions outside of New Zealand (DOC, 1999b). Further, the Department of



Plate 1.2: Fox Glacier

Conservation has recently expressed concerns about the physical risks to which visitors are exposed at the glaciers (DOC, 1997a, 1997b). Loose rock, falling ice, and fluctuating river levels represent natural hazards to tourists and recreationists whose experience in such environments is likely to be limited.

⁸ The Department of Conservation recommends that visitors who wish to climb on the glacier do so only in the company of an experienced guide. Professional glacier guiding companies operate throughout the year at both Fox and Franz Josef Glacier.

While there is a growing body of information about the natural hazards and physical risks to which visitors are exposed at the glaciers in South Westland (DOC, 1999b; McSaveney & Davies, 1998; TRC, 1995), very little is known about how visitors to these attractions perceive risk and safety, or the extent to which visitors accept responsibility for their own safety. The present research will help develop an understanding of the significance of risk in natural area tourism, and assist the management agency in identifying appropriate levels of risk management and hazard communication at the sites.

1.4.2 The Department of Conservation

The Department of Conservation administers Westland National Park as part of a significant PNA system including 12 other national parks throughout New Zealand. This government department manages hundreds of tracks, thousands of structures and millions of national and international visitors each year in areas which, collectively, constitute approximately 30 per cent of New Zealand's total land mass. These areas are public lands, also known as the 'conservation estate'.

DOC was established in 1987 with the passing of the Conservation Act (1987), and replaced several land management agencies existing at that time. For the first time, New Zealand's conservation estate was the responsibility of a single government agency. Under the Conservation Act, the Department is obligated to:

1. manage all land, and other natural and historic resources for which it is responsible, for the purposes of conservation (S 6(a)); and
2. foster the use of natural and historic resources for recreation, and allow for their use for tourism, to the extent that this use is not inconsistent with conservation (s 6(e)).

DOC aims to achieve its natural and cultural heritage responsibilities through protecting and restoring natural areas, reducing threats to native species, controlling pests and weeds, and promoting conservation. Public recreation is fostered through the construction and maintenance of facilities (including huts, tracks, and bridges), granting and managing concessions, managing visitor centres, and providing information (DOC, 1996b, 2001). Owing to its dual (and sometimes conflicting) mandates, its wide range of geographically

dispersed responsibilities, and the emotive nature of some of its work, DOC operates within a complex and often politically charged environment.

In addition to a central management office in Wellington ('Head Office'), the Department is represented throughout New Zealand by 13 regional conservancies. Each conservancy includes several area offices responsible for the delivery of conservation and recreation outputs (DOC, 2001). Three regional offices ('Northern', 'Central' and 'Southern') were a recent addition to the Department's structure, and have the task of "continuous quality improvement" (DOC, 2001, p. 13). The Fox and Franz Josef glaciers are within the West Coast Conservancy (South Westland Area Office), and managed on a day-to-day basis through individual administrative units (field centres) based in the nearby townships of Fox Glacier and Franz Josef.

Further aspects of the Department's systems, structure, and governing legislation are presented in Chapter 7 when the risk perceptions and attitudes of its managers are discussed.

1.5 Organisation of the thesis

This thesis is divided into eight chapters. The relevant literature is contained in the next three chapters, which collectively inform the three dimensions of the study. Chapter 2 is a discussion of the social context in which risk needs to be considered. Chapter 3 examines individual visitors' perceptions of risk, including factors that influence these. Chapter 4 focuses on the management and legal context of risk in recreation and tourism settings, and identifies the significance of risk in this context.

In Chapter 2, the concept of risk and its growing importance in Western post-industrial society is examined. It is argued that, as in no previous society, current attitudes to risk and safety in such societies are conservative in the sense of emphasising the avoidance of risk where possible. Chapter 2 reviews definitions and explanations of risk and hazard, and the rise, in recent decades, of concerns over risks. The perspective of the chapter is primarily sociological, and this informs the analysis and discussion of ideas presented in Chapter 7.

Chapter 3 involves discussion of the individual and how he or she perceives risk. The perspective adopted is principally social-psychological and includes an examination of the

subjective experience, the influence of other people (including the media), and the way in which each affects risk perception. A section of this chapter is devoted to a discussion of risk communication and, in particular, the effects of warning messages on compliance and risk perception.

Chapter 4 reviews the available literature on risk in recreation and tourism, and locates the present study within that context. The nature and scope of risk in natural resource tourism is identified, and the legislation relevant to New Zealand discussed. The possibility that tourists are especially vulnerable to hazard and risk is also explored.

In Chapter 5, the methods for this study are described. These methods include both quantitative and qualitative tools in order to address the specific research objectives (Section 1.3.1 above). Few integrative studies in natural resource recreation and tourism have been undertaken in New Zealand (Simmons & Berno, 1995), yet there is excellent scope for their adoption. Considerable attention is given to the topic of ethics in Chapter 5, as some aspects of the methods raise interesting and significant ethical issues.

Chapters 6 and 7 present and discuss the research findings, including visitor perceptions of natural hazard and risk, and the factors affecting how risk is managed at the two tourism attractions. While the extent to which visitors perceive risk, and their specific awareness of natural hazards is examined in Chapter 6, Chapter 7 focuses on the degree to which risk is presented to visitors, the strategies used to communicate risk, and the legislative, moral and pragmatic justifications for the management approaches used. The growth of risk management in the New Zealand parks and recreation context is a feature of the discussion in Chapter 7. Discussion covers the various factors affecting managers' risk perceptions, including the effects of key historical events and other social context.

Chapter 8 forms the final synthesis of the research findings, a reappraisal of the research objectives, and presentation of implications for the management of visitors in natural resource recreation settings. The aim of this last chapter is to integrate the various dimensions of the study, and to articulate the complex relationships between them.

1.6 Chapter summary and conclusions

The study of risk has grown significantly in substance and in scope over three decades. While the focus of this field still lies in the analysis of technological and environmental risk, some researchers have looked in detail at the concept of risk in recreation and tourism. Few, however, have examined risk and safety perceptions in the context of nature-based tourism, and none within the context of the 'risk society' (Beck, 1992). The present study aims to make a contribution to the understanding of risk perception, visitor management, tourism studies, and the social psychology of communication in natural environments. The study also complements existing literature on the sociology of risk, and the political significance of risk management.

To this extent, the present study adds to the existing work in the fields of 'risk' recreation and tourism, as well as to the understanding of risk perception and its effects on tourists and the tourism industry. Furthermore, the study expands current knowledge of communication and warning compliance in natural resource environments, and establishes important links between the social and cultural context and the management of parks, recreation, and tourism in New Zealand.

Chapter 2 The nature and significance of risk

2.1 Introduction

The investigation of risks is at once a scientific activity and an expression of culture (Kasperson et al., 1988, p. 177).

A substantial and growing literature on risk has emerged out of the realisation in advanced industrial societies of the need to regulate technology and to protect their citizens from natural and technological hazards (Kasperson et al., 1988; Krimsky & Golding, 1992). One significant component of the risk literature represents a reaction to increasing social concerns about the potential dangers in both the human-induced and natural environment (Douglas & Wildavsky, 1982; Gough, 1990, 1991a, 1991b; Hunnius & Kliemt, 1993; Leiss & Chociolko, 1994; Sjöberg, 1987). Subjects of analysis typically include risks associated with health, environmental pollution, nuclear power plants, and natural disasters. Among others, these issues have stimulated public discussion on how best to meet the challenges of technological progress, and inevitably focus on the concept of ‘risk’ (Hunnus & Kliemt, 1993). Far less debated are the possible risks to which people are exposed in natural environments, not normally part of their lifestyles. In this sense, technology has facilitated access to risks of another kind.

This chapter documents a growing emphasis on safety, risk, and hazard in many modern societies. The main discussion is preceded by an initial section devoted to the definition of key concepts used in this study. Several sociological explanations for the contemporary prominence of risk are then proposed, and an outline of the development and current significance of legislation that both justifies and perpetuates the concern over risk and safety is given. The present chapter acts as a basis for the discussion of risk in recreation and tourism presented in Chapter 4.

2.2 Definition of terms

Risk and risk-taking are inescapable aspects of all human existence, involving choices or trade-offs between positive and negative outcomes. ‘Risk’ is a term used in an increasing number of contexts, to the point where it could be considered a dominant social discourse in

many societies. As a concept, however, 'risk' is ambiguous in meaning, and is often used interchangeably with similar terms such as 'hazard' and 'danger', and within the context of 'safety' (or the lack thereof). This section examines the meaning, usage, and scope of the term 'risk', and thus provides a basis for the later discussion on the significance of risk in some Western societies. A variety of risk definitions are reviewed, and some common elements identified. Related concepts are discussed and differentiated.

2.2.1 Risk

The term 'risk' appears to have originated in the Italian language (*risco* or *risicare*), first appearing in the 17th century (Bernstein, 1996; Keey, 1998; MacCrimmon & Wehrung, 1986). Bernstein (1996) claimed the latter meant 'to dare', whereas Keey (1998) gave a less neutral interpretation as 'to run into danger'. Others have also suggested that the idea of risk took hold in the 16th and 17th centuries, first used by Western maritime explorers (Covello & Johnson, 1987; Giddens, 1998). Giddens differed on the term's derivation, however, citing instead a Spanish or Portuguese connection, where it was originally used to refer to sailing into uncharted waters. Hence, the earliest conception of risk included the dimensions of uncertainty, danger, and loss, yet it also implied a choice rather than a fate (Bernstein, 1996). While there may have been no word for risk, Wiedemann (1993) traced the perception of hazards as risks to the development of insurance, the earliest evidence of which he reports as 1329.

A wide variety of disciplinary interests are represented in the study of risk, including those of sociologists, psychologists, economists, geographers, safety engineers, and philosophers, prompting Holzheu and Wiedemann (1993, p. 10) to describe the field of risk studies as "vast and loosely defined". As a consequence, the term 'risk' has assumed a range of meanings, the most common of which include the technical (including wide application in a variety of scientific contexts such as engineering and medicine), and financial (especially insurance and investment). Most authors note that risk means different things to different people, although a review of the literature suggests that disagreement about risk is found less in the elements of its composition, and more in how it is assessed, what to do about it, and who is responsible for it. The existence of risk, its significance, and its probability is where the genuine controversy lies.

Risk is present in multiple spheres, and is highly contextual. In the leisure and tourism domain, for instance, a variety of different types of risk have been identified (Brannan, Condello, Stuckum, Vissers, & Priest, 1992; Cheron & Ritchie, 1982; Fullagar, 1996; Roehl & Fesenmaier, 1992). Some possible risk contexts are illustrated in Table 2.1.

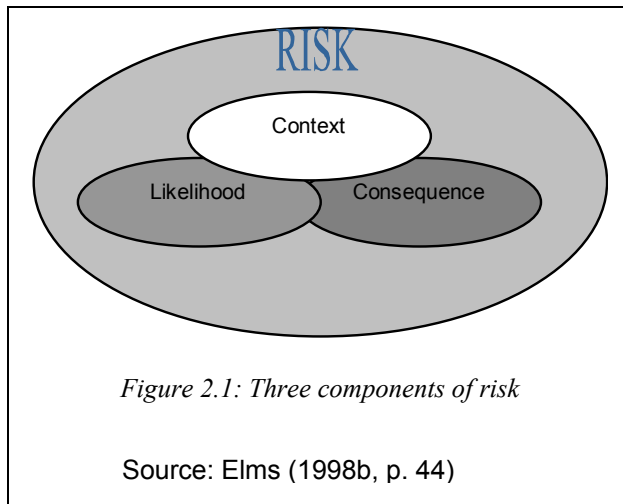
Table 2.1: Multiple risk contexts

Risk	The possibility that the action will:
Financial	not provide value equal to money spent
Functional	result in mechanical or technical failure
Physical	lead to bodily harm or illness
Psychological	alter an individual's perception of self, or fail to meet expectation
Social / Commercial	alter others' perceptions of the individual or organisation
Time	be too long, or not worth the time taken

Adapted from Cheron & Ritchie (1982)

The risks identified in Table 2.1 apply in both a personal and public sense, although individuals are likely to be more concerned with physical, social, and psychological risks than organisations, which are more likely to emphasise financial and functional risks. The oldest acknowledged form of risk is the possibility of physical harm, and perhaps the most recent those of time and finance. Throughout human history, however, perceptions of social and psychological risks have helped shape attitudes and behaviour.

The conventional and scientific approach considers risk as an expression of probability. That is, risk is understood as “the likelihood that something unpleasant will happen” (Wagenaar, 1992, p. 258). Hence, risk can be calculated and formalised in terms of magnitude and statistical probability, and represented by formulae as discussed by Rayner (1993), Jungermann and Slovic (1993) and Elms (1998b). In this technical sense, risk (R) is defined as a function of probability (P) and magnitude (M) of an undesired event (Rayner, 1993).



Elms (1998b) described risk as involving three related components (Figure 2.1), two of which correspond closely with probability and magnitude. Importantly, Elms also emphasised the salience of context to the understanding of risk. Two risk calculations (likelihood x consequence) may appear the same, but each may relate to completely different contexts, and therefore need to be considered separately.

Consistent with this technical-scientific approach to risk, Yates and Stone (1992) identified three major components in the risk construct including potential loss, the significance of loss, and the uncertainty associated with loss. Similarly, Sitkin and Pablo (1992) offered three ‘outcome’ dimensions: uncertainty, expectation, and potential. Reflecting their management focus, they defined risk as a characteristic of decisions and “the extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decisions will be realized” (Sitkin & Pablo, 1992, p. 10). According to these authors, risk in decision-making exists along a continuum where outcomes are more or less certain, and the range of possible outcomes includes some extreme consequences.

While convenient, and clearly amenable to quantification, the traditional technical approach to risk does not allow for a comprehensive understanding of the risk construct, and involves several assumptions not always made apparent. For instance, in technical assessments, risks are viewed as unproblematic facts that are possible to measure and objectify. Also implicit is an agreement on the significance of any particular risk. The values that underpin risk identification and assessment are rarely made explicit. Further, there is often an assumption that risk involves undesirable outcomes, with no acknowledgement of potential benefits.

The alternative perspective is to consider risk as a social construction, rather than an objective reality yet to be discovered. Some authors deny the suitability of a technical approach to the understanding and assessment of risk (Douglas & Wildavsky, 1982; Fox, 1999; Krinsky & Golding, 1992; Lupton, 1999; Rayner, 1993; Rayner & Cantor, 1999). In their critique of risk theories, Douglas and Wildavsky, for instance, claimed that risk acceptability is always a

political issue, a product of social and cultural processes. These authors seriously question the attempts of risk analysts to make the assignment of probabilities a value-free exercise: “judgements of risk and safety must be selected as much on the basis of what is valued as on the basis of what is known” (Douglas & Wildavsky, 1982, p. 80). Fox (1999) went beyond the culturalist model and argued that hazards are socially constructed out of judgements about the adverse outcomes of choices made by humans. Objects in the environment that are otherwise ‘inert’, are transformed into hazards through our evaluations of risk (Fox, 1999).

An emphasis on negative outcomes of risk is a common feature of risk definitions (Furedi, 1997; Gough, 1998a; Johnston, 1989a; Sitkin & Pablo, 1992; Wiedemann, 1993). For instance, in a business context, Williams and Narendran (1999, p. 103) stated that: “most theorists agree that a risky decision involves the unspecified possibility of an *undesirable* outcome” (emphasis added). Similarly, from the perspective of engineering, Elms (1998b, p. 44) claimed that “risk has to do with something *unwanted* that could happen in the future” (emphasis added).

The focus on the negative outcomes associated with risk may be a recent phenomenon. According to some authors (Carpenter, 1995; Furedi, 1997; Leiss & Chociolko, 1994), society has moved away from treating risk as either a neutral or a positive feature of life and now has a predominantly negative view of its presence. MacCrimmon and Wehrung (1986, p. 9) claimed that at other stages in history, risk was represented as an admirable enterprise, citing Samuel Johnson’s use of the term in the eighteenth century: ‘To risque the certainty of a little for the chance of much’. Similarly, Wiedemann (1993, p. 54) observed that the public increasingly “regard[s] risk from the aspect of a negative utilitarianism [where]... the possible loss outweighs the potential gain; the motto is now: ‘better safe than sorry’”. The possible consequences of societal risk aversion are discussed in Section 2.3.4.

While risk is usually used in a negative context, it is simplistic to assume that all risk is now avoided. There are many instances in which successful risk-takers are admired, including entrepreneurs in business, mountaineers, and sports people. It is also evident that the positive or negative usage of the concept of ‘risk’ is highly contextual. In fields of application such as engineering or insurance, risk does assume a largely negative connotation (to be avoided). In other contexts, such as investment and some forms of recreation, the risk can have a positive meaning. Whether a risk is viewed as positive or negative will depend on the values

associated with the outcome. The unifying feature of risk, then, is the presence of uncertainty from which might emerge outcomes that are interpreted as either positive or negative.

While definitions of risk vary in their emphasis and application, a degree of commonality between them is evident. Differences tend to reflect disciplinary positions and, ultimately, ontological perspectives. Disparities are also more evident in the assessment of risk and its application, rather than in terms of the underlying meaning of the concept. A review of definitions presented in the wide literature on risk, reveals common use of terms including ‘loss’, ‘chance’, ‘probability’, ‘exposure’, ‘uncertainty’, and ‘choice’. Typical of many definitions is ‘the potential to lose something of value’ (Australian / New Zealand Standards [ANZS], 1999; Brannan et al., 1992; Elms, 1998b; Haddock, 1993; Hanna, 1991; MacCrimmon & Wehrung, 1986).

From the preceding discussion it is evident that risk involves choice and uncertainty. A situation in which the *only* outcome is loss is not a risky one (Giddens, 1998; Lash, Szerszynski & Wynne, 1996; MacCrimmon & Wehrung, 1986; Roehl & Fesenmaier, 1992). Risk implies that the human agent has a choice, and, therefore, a degree of control over the eventual outcome. The notion of risk is not raised across all aspects of life unless there is the opportunity for human agents to influence these. Where there is no choice, no alternative outcome, there is no risk. To this extent, risks are trade-offs: “to take a risk is to incur a certain loss in expectation of a larger but less certain offsetting gain” (Leiss & Chociolko, 1994, p. 256). As will be discussed in Section 2.3 below, one hallmark of some Western societies is a growing individualism, and the freedom to choose in many life spheres. A perception of choice has become widespread in modern Western democracies, thereby increasing the perception of risk.

2.2.2 Terms related to risk

2.2.2.1 Actual and perceived risk

Many writers seek to differentiate between ‘actual’ risk (also referred to as ‘real’ risk or ‘objective’ risk), and ‘perceived’ risk (Bamford, 1987; Elms, 1998b; Lee, 1981; Slovic, Fischhoff & Lichtenstein, 1982). The difference between these assessments is important to the later discussion and analysis presented in this study, and hence Chapter 3 addresses the

subject of ‘perceived risk’ directly. At this point, it is sufficient to note that the assessments of ‘actual’ risk (probability x magnitude) are technically described as the ‘estimated’ or ‘observed’ risks (Elms, 1998b). These terms refer to assessments based on statistical probability such as the prediction of future events from statistical data provided by past events. The term ‘actual’ risk is used to convey an objective assessment, to differentiate between the technical calculations of experts, and the subjective perceptions of the public, which have traditionally been considered irrelevant to social decision-making.

2.2.2.2 Hazard

The word ‘hazard’ is thought to have its origins in the name given to dice and other games of chance, from the Arabic word for dice – *al zahr* (David, 1962; cited in Bernstein, 1996). Today, hazards refer to specific circumstances that promote the possibility of loss occurring, or reduce the chances of gains being made. Hazards can take many forms and typically describe dangerous conditions in contexts including the workplace, home, recreation and leisure areas, and other places where people or the things they value are present. In particular, most definitions emphasise that hazards include any source of potential injury or harm to a person (ANZS, 1999; McCarthy, Ayres, Wood & Robinson, 1995). In the natural resource recreation and tourism context, Christiansen (1987, p. 135) defined an inherent hazard as “a natural feature of the environment that is potentially dangerous”. Examples from these settings might include river rapids or deep pools of water in the river, rockfall areas, and steep slopes.

Like risk, hazard implies an element of uncertainty and chance. Unlike risk, the term hazard is exclusively used in the context of negative consequences. Where risk is the potential for loss, hazards are specific circumstances which increase the chance of that loss occurring. In this sense, driving a car presents a risk (physical injury, property damage, or legal liability), whereas ice on the road represents a hazard. To drive the car over the icy road would entail a risk, reinforcing the notion that risk relates directly to an action performed, and perhaps chosen by, an agent. In the present study, the phrase ‘natural hazards and risk’ is used in recognition of the difference between the two phenomena, but also in acknowledgement that the two invariably occur together.

2.2.2.3 Danger and safety

It is also useful to differentiate between the terms 'risk', 'danger', and 'safety' – often used synonymously in the literature on risk. Luhmann (1993) provided a helpful discussion of this difference. According to Luhmann, a risk is involved if the uncertainty of future loss can be attributed to a decision (thus, the risk is contained in the choice). In contrast, where the possible loss is considered to occur externally, that is, attributed to the environment, we speak of danger. In this sense, older societies were preoccupied with dangers, whereas contemporary society concerns itself with risk. 'Danger' also implies limited control over the outcome, and is often applied in an experiential sense. That is, one can be 'in danger', although the specific dangers closely represent hazards.

The terms 'risk' and 'safety' are also closely linked. Safety can be considered as the control of conditions that potentially lead to loss (Haddock, 1993), and as such, the antithesis of risk. To feel 'safe' is to feel free from danger or threats to personal security or well-being. Yet Wildavsky (1988, p. 5) argued that there could be no safety without risk because, "for the most part, safety and risk coexist in the same objects and practices". This apparent paradox is part of an argument that challenges society's current emphasis on risk aversion, a set of claims that will be explored in Section 2.3 below.

2.2.3 Summary

In a semantic sense, risk is a term used to convey the threat of an undesirable outcome. Risk is present (in a variety of contexts) when outcomes are uncertain, when particular outcomes are favoured over others, and a degree of choice is available. Although risk is variously defined, common dimensions are evident in most applications of the concept. Whether risk is present, how it is assessed, what its implications are, and who is responsible for it are questions of a political and ethical nature.

As will become clear in following section, the overwhelming emphasis in some Western societies is on risk avoidance, as part of a search for safety (Wildavsky, 1988). Section 2.3 investigates the significance now associated with this concept. Risk has become more than a word describing potential loss; it has attained a paradigmatic status in many Western societies.

2.3 A society preoccupied with risk and safety

The evaluation of everything from the perspective of safety is a defining characteristic of contemporary society (Furedi, 1997, p. 4).

2.3.1 Introduction

Risk is ubiquitous. A concept underlying virtually any activity containing an uncertain outcome, it arises in nearly all aspects of life. Asking someone for a date, accepting a challenging work assignment, having a baby, writing a thesis, raising a sensitive issue with a spouse or a friend, all involve uncertain outcomes, and present some level of risk (Roberts, 1994).

Although it may have been undefined, risk has always been present in human experience. Elms (1998a, p. 2) noted that “for as long as we have been able to look into the future and wonder and worry, we have been aware of hazards and of what could go wrong”. How different societies have reacted to this awareness is what has changed over time. For some, the future was determined by the will of the gods, while others attempted to predict what could happen and took action accordingly. “People consulted fortune tellers, oracles, prophets or the *I Ching*, but they would also be prudent and wear armour, build their house upon rock, or lay up stores against the future” (Elms, 1998a, p. 2). This section discusses the claim of several sociologists that current Western societies are focused on risk and safety in ways never previously experienced. Evidence for this claim is presented and discussed, as are the consequences of a risk-oriented society.

It should be emphasised that the tendency to view technological progress and social outcomes from the perspective of risk is not necessarily applicable to all cultures and societies, but is confined almost exclusively to the Western democracies. For instance, Hunnius and Kliemt (1993, p. 223) claimed that “scholars [in the former German Democratic Republic] were not allowed to gather data on ... environmental pollution, public health, or the public’s assessment of and attitudes to specific technologies”. In addition, Goszczynska, Tyszka, and Slovic, 1991, p. 81) claimed that, “in communist countries, information on risks and accidents has been strictly censored”. The absence of debate about risk issues, and the apparent lack of choice concerning their management, means that the risk society discussion is largely confined to the Western democracies, no doubt related to their strong emphasis on

individualism, and the relative control those governments have gained over basic lifestyle features such as safe drinking water, hygiene standards, and vaccination.

2.3.2 The origins and cultural evolution of risk

It is instructive in this discussion of risk, to consider first the origins and precursors of the concept. Parallels can be observed in the roles of different social constructs.

Primitive societies used misfortune and the resultant blame for political purposes, to increase group solidarity and survival of the community (Douglas, 1992; Luhmann, 1993; Wiedemann, 1993). According to Douglas (1992, p. 6):

The stronger the solidarity of a community, the more readily will natural disasters be coded as signs of reprehensible behaviour.... Danger is defined to protect the public good and the incidence of blame is a by-product of arrangements for persuading fellow members to contribute to it.

Wiedemann (1993) also drew comparisons between different historical epochs and examined how each has achieved social control mechanisms. Wiedemann explored the three concepts of 'taboo', 'sin', and 'risk' and argued that each achieved social control through guiding human conduct. In the case of taboo, the hazard is the harmful consequence certain to befall the offender who breaks the taboo. Sins contravene the will of God, or some divine order, and will bring punishment upon the sinner. Risk is also concerned with potential harm: "Like taboo and sin, the risk concept motivates the individual to adopt a form of behaviour or action to minimize the hazard" (Wiedemann, 1993, p. 44). While Wiedemann recognised the social control function of risk, sin, and taboo as being similar, he also identified differences, the most important of which is the relativity of risk. Sin and taboo systems are far less tolerant of deviancy, whereas "what is a great risk to one man may be none at all to another" (Wiedemann, 1993, p. 45). Wiedemann traced the emergence of a risk consciousness to the Enlightenment, when many common dangers were systematically overcome by technological explanations. At a similar time, the theory of probability was synthesised, a concept essential to the calculation of risk.

In most previous societies, a concept such as risk was unnecessary because risk only has meaning in a society that is oriented towards the future, and a future that is open. The idea of risk is linked to the aspiration to control the future and, as such, defines the boundary

separating modern times and the past (Bernstein, 1996; Giddens, 1998). The attempts to control risk released Western society from a belief in a predetermined future and that humans were passive before nature. Lee (1981) described this as a profound philosophical change during which fatalism was discredited and religion radically altered. Explanations for catastrophes are now linked to antecedent events, rather than fate or the will of God. “Responsibility, if not omniscience, has been transferred to the government and to scientists or other experts” (Lee, 1981, p.6). Yet, ironically, it may have been the success of science and technology that ultimately contributed to the emergence of a ‘risk society’, characterised by doubt and uncertainty. According to Beck (1992, 1996, 1998) and Giddens (1994, 1998), science information is increasingly uncertain, and many new technologies, rather than creating a greater sense of security, have had the opposite effect through their contribution to a new set of risks.

2.3.3 A new modernity: The emergence of a risk society

Risks and hazards in the 21st century are very different from the risks and hazards of centuries past. Since the middle of the twentieth century, risk has achieved global proportions, and extends well beyond small localities or political borders (Beck, 1992; Giddens, 1994). Social class, gender, or residential locality no longer protect people completely from the new set of human-induced hazards and risks such as acid rain, global warming, or the possibility of a nuclear winter. Unlike the risks and hazards associated with traditional modernity, the hazards of the risk society are far less constrained by geography and time, and may even pose significant threats to future generations.

Some authors have observed that we live in more dangerous times than those of earlier generations (Rohrman, 1996; Slovic, et al., 1981), yet others have argued that it is the nature, significance, and origin of risks and dangers that have altered (Beck, 1998; Dwyer, 1991; Franklin, 1998; Giddens, 1994, 1998; Lash et al., 1996; Lübke, 1993). Giddens (1998), for instance, suggested that, unlike previous societies, the risks created by humans are equal or more threatening than those that come from the outside (natural sources). Environmental risk, a subject not even considered until a few decades ago, now occupies the attention of many Western societies and their political leaders. Environmental risk is a useful example of how the scope of risk has changed since the advent of industry. Although benefits may accrue to a

risk-imposing group, other groups (perhaps covering a very wide, even global area) suffer exposure to impacts (Adams, 1995).

In a very different context, the freedoms associated with living in a post-industrial society also represent a number of social risks and hazards not previously present. These new risks include, for example, deciding if, when, and who to marry; whether or not to reveal sexual orientation; and which occupation to pursue. Certainties associated with class, gender, and social mobility in general are absent today, a situation which contributes to an emphasis on uncertainty and risk. Beck (1992) has identified these social changes as part of a new phase of modernity, an epoch he has termed the 'risk society'.

The system of coordinates in which life and thinking are fastened in industrial modernity – the axes of gender, family and occupation, the belief in science and progress – begins to shake, and a new twilight of opportunities and hazards comes into existence – the contours of the risk society (Beck, 1992, p. 15).

In the risk society, a new generation of risks is born, as humans are confronted with the consequences of their actions (Franklin, 1998).

Ulrich Beck's (1992) theory of the risk society examines the changing relationship between social agents and social structure, and suggests that, in a significant way, people today are more individualistic than in any previous social arrangement. The risk society thesis assumes that traditional certainties can no longer be taken for granted, creating new risks for individuals to negotiate. Beck (1992, p. 3) contended that society has moved beyond modernity to a "reflexive modernity" in which individuals, free from the constraints of social structures, "reflexively construct their own biographies". For Beck (1996), the new modernity is reflexive as it draws on traditional modernity for definition, and is concerned with its unintended consequences, such as the hazards now emerging out of science and technology.

Lash et al. (1996), following Beck (1992), argued that risk and individualisation have been closely linked since the origins of modern society. For these authors, it is not the emergence of new or an increased number of dangers that has led to heightened risk consciousness, rather it has resulted from the setting free "of agents from normative institutional constraints" (Lash et al., 1996, p. 13). These authors observed that, in the process of modernisation, "more and more areas of life... have been taken from the sphere of the natural and inevitable and made

the objects of choice and responsibility” (Lash et al., 1996, p. 12). In ‘simple’ modernity, few areas of life were constructed in terms of choice and, hence, remained unaffected by risk.

Giddens (1994, 1998) also recognised the new significance of risk in the context of a society in which traditional norms are being eroded. For Giddens (1998), the risk society represents a diversity of possible futures, less defined by nature or tradition. To this extent, Giddens described risk society as comprising ‘the end of nature’ and ‘the end of tradition’. While past societies worried about what nature could do to *them*, a transition has occurred where many current societies worry about what *they* have done to nature. Similarly, Giddens has argued that the risk society exists ‘after tradition’. Where previous communities lived in a world dictated by fate and prescription, modern societies operate in an environment of choice, which inevitably means that individuals have to confront futures much more open than in the past, with all the risks this brings (Giddens, 1998).

Luhmann (1993), too, has illustrated the links between uncertainty and the reduced role of nature. According to Luhmann, the idea that nature can limit the future has all but been abandoned, with technology taking its place. If humans have greater influence over their individual futures, ultimately more is at stake in the choices that are made, thereby increasing the perception of risk. The basis of this argument is that, because what we do on the planet is likely to affect us (and others, including future generations), this attaches greater meaning, significance, and risk to decisions. In previous societies, in which a strong dependence on the supernatural prevailed, the future may have been feared or welcomed, but individuals’ perceptions of how they might personally affect that future was limited. Unwelcome events, such as floods, lightning, or disease, were interpreted as resulting from the displeasure of God or the breaking of some taboo, rather than events that could be predicted, or the effects of which could be managed. MacCrimmon and Wehrung (1986) have also suggested that primitive people had little control over their environments and faced many risks in everyday activities such as obtaining food and shelter. Pre-figuring the arguments of Beck and Giddens, MacCrimmon and Wehrung (1986, p. 4) claimed that, “while modern man has gained some control over his environment and may experience fewer risks in acquiring the basic necessities, a more complex environment has brought new risks”. Global warming and an associated rise in sea level is probably the most obvious example of how humans may have contributed (albeit in a collective and unconscious fashion) to what may be the greatest risk to life on earth.

Furedi (1997), following Beck (1992), suggested that modern society has established safety as a fundamental value. According to Furedi, risk is more prevalent in modern society because of a heightened sense of insecurity resulting from changes to social cohesion. Furedi cites the breakdown of social collectives, including the family, and economic conditions that create an insecure work environment, as features contributing to a 'culture of fear', in which people are preoccupied with managing and, ultimately, minimising risk. This preoccupation extends to include situations that were previously never considered unsafe. Referring to a recent regulation preventing him from examining a female patient alone, Derbyshire (1997, p. 823) concurred with Furedi and lamented the influx of safety rules on the basis that they may promote distrust and even undermine desired outcomes. He illustrated the proposition that his own profession had become risk and safety obsessed with the empirical observation that in the five years between 1967 and 1972, 'risk' was cited approximately 1,000 times in British medical journals; in the years between 1992 and 1997 80,000 references to the concept were observed (Derbyshire, 1997). Although this appears to be strong evidence of an emphasis on risk in the medical profession, Derbyshire does not specify how this analysis was conducted, leaving open the possibility that there has also been a significant increase in the number of, or contributions to, medical journals in Britain.

Furedi (1997) observed that the problem of insecurity is exacerbated by the breakdown of communities and the solidarity traditionally provided by religion, geographical immobility, and small community localities. He argued that the relative weakness of institutions which previously linked individuals, contributes to a heightened sense of isolation and, consequently, a feeling of vulnerability. According to Furedi (1997, p. 67), the current Western emphasis on health, safety, and security are the "products" of social isolation. Further, like Douglas (1992) and Wiedemann (1993), Furedi argued that the emphasis on safety is a mechanism for social control, providing a provisional solution to the problem of social cohesion. According to Furedi, in some respects, the traditional morals of religion may have been replaced by the morality of safety. In this sense, social norms are now transmitted through the discourse of risk. Hence, the "dividing line today is not between practices that are normal or abnormal, or moral or immoral, but between [for example] sex that is safe and sex that is unsafe" (Furedi, 1997, p. 151). In such a society, to ignore safety advice is "to transgress the new moral consensus" (Furedi, 1997, p. 4). Luhmann (1993, p. 10) also emphasised the current moral power of the risk concept. Further extending the religious

analogy, he described the preoccupation with risk calculation as “the secular counterpart to a repentance-minimization program”.

That some Western societies exhibit a new preoccupation with risk was also observed by Douglas (1992), who explained the phenomenon in terms of the movement toward a global society. Recent economic imperatives have drawn individuals away from local communities into regional, national and international markets. According to Douglas, liberation from small community constraints can result in the loss of traditional protections, making individuals vulnerable. Similarly, Dwyer (1991, p. 27), in his analysis of life and death at work, contended that the emergence of industrial society dismantled patterns of protection traditionally afforded through “community networks, family, ties to the land, and the guild system that were part of agricultural and craft traditions”. This exposure and vulnerability loosely equates to a feeling of uncertainty or the perception of risk as proposed by Beck (1992) and Giddens (1994, 1998). Douglas (1992) and Dwyer (1991) both implied that there has been a cultural shift towards concern for fairness and the development of political pressure to avoid exposing people to risk. Such political pressure may then result in the types of health, safety and accident legislation to be discussed in Section 2.4.3.1, which then affects management perceptions of risk (discussed in Chapter 7).

According to Douglas (1992), the concept of risk is well suited to a culture that supports a modern industrial society. Of the different blaming systems evident in tribal societies, Douglas (1992, p. 15-16) argued that “the one we are in now is almost ready to treat every death as chargeable to someone’s account, every accident as caused by someone’s criminal negligence, every sickness a threatened prosecution”. In this sense, Douglas has identified one of the consequences of a risk-oriented society, in which the identification and punishment of transgressors is part of the quest for safety.

The theses of Beck, Giddens, Furedi and others are compelling, yet may be criticised on the basis that there is little research evidence to support them. For the most part, these authors operate at the level of grand theory, and few links are made to how risk is experienced by individuals or social groups. Several authors emphasise the breakdown of traditional institutions (such as the family, church, and tribe) as critical in exposing the individual to uncertainty, risk, and the responsibility for influencing life outcomes. While there is clear evidence for less prescribed social roles and greater opportunities for social mobility, the ‘risk

society' and 'culture of fear' theses do not acknowledge the power of modern institutions, such as commerce and the media, to shape and direct individual choices. These institutions, it can be argued, also create a degree of social conformity, albeit based on different values and principles than those of traditional modernity. Notwithstanding these weaknesses, the risk society thesis may have application to the present work, in understanding risk and risk management in natural resource recreation and tourism settings. Section 2.3.4 explores possible evidence for the proposed social preoccupation with risk and safety through looking at some of the consequences of a risk-oriented society.

2.3.4 Evidence of a risk-oriented society: The compelling need to warn

The previous section established a claim that a new world-view of risk consciousness has a significant influence on many aspects of social life. According to some authors, Western societies have become so risk averse that opportunities for exploration and discovery (at both the level of the individual and the wider community) are passed up in favour of conservative and safety conscious alternatives (Carpenter, 1995; Furedi, 1997). If this observation is accurate, there are obvious implications for participation in, and management of, outdoor recreation and tourism, a subject of discussion in Chapter 4. The current section considers some of the available evidence for the prominence of a concern for safety.

2.3.4.1 Marketing safety and risk

Trends in the marketing of products and services may be a useful indicator of the significance of risk and safety in some aspects of society. Those who create advertisements, for instance, are usually familiar with what the public wants to see and hear about products. Equally, the manufacturers responsible for the safety of these products recognise the modern consequences of poor safety performance.

An appreciation of the current 'risk culture' is not restricted to compliance with an increasing number of, and scope for, safety regulations, but is also about meeting people's expectations and gaining market advantage (Taig, 1998). Safety, and the management of risks, has become big business, and a dimension of marketing household appliances, cars, and tourism destinations. Taig (1998, p. 9) argued that, while safety and health have always been factors present in consumer decision-making, never before have they commanded such priority in

consumers' choices. The motor vehicle industry provides examples of this in sales promotions where features such as 'ABS brakes', 'side intrusion bars', and 'driver / passenger airbags' are prominent. In New Zealand, these features are often more evident in the advertising than the individual specifications of the vehicle's performance, suggesting that safety is a discourse that is widely understood and agreed upon. Ironically, the increased emphasis on the safety features of motor vehicles comes at a time when the number of fatalities on New Zealand roads has reached a 30 year low (Statistics New Zealand, 2000). Notwithstanding the likelihood that a reduction in road deaths is influenced by factors other than the safety features of the vehicles (such as driver education, improvements in road design, the price of oil influencing the number of vehicles on the road, and the number of trips taken), consumers appear to demand higher safety protections than in the past.

The health and insurance sectors are also major proponents of a developing concern for safety and risk reduction. The public appears increasingly interested in both conventional medical technology and alternative means to reduce their chances of developing life-threatening diseases. The media regularly report new evidence that certain products and activities either increase or decrease the risk of getting cancer, Alzheimer's, diabetes, heart disease, or other ailments. The evidence is sometimes contradictory, but nonetheless influential, readily absorbed by the public, as well as entrepreneurial manufacturers who recognise that consumer choices will be affected by the perceived health and safety benefits of their products. Some recent examples of products and activities subject to contrasting expert opinion include the consumption of alcohol, red meat, aspirin, and undertaking vigorous exercise. Giddens (1998) argued that these contradictory opinions of science, now in the public domain, contribute to uncertainty as individuals are faced with making decisions about what is safe or unsafe.

In seeking some empirical evidence of what appears to be a demand for safety, Furedi (1997) observed that, in the United Kingdom, citizens' concerns with the dangers of drinking water from the tap have resulted in sales of bottled water doubling between 1990 and 1995. Further, Furedi reported that the average household expenditure on insurance doubled during the 1990s. The consumer response to perceived risk in these cases is clear, although the origins of the behaviour are less certain. That is, rather than perceiving a risk, it is possible that people assume there must be risk since there is insurance for it, or there is a less risky product

available. To this extent, the arguments of Furedi and others do not necessarily imply an increase in the social perception of risk, but do suggest a commitment to the value of safety.

2.3.4.2 Proliferation of warnings

Further evidence of the community's preoccupation with health, safety and risk is illustrated by the proliferation of warnings accompanying products, services, and experiences (Edworthy, Stanton, & Hellier, 1995; Friedmann, 1988; King, 1997; Meehan, 1995; "Uncommon sense", 1998). From the traditional warning 'slippery when wet', to more specialised and detailed appeals for caution, manufacturers and service providers are increasingly aware of the legal and commercial consequences of faulty or dangerous products. Observing a "bombardment" of warnings in everyday life, Edworthy et al. (1995, p. 2147) anticipated that "over-warning" could soon be a problem, especially "given the product manufacturer's desire to protect him or herself from expensive litigation".

Risk awareness appears to take on absurd dimensions in the United States where a recent article in *Time International* bemoaned the apparent loss of consumer discernment. Among the warnings observed by the author of the article were a chainsaw instruction manual warning: "Do not attempt to stop chain with your hands", and on a brand of household iron: "Do not iron clothes on body" ("Uncommon sense", 1998, p. 83). Similarly, another columnist records her impressions of the warnings and cautions included in the instructions for a toaster purchased in the United States: "Do not use appliance except as intended", and "Do not place any part of this toaster under water or other liquid" are among those she mentions (King, 1997, p. 84). That it was considered necessary to identify these inappropriate uses of a household toaster illustrates the extent to which some manufacturers fear legal or commercial repercussions following the misuse of their products. According to McCarthy et al. (1995), the product safety standards used in the United States, and the safety literature in general, has taken a 'warn about every hazard guideline', rather than leave correct usage in the hands of the responsible consumer. Adopting a slightly different perspective, Wogalter and Laughery (1996) partially justified the proliferation of warnings by claiming that in today's high technology society, warnings have become more necessary: "Products, equipment, tools, and the environment have become more complex; how they work, their composition, and their inherent hazards are frequently not obvious" (1996, p. 33).

The willingness of manufacturers and other producers to warn consumers of the possible dangers inherent in the use of their products may have little to do with concern for consumer welfare. Jungermann, Schütz and Thüring (1998), for instance, contended that information given to consumers of pharmaceutical drugs is less about patient safety than it is about the manufacturer's legal risk. From their analysis of patient package inserts (PPIs) accompanying medicines, the authors concluded that:

Little effort is spent in industry on optimizing the communication with respect to the potential reader's comprehension and utilization of the information. The reason might be that PPIs are primarily written to protect the producer against lawsuits, not to guarantee understanding and proper use by the patient (Jungermann et al., 1998, p. 217).

In many parts of the Western world there is strong legislation in place to protect citizens and, in some countries, to ensure litigation against those whose products or services are found to be unsafe or dangerous through negligence (Glasse, 1998; Hanna, 1991; Taig, 1998; Wildavsky, 1988). This may have contributed to a recent increase in people's expectation of protection, feelings of entitlement, and awareness of their rights (Brown, 1987; Fischhoff, 1985; Taig, 1998), and an associated rise in the cost of compensation, particularly in highly litigious societies (Hanna, 1991). Slovic et al. (1981) also observed an increasing pressure on the designers and regulators of hazardous enterprises to inform people about risks to which they may be exposed. It is possible that one result of a high level of paternalism may contribute to a culture of expectation of others taking responsibility for risk and safety, and one in which risk tolerance is low.

2.3.5 Interim summary

At a time when life expectancies and standards of living have never been better, people in Western society appear increasingly preoccupied with risk (Dwyer, 1991; Furedi, 1997; Hanna, 1991; Lübke, 1993; Slovic, 1999; Wildavsky, 1988; Wren, 1997). This apparent contradiction has been explained by various sociologists who argue that risk and safety have attained status through the breakdown of social institutions and the rise of individualism. An increasingly individualised society means that social members have a much greater role in constructing their own life outcomes. In the new reflexive modernity, the

opportunities, hazards and ambivalences of biography which once could be coped with in the family unit, in the village community, and by recourse to the social class or group, increasingly have to be grasped, interpreted and dealt with by the individual alone (Beck, 1996, p. 30).

If Beck's analysis is accepted, it is also reasonable to suggest that, in this individuated milieu, people will feel more responsible and accountable for their life outcomes, and yet less certain about their futures. A preoccupation with risk and safety may also be related to increased expectations of life chances, and demands for individual rights, entitlements, blame, and compensation. If, as several authors suggest, fewer people interpret life's outcomes (especially negative ones) as fate, it seems plausible that they will emphasise things that represent obstacles to health, wealth, and safety. Furthermore, in societies with a strong communal ethos, the continued existence of the community might 'justify' some individual loss. To take an extreme example, the loss of individuals during a period of famine helps sustain the community by reducing the overall demand for resources. In a society where individualism is the norm, however, the unit of survival becomes the individual and, therefore, levels of risk that threaten the well-being of the individual are no longer deemed 'acceptable'.

The argument for a risk conscious society premised on the notion of growing individual responsibility is a compelling one. Perceptions of responsibility and choice may well lead to a sense of uncertainty, but the relationship with individualism is less clear. Although paradoxical, it is also possible to argue that increased risk perceptions among members of society will mobilise people into collectivities, such as those groups concerned about the risks associated with environmental pollution, genetically modified food, and the effects of telecommunication towers in residential areas. While a risk and safety conscious society is, in part, formed by increased individual responsibility, it is also possible that the resultant risk perception will create collective outcomes, rather than erode them. That is, if individuals' lives are more focused on risk, one might expect this to strengthen links between individuals. To a certain extent, this is not incompatible with what Furedi (1997) referred to as the 'new moral consensus' of safety, yet he (and others) also argued that such 'consensus' is only provisional, presumably because the modern institutions upon which it is based are more transient and fragile than in the past.

The risk society thesis is also based on the notion that people today must construct their own biographies from a plurality of possible futures. This implies the absence of institutional or other influences on life outcomes. While it is apparent that modern social arrangements allow individuals to control aspects of their own futures, biographies cannot be constructed without

the support and cooperation of other people and organisations. Today's society is one of choices, the outcomes of which individuals will bear, but because these outcomes are also reliant on other people, some of the control is relinquished. Hence an implicit social contract may operate where individuals relinquish some control of their lives, and in return have high expectations of their keepers.

The phenomenon of an increasing individualism coupled with a reduced willingness to accept some risks appears paradoxical, yet can be understood in terms of the likely contractual expectations held by members of society. While it can be argued that, in a 'pure' individualised society, no one member would expect anything from any other, in reality individuals are dependent on others for specialised knowledge, including information about risk, in order that decisions can be made. Individualism may be about freedom and choice, but choices cannot be made, nor depended upon, if trustworthy information is not available. Individualism, therefore, requires a social world in which there is a social contract binding members to supply information. Hence, there is no real paradox between increasing individualism and readiness to blame others for misfortune, but members of many Western societies do demand access to accurate information relating to decisions they will make affecting their safety.

The risk society is characterised by freedom and choice over a number of life spheres, previously highly prescribed. Sociological explanations for the rise of risk focus on the fragmentation of collective values, and the subsequent emphasis on individualism. One consequence of this is increased uncertainty, a key determinant of risk. With individualism comes an associated demand for accountability and responsibility as individuals face potentially significant losses (social, physical, and financial) as a result of their own decisions and those they 'delegate' to others. In response to increasing uncertainty, demand for accountability, and reduced risk tolerance, a new science in risk assessment and risk management has emerged. Where prayer, ritual, and superstition once stood, now risk management and hazard mitigation strategies prevail.

2.4 Controlling risk: Management, legislation, and acceptance

Whatever we do, there is a chance that something will go wrong. But whereas at one time people regarded the future as purely a matter of chance, known only to the gods, now we can work with uncertainty. We can manage risk, and manage it rationally (Elms, 1998a, p. 1).

2.4.1 Introduction

Given the apparent importance of risk in some Western societies, it is inevitable that considerable effort should go into controlling or limiting exposure to it. Societies which seek to reduce their exposure to negative outcomes will attempt to develop systems and processes for achieving this aim. Now common in the discourse of Western communities, the term 'risk management' is evident in areas as diverse as outdoor recreation and education, financial advising, engineering, and politics. Risk management uses the tools of technical science, involving application of mathematical probability, to maximise gains and reduce exposure to loss. This section begins with an outline of the basic elements of, and justification for, the risk management process. The legislative context for risk management is then described, followed by a discussion on risk acceptability.

2.4.2 Risk management

Risk management is an emerging management science that first attracted the interest of academics in the 1970s (Rejda, 1998; Sutton, 1989). Since that time, the demand for the services of safety professionals in countries such as New Zealand, Australia, Canada, the United States, Great Britain, and France has grown exponentially (Dwyer, 1991). This demand corresponds to increasing public concern for risk and safety in a variety of contexts (including personal, industrial, environmental, and financial), and the development of health and safety legislation throughout the Western world (refer to Section 2.4.3.1).

The essence of risk management revolves around the principles of identifying, assessing, and removing (or reducing) risks to the individual or agency perceived to be under threat (AS/NZS, 1999; Bamford, 1987; Batt, 1996; Bernstein, 1996; Dierenfeld-Michael, 1989; Fullagar, 1996; Gough, 1998a; Hamilton-Smith, 1996; Keey, 1998; Leiss & Chociolko, 1994; Rejda, 1998). Such a systematic approach to risk management has only been possible since

the development of probability theory (Bernstein, 1996; Elms, 1998a; Wiedemann, 1993). For instance, it was necessary to understand several dimensions of probability in order to gain predictive power and, thus, reduce uncertainty. In particular, understanding the structural elements of any given situation is critical to the rational management of risk. That is, the built-in properties of any situation, such as the two sides of a coin, must be known before the likelihood of separate outcomes can be estimated. Also critical to reducing uncertainty through prediction is knowledge of the frequency of any given event (such as lightning, flood, disease, or a coin landing 'heads up'), which necessitates the ability to count and record. Comprehension of these elements allowed the likelihood of various events (and, therefore, the risk exposure) to be estimated (Elms, 1998a), and created the potential for a massive insurance industry.

Today, the most common form of risk management is insurance (Rejda, 1998), a custom that is essentially a risk purchasing or risk leasing arrangement between two parties. Many individuals now pay insurers to accept the financial risks associated with property, death, health, and employment. Until the late 18th century, however, insurance was generally considered immoral, and more a gamble than a rational way of dealing with risks (Wiedemann, 1993). Wiedemann implied that the immorality of insurance lay in its similarity to gambling, yet it seems just as possible that its basis was in the idea that insurance effectively reduced risk and ultimately sheltered people from some of the consequences of their actions.

Beyond the insurance industry, the risk management process is applied to a plethora of situations in which undesired or unexpected outcomes could be significant. Formalised risk management has emerged as a strategic process undertaken by a range of groups and organisations with the intention of protecting against threats that are considered to represent unacceptable or unsustainable losses (Elms, 1998a).

2.4.3 The legal context for risk management

Another important aspect of controlling exposure to risks, and apportioning responsibility *for* risk, is the legislative context. Societies create laws that bind their citizens to act in ways that protect each society's interests. As in other spheres of life, laws governing risk have been developed in most parts of the world in the form of health and safety legislation. This section

provides a brief overview and discussion of the development of health and safety legislation. In Chapter 4, specific consideration is given to the legislation affecting the management of natural resource recreation and tourism.

2.4.3.1 Health and safety legislation

The most obvious example of health and safety legislation is that which protects workers from harm while at work. Dwyer (1991) reviewed much of the history of such legislation in Western economies, and concluded that the adoption of laws strongly reflects political and economic imperatives, and not simply a direct concern for the well being of employees. According to Dwyer (1991, p. 67), legislative changes occur in response to “social movements, satisfying political compromises..., suppressing technical accident causes, or simply providing a market for new prevention techniques”. Dwyer (1991, p. 50) identified the phrase “safety pays big dividends” as illustrative of the motives of many industrial and manufacturing employers who adopt safer practices and techniques for their workers. Economic interests can be protected through reducing the costs of disasters such as those that were common in factories and mines in the early to mid twentieth century (Dwyer, 1991).

Impetus for safer work practices has also been political. Social movements in the 1960s and 1970s forced industrial safety out of a hitherto private and invisible realm into the public arena, revealing safety and compensation systems as seriously deficient (Dwyer 1991). By the end of the 1970s, the social demand for improvements to workplace safety (in combination with economic and other political motives) had led many Western democracies to re-address health and safety at work (Dwyer, 1991; Wren, 1997). The common outcome for many of these societies was to increase the state’s role as a creator and administrator of standards.

Like other Western nations in the late 1960s and early 1970s, New Zealand society demanded improvements to injury prevention and compensation systems. Rather than address the legislation governing workplace practice, however, a different path was adopted. In 1972, no-fault legislation was passed under the Accident Compensation Act, creating a system that provided a universal, state-operated scheme to compensate all victims of accidents, both work and non-work related. According to Dwyer (1991) this system represented an acknowledgement that accidents and injuries are produced by social processes, rather than

directly attributable to individuals who suffer their consequences. As such, the responsibility for the production of accidents becomes that of the society as a whole (Dwyer, 1991).

Developments in health and safety (injury prevention *vis a vis* compensation) legislation in New Zealand took longer to emerge than in other industrially advanced countries. In part, this may have been a consequence of a robust compensation system in place since 1974. To a degree, this system may have hindered injury prevention legislation because of the comprehensive compensation available giving employers few economic incentives to be proactive about health and safety at work (Wren, 1997). Wren claimed that when change did occur in New Zealand, it was driven by demands from several sectors, including trade unions (who sought extensions to workers' rights), employers (who were frustrated by perceived duplication and conflict among existing regulations), and Occupational Safety and Health Unit (OSH) officials (who saw merit in updating the legislation in line with overseas developments). While not all interests evident in these demands were satisfied, this pressure eventually led to the passing of the Health and Safety in Employment Act (1992).

The development of legislation that addressed the health and safety of workers and the general public affected by work, had several important implications for recreation and tourism (Davidson, 1996; Heilbronn, 1992; Hughes-Johnson, 1996; Martin, 2000). These are discussed in Chapter 7. At a broader level, the legislative changes (both in New Zealand and elsewhere) reflected a growing public awareness of risks, rights, and responsibilities (Brown, 1987; Taig, 1998). A tension is also evident between growing individual responsibility (such as economic independence for health, education, and retirement), and increased expectation of organisational accountability (Hanna, 1991; Smith, 1998). The New Zealand health and safety legislation allows for these constructs to coexist.

2.4.4 Acceptance of, and responsibility for, risk

Two final dimensions are important to consider in this introductory chapter on risk. Given that risk is about potential loss, it is necessary to examine the extent to which those exposed accept the potential losses, and who might be expected to take responsibility for any negative outcomes.

Various authors have argued that risks taken voluntarily, or where some outcomes are under personal control, are more socially acceptable than those to which people are exposed without knowledge (Bean, 1989; Gregory et al., 1997; Horswill & McKenna 1999; Singer & Endreny, 1993). Leiss and Chociolko (1994) explained the public's concern about risks (even when experts rate the technical risk as low) in terms of voluntariness and compensation. According to these authors, people fear "falling victim unfairly to uncompensated loss" (Leiss & Chociolko, 1994, p. 4). To accept risk voluntarily implies some control over, and responsibility for, the outcome. Conversely, the involuntary exposure to risk carries with it serious repercussions concerning moral and legal responsibilities, and the question of compensation for any actual damage, loss, or injury resulting from exposure.

Leiss and Chociolko (1994, pp. 33-34) proposed three conditions for judging risk as acceptable: i) the level of risk should be below some threshold; ii) benefits must appear to outweigh risks; and iii) there should be no unjust distribution of risks and benefits. These specifications reflect the social values of many Western democracies, yet can be interpreted as somewhat idealistic. For instance, it is unclear how risk thresholds are decided, or whether risks avoided are greater than new risks generated through exposure. Cost – benefit calculations are also fraught, especially given that these will often accrue differentially, and because a benefit to one party may represent a cost to another. Further, Leiss and Chociolko argued that the ultimate objective is to achieve a 'reasonable' societal consensus on how to assess and manage risks. Such a consensus is likely to be problematic given that risk is a highly politicised construct. It may be as fraught as obliterating 'crime' (constantly redefined), or agreeing once and for all, on the 'best' policies of governance. Where there is risk, there are choices; and where there is choice, there is interest. Interest is the source of all politics.

Unlike the calculation of risk itself, risk acceptability is based, not on probability, but on moral and political considerations (Douglas & Wildavsky, 1982). Sjöberg (1987) also argued that, while conditions for acceptability can be suggested, there is no such thing as an absolute level of acceptability. This is largely because it is typically impossible to reach agreement on what the risk is, the likelihood of its occurrence, and the magnitude of its consequences. Furthermore, Gough (1998b) suggested that a risk can only be deemed 'acceptable' by the risk *taker* and is, therefore, related to perceived risk. To this extent, "the concept of

acceptable risk requires that people are aware of the risk, that they understand the risk, and that its acceptance is consistent with their personal value system” (Gough, 1998b, p. 26).

Another important feature of the nature of any particular risk is the degree to which it is perceived to be within the control of the people it affects. Horswill and McKenna (1999) investigated the effect of perceived control on risk acceptance by assigning subjects in an experimental setting to the respective roles of vehicle driver and passenger. These researchers found that “those who were told to imagine they were driving chose significantly faster speeds than did those who were told to imagine they were passengers” (Horswill & McKenna 1999, p. 377). This implies that those who perceive greater control (ie., the drivers) accept a higher level of risk than those who perceive less control (ie., the passengers).

In addition to ‘voluntariness’ and ‘controllability’, Jungermann and Slovic (1993) add ‘accountability’ as an important feature affecting individual risk acceptance. The nature of any given risk has an important effect on how people perceive responsibility for it. Jungermann and Slovic (1993, p. 94) claimed that “technologies for which we can find the guilty parties... excite our indignation much more than natural risks, which we tend to accept as inevitable”. Similarly, Lee (1981, p. 13) noted that when the cause is human and the outcome adverse, “we tend to attribute responsibility, and hence blame, proportionately to the various agents”. Much stronger blame is attributed if the risks have been imposed, rather than accepted voluntarily.

Responsibility for risk, or the adverse consequences of risky actions, often falls on governments or other institutions, including those in the private sector. For instance, insurance companies accept some responsibility for risks (such as natural and accidental death, damage to property, and loss of income) in return for the payment of regular premiums. Society also assumes a degree of responsibility for the risks taken by its members in a variety of other ways. A publicly funded health system, for instance, deals with some of the consequences of smoking cigarettes, a behaviour known to increase the risk of several cancers and heart disease. The cost of this risk is borne by society as a whole, although some attempt at redistribution is effected through the imposition of targeted taxes on cigarettes and tobacco. The smokers themselves therefore assume a greater proportion of the financial risk.

A common indicator of responsibility is the voluntariness of the risk exposure (Laughery, Lovvoll, & Wogalter, 1995; Leiss & Chociolko, 1994; Singer & Endreny, 1993). Individuals may be expected to accept responsibility for risks to which they are voluntarily exposed, while others may be held accountable when risk exposure is involuntary. Using this framework, it might, therefore, seem reasonable to hold individuals accountable for the effects of smoking cigarettes, driving too fast, or contracting AIDS through unprotected sex. It is less likely that, as a society, we would expect the same risk acceptance for those hotel employees exposed to passive smoking, or patients contracting AIDS through blood transfusions.

There are, naturally, several factors that confound the voluntary / involuntary dichotomy concerning responsibility for risk. For instance, it can be difficult to determine the extent to which individuals are aware of risks associated with actions taken voluntarily. Prior to the 1960s, for example, smoking cigarettes was not considered a serious health risk, and was even recommended by some doctors as a form of relaxation (Giddens, 1994). Furthermore, the addictive nature of nicotine contained in tobacco smoke raises the question of voluntary control, and, therefore, responsibility for one's actions. Exposure to risk, and the extent to which individuals or groups accept responsibility for risk, is also highly dependent on effective communication, a subject of interest in Chapter 3.

2.5 Chapter summary and conclusions

This chapter has presented a broad discussion on the nature and significance of risk in Western democratic societies. A review of the literature suggests that risk is a relatively modern concept, only applicable to societies of the last few centuries. Risk and its management is now prominent in a wide variety of contexts including technical and scientific, financial, legal, and personal arenas. Despite the fact that risks are never taken without the possibility of some 'gain', most usage of the term 'risk' is associated exclusively with 'loss', and as something to avoid in many areas of contemporary life. Since about 1970, there has been an increasing public awareness of risk, and an associated aversive reaction to its presence. These perceptions (further explored in Chapter 3) are reflected in the various legislative arrangements emerging throughout the Western world at around the same time, and the increased public expectations concerning the safety of products and services consumed. To a certain extent this is linked to a growing individualism in Western societies in which

people are exposed to the consequences of their own decisions and choices to a much greater degree than in previous societies, in which the lives of citizens were largely prescribed through qualities such as class, gender, and race.

A new social contract may also be emerging - that of greater expectation of public and private officials to be accountable for the public consequences of their actions (Fischhoff, 1985). Members of Western democracies are demanding greater safety, security, and assuredness across multiple sectors of society. The growing significance of risk in Western society has important implications for the management of recreation and tourism in natural settings, especially those areas in which potentially hazardous conditions inhere. These implications and consequences form a large part of the discussion presented in Chapter 4 of this thesis, and re-emerge in later analytical sections. The following chapter (Chapter 3) builds on the discussion presented above, and specifically addresses aspects of risk perception and risk communication.

Chapter 3 Risk perception and communication

3.1 Introduction

In Chapter 2, the scientific assessment of risk was discussed as part of an introduction to the concept of risk. ‘Objective risk’, and ‘real risk’ were described as part of the technical vocabulary of experts who make rational risk calculations. When public perceptions of risks are discrepant with these assessments, perceptions have traditionally been dismissed as irrational, and of limited value to decision makers (Fischhoff, 1995; Lee, 1981; Rohrman, 1996; Slovic, 1999). Irrespective of the *actual* presence of risk, however, it is the *perception* of risk that will govern the behaviour of individuals. Furthermore, if the *seriousness* of the risk or hazard is the subject of discussion (as distinct from its likelihood of occurrence), public judgements can be considered essential, since social and moral values are the ultimate criteria for determining significance (Lee, 1981).

Having established a recent social tendency towards risk aversion (Chapter 2), it is now useful to examine some of the concepts associated with the individual’s perception of risk, and how hazards and risks are communicated. This chapter begins with a general definition and discussion of risk perception, including consideration of those risks perceived as most significant by the public. This is followed by a section in which the various dimensions influencing perception and risk-taking are identified and discussed. The rather limited literature on risk perception in the context of recreation and tourism is then introduced. The final part of the chapter examines risk communication, including aspects of message effectiveness, warning compliance, and factors affecting these. Available literature specific to communication in tourism and recreation is reviewed. This chapter extends the risk theme established in Chapter 2 and prepares a basis for the discussion on risk in the management of recreation and tourism presented in Chapter 4.

3.1.1 Perception

Perception is a branch of cognitive psychology concerned with how the individual comes to know his or her environment through the information received via the sense organs. The term ‘perception’ is applied to a wide range of phenomena, including the perception of an object as present in the environment, recognition of familiar features (such as a face or landscape), and

intuitive feelings based on the information available (such as perceived safety, or perceived hostility of a place).

Perceptions are important to understand because, as the judgements, attitudes and beliefs held about the external environment, perceptions are considered to influence behaviour (Fishbein & Manfredo, 1992; McGuire, 1985; Sitkin & Pablo, 1992; Tobin & Montz, 1997). Yet, while these assessments are individual in construction and expression, perception is more accurately understood as subject to both social and cognitive dimensions. While cognitive psychology traditionally emphasised the role of the individual, there is now wide recognition of cognition as a social activity, combining information processing strategies and socio-cultural dimensions (Forgas, 1981; Langer, 1989; Moscardo, 1996; Philipchalk, 1995). To this extent, it is not possible to understand cognition outside of its social context, nor is the study of society complete without acknowledgement of the cognitive efforts of individuals (Forgas, 1981). In this chapter, perception is considered to be the product of the combined action of individual thought processes and the permeating features of society and culture.

3.2 Risk Perception

Risk perception is the process through which individuals form impressions about threats to the things they value. These perceptions are influenced by experience, personality traits, and social norms and, therefore, also connote subjectivity. Risk perceptions, then, as experienced by individuals, are not technical calculations, a fact that frustrates some experts in terms of the usefulness of public risk perception data in informing decision making (Rohrmann, 1996).

It is important to emphasise that the term ‘perception’ has a variety of applications in the context of risk and hazard, including assessment, attitude, and awareness. McCool and Braithwaite (1992, p. 304) observed that “the term has come to represent such widely varying concepts as cognition, knowledge, decision-making and choice behavior”. Consistent with its multifaceted nature, Rayner (1993, p. 199) argued that risk perception “must be regarded as a broad term encompassing a range of social behaviors and preferences, as well as stricter issues of the cognition of probability and the magnitude of consequences”.

The study of risk perception covers a wide variety of topics and discipline areas. Subjects of discussion include topics as diverse as the perceived risks among cigarette smokers,

adolescents, pregnant women, motor vehicle drivers, recreationists, and employees at nuclear power plants. The following section reviews some of the main research findings in the risk perception literature.

3.2.1 Research in risk perception

The study of risk perception is typically associated with one of two approaches, each of which places greater or lesser emphasis on the importance of individual or socio-cultural influences in understanding risk perception. By far the most prolific body of work has been within the ‘psychometric paradigm’. This approach is characterised by attempts to make quantitative judgements about the perceived risk associated with a diverse range of hazards. A smaller number of academics have proposed a cultural theory for understanding risk perception and risk taking behaviour. Proponents of cultural theory have argued that risk perceptions cannot be isolated from the social and cultural contexts (Lupton, 1999). Douglas (1992), through whom this perspective is most widely recognised, has argued that risks, rather than being cognitive aids for the individual decision-maker, are more accurately interpreted as shared conventions which support particular worldviews (Douglas, 1992; Douglas & Wildavsky, 1982; Rayner & Cantor, 1999; Wildavsky & Dake, 1998). The psychometric and cultural theory approaches are not necessarily mutually exclusive explanations. Differences between the approaches relate less to the specific risk perceptions identified than to the factors that determine these (see Section 3.3).

The risk perception literature is dominated by the psychometric paradigm, and in particular the studies of Paul Slovic and associates, whose multiple works on risk perception focus primarily on understanding how people characterise risk, the accuracy of public perceptions of risk, attitudes toward risk acceptability, and how knowledge about risk perception can contribute to effective policy (Barnett & Breakwell, 2001; Kasperson & Dow, 1993; Lupton, 1999; Marris, Langford, Saunderson, & O’Riodan, 1997; Slovic, 2000). The research undertaken by Slovic and others has typically adopted a psychometric scaling approach to produce quantitative assessments of risk and hazard perception. The principal focus of the research has been to investigate public judgements of hazardous activities, substances, and technologies (Jungermann, & Slovic, 1993; Slovic, 1998, 1999, 2000; Slovic, Fischhoff, & Lichtenstein, 1980, 1981, 1982, 1985, 2000a, 2000b, 2000c, 2000d). The results of this work,

and others within this paradigm, have allowed several broad conclusions to be drawn about the public's risk perceptions. These conclusions are outlined below.

One conclusion from the psychometric studies is that risk perception can be represented by three primary factors (Goszczyńska et al., 1991; Hartenian, Bobko, & Berger, 1993; Mullet, Duquesnoy, Raiff, Fahrasmane, & Namur, 1993; Slovic et al., 1980, 2000c). The first factor has been termed 'dread risk' (Slovic et al., 1980), and includes characteristics of severity, dread, and catastrophic potential of particular hazards. The second factor is 'unknown risk', characterised by the degree to which the specific hazard is "unknown to those exposed, unknown to science, unfamiliar, and involuntary" (Goszczyńska, et al., 1991, p. 182). A third factor, less frequently reported, relates to the 'number of people thought to be affected' by the hazard (Mullet et al., 1993; Slovic et al., 1981). The order of these factors differs between studies, but dread risk and unknown risk consistently occupy the highest rankings. What this means is that, among members of the public, the highest risk perceptions are held for those hazards that involve severe, immediate and dreaded consequences beyond the understanding and management of individuals and experts, and to which exposure is involuntary. Hazards affecting large numbers of people also receive high risk estimates from the public. Consistent with these factors, members of the public have typically rated the risks associated with nuclear power and pesticides as the greatest (Kasperson & Dow, 1993; Slovic et al., 2000c)

Another common outcome of risk perception research has been the identification of group differences in risk perception. Researchers have found differences in perception between variables such as age (Bromiley & Curley, 1992; Deery, 1999), gender (Flynn, Slovic, & Mertz, 1994; Gustafson, 1998; Mesch, 2000), culture and nationality (Eiser & Arnold, 1999; Goszczyńska et al., 1991; Rohrmann, 1996; Sokolowska & Tyszka, 1995), knowledge (Johnston, 1995; Wildavsky & Dake, 1998), and others (Barnett & Breakwell, 2001). While not conclusive, many studies have suggested that risk perception increases with age, women have higher risk perceptions than men, and those with more self-reported knowledge of the specific risk have lower risk perceptions.

A third prominent finding in the risk research has established that the public does not see risk in the same way as the experts (Elms, 1998b; Gregory et al., 1997; Kasperson & Dow, 1993; Kemp, 1993; Lee, 1981; Leiss & Chociolko, 1994; Paton, Smith, & Johnston, 2000; Rohrmann, 1996; Slovic et al., 1981, 2000d). The public – expert disparity is important to

examine because, while the risk assessments of experts help direct policy and risk management decisions, the perceptions of the public reflect important social and moral values and will direct behaviour. The literature is also relevant to the current study given its attention to both public (park visitor) perceptions of risk, and those of managers and policy makers.

The most documented example of the difference in risk assessments of experts and the public is the observation that the risks that kill are not necessarily the ones that people fear (K.C. Cole, 1998; Furedi 1997; Jungermann & Slovic, 1993; Rohrman, 1996). Public – expert disparities are typified by the former’s underestimation of many voluntary risks (such as driving a car, smoking cigarettes, high cholesterol diets, immoderate alcohol consumption, and lack of exercise), and overestimation of involuntary risks (such as air pollution, food additives, genetic engineering, and generation of nuclear energy) (Leiss & Chociolko, 1994). Furthermore, the public often overestimates the risk of high magnitude, low frequency events (such as a nuclear accident or jet airliner crash) and underestimates the less dramatic, slow to accumulate risks (such as those associated with smoking and weight gain) (K.C. Cole, 1998; Fischhoff, 1985; Lee, 1981; Singer & Endreny, 1993; Slovic, et al., 1981, 1982, 2000b; Wildavsky, 1993).

Multiple reasons have been suggested for the differences in public risk and expert risk assessments, several of which relate directly to the factors influencing individual risk perception discussed in Section 3.3 below, including incomplete and sometimes contradictory data, complex theories, and unwillingness of some experts to understand public concerns (Elms, 1998a; Leiss & Chociolko, 1994). Kasperson and Dow (1993) suggested that the public has difficulty with technical risk, especially the assessment of infrequent but high consequence risks. This is supported by studies, such as those reported by Slovic et al. (2000c), on drivers’ use of seatbelts and the public’s insurance behaviour.

Jungermann and Slovic (1993) explained the difference between lay and expert risk perception in terms of the cognitive processes used to assess risk. While expert assessments are made using algorithmic methods, the general public tend to rely on heuristic procedures such as the prominence or availability of events. If an event is easy to imagine or recall, its occurrence will be judged more likely. This inferential strategy is known as the ‘availability heuristic’, and helps explain why risk perceptions are often inaccurate (Kasperson & Dow,

1993; Slovic, 2000; Slovic, et al., 1980, 2000b; Tversky & Kahneman, 1982a, 1982b). Hence a recent child abduction reported in the media, is likely to increase the perceived risk of another kidnapping to higher levels than occur when there have been no similar recent events.

3.3 Dimensions of risk perception

The literature on risk perception is broad and dispersed across many disciplinary areas. Common fields of interest include management and decision-making, technological and environmental risk, engineering, finance and insurance and, in fact, virtually any aspect of

human endeavour in which decisions must be made. Despite the varied disciplinary contexts and applications, risk perceptions can be organised along common dimensions. These dimensions are shown in Figure 3.1, using a framework adapted from Tobin and Montz (1997). The dimensions of risk perception are classified as situational (physical environment and social environment) or individual

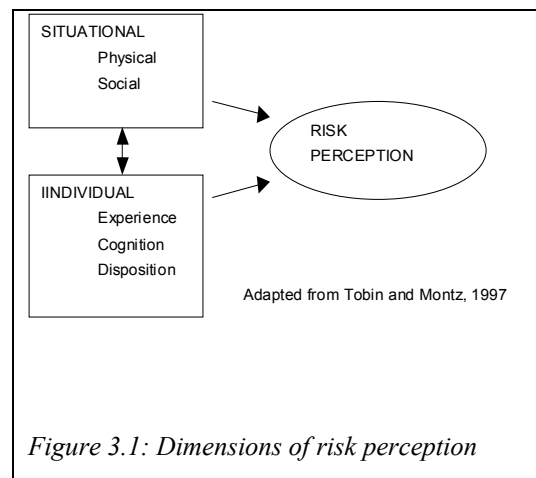


Figure 3.1: Dimensions of risk perception

(experiential, cognitive, and personality disposition). This model is appropriate for understanding risk perception because it acknowledges the combined influences of individual information processing, personality traits, and social conditioning. While each dimension of the model is depicted as discrete, in reality none is entirely independent of the others. The factors overlap and interact to create individual risk perceptions. The dimensions are discussed below.

3.3.1 Situational factors affecting risk perception

The situational dimension comprises both the physical and social aspects of the individual's environment. In the context of natural hazards, physical aspects include features such as the potential dangers observed, their estimated frequency, severity and controllability. Social factors are varied, and include social demographic characteristics, cultural attitudes to risk, hazard and risk communication, the influence of media, and social norms.

3.3.1.1 Physical environment

The physical environment refers to the characteristics of the specific hazard, such as its physical nature, magnitude, frequency and duration. Individuals' perceptions of serious earthquake risk, for instance, are likely to be influenced by personal knowledge of the temporal distribution of major earthquakes (Tobin & Montz, 1997). Lee (1981) claimed that the potential size of a single catastrophe has important influences on the public's perception of its seriousness. For instance, despite public acceptance that accidents at nuclear power plants are unlikely, their perceptions seem heavily influenced by how devastating the accident would be if it occurred. Slovic et al. (1981) reported physical situational factors affecting risk perception to include the number of people exposed to the hazard, immediacy of threat, and threat to future generations.

3.3.1.2 Social environment

In their discussion of risk perceptions, Tobin and Montz (1997) identified the socio-economic environment as an important influence. This included individual characteristics such as age, gender, and experience with hazard, as well as education, religion, household size, and income. These latter features are used to help explain the hazard perceptions and responses of people who reside in high risk areas, such as those areas prone to hurricanes, floods, and earthquakes. While not identified by Tobin and Montz, these factors are also likely to contribute to hazard or risk perception through influencing attitudes and beliefs, as well as through the different responsibilities and obligations that accompany some social characteristics. For example, the circumstances of each individual's life (such as responsibility for children or other dependants), as well as wider social or cultural safety norms, are likely to affect his or her assessment of loss potential and magnitude. Tobin and Montz did not discuss other social situational factors which are also important to consider in the formulation of risk perceptions. The model (Figure 3.1) has been adapted to incorporate these.

The adapted model goes beyond socio-economic variables, and incorporates micro- and macro- features of the individual's social world. For instance, individual risk perceptions are likely to be influenced by the actions and responses of other people in the specified risk context. These might include the direct actions of officials or managers, media portrayal of events, or the behaviour of fellow residents or visitors. Furthermore, the broad social context

or cultural disposition toward risk must also have a mediating influence on individual risk perception. In Chapter 2, the discussion centred on the proposition that people and organisations in some Western societies have become risk averse and focussed on safety. This aspect of the social environment is likely to help determine individual risk perceptions in a variety of contexts.

The salience of social influences in creating risk perceptions is raised by Sitkin and Pablo (1992) in their study of management and decision-making. The authors emphasised the role of information gathered from others as pertinent to the risk perception construct. In particular, they claimed that an organisation's leaders, and the organisational culture that prevails, has a formative influence. "Organizational members come to view their world through the lens of their organization's culture, which can distort their perceptions of situational risks, sometimes by overemphasizing or underemphasizing risk" (Sitkin & Pablo, 1992, p. 21). On a wider scale, the ideological stance adopted by governments can influence perspectives on and perceptions of risk. Gregory et al. (1997, p. 51), for instance, claimed that recent major restructuring of government institutions in New Zealand, "has involved the devolution of responsibility to local government and individuals where possible. It is possible that this has influenced perceptions of responsibilities", and, in turn, may have heightened perceptions of risk among some managers (in relation to legal liability).

Douglas and Wildavsky and associates, have also emphasised the centrality of the socio-cultural context to understanding risk perceptions. These authors minimise the role of cognition and personality influences on perception and claim that in risk perception "humans act less as individuals and more as social beings who have internalised social pressures and delegated their decision-making processes to institutions" (Douglas & Wildavsky, 1982, p. 80). Similarly, Furedi (1997) has claimed that risk is perceived on the basis of the prevailing ideas and values held about society and its future. As such, what is seen as a risk or hazard at one time may not be so at another.

Proponents of the cultural theory thesis have argued that people *choose* what to fear to support their way of life (Douglas & Wildavsky, 1982; Rayner, 1993; Wildavsky, 1993; Wildavsky & Dake, 1998). In this way, certain interest groups within society perceive risks on the basis of what threatens their worldview. Hence, liberal 'egalitarians' (Rayner, 1993; Wildavsky & Dake, 1998) fear technology on the basis that the risks and benefits are unevenly distributed

throughout the population, yet rate social deviance as low risk. Conversely, conservative ‘hierarchists’ (Wildavsky 1993; Wildavsky & Dake, 1998) consider technology as benign, but that social deviance leads to disaster. Thus, these authors have concluded that there is no risk taking or risk averse personality; rather, these dispositions reflect cultural or political perspectives.

Sjöberg (1998), however, has refuted this analysis, and argued that the notion of choice is misleading. According to Sjöberg, people do not freely choose what to fear but, rather, would like to be free of fear. While Sjöberg doubts the explanatory power of cultural theory in understanding risk perceptions, a less literal interpretation is more forgiving. For instance, Wildavsky (1993) uses the term ‘choose’ rather loosely. It is more plausible to suggest that individuals’ fears reflect the threats they perceive to the things they value.

Another important situational factor influencing risk perception is the news and advertising media (Singer & Endreny, 1993; Wildavsky, 1993). According to Singer and Endreny (1993, p. 4), the media play an especially significant role in the portrayal of high severity – low probability risk events, which are “likely to be regarded as ‘newsworthy’ by journalistic standards, and therefore reported in the press”. Reporting, in turn, is likely to make such events more readily available to attention and recall. Bias in media coverage of the sensational, dramatic, and altogether less common risks and hazards can influence the individual’s risk evaluation of particular objects or events.

Slovic et al. (1981, 1982) have also suggested that biased media coverage and inadequate information contribute to the misunderstanding of risk. Some empirical evidence for this claim is provided by Goszczyńska et al. (1991) in a cross-national study of risk perception. The authors found that overall risk ratings in Hungary were lower than those in the United States and Norway, prompting them to suggest that this might be related to the disproportionate emphasis the Hungarian media affords to dangerous events beyond that country’s borders. According to Goszczyńska et al. (1991, p. 181): “In communist countries, information on risks and accidents has been strictly censored [one reason for which is] to show that life under the communist system is safer than that under a capitalist system”. Given that people will form perceptions on the basis of what they see, know, and experience, the control of media in this case may help explain reduced risk perceptions.

Further, Kottak and Costa (1993, p. 338) studied environmental risk perception in Brazil, and revealed that awareness of risks was most developed in places and groups directly influenced by the media, “rather than among those who are most endangered”. They argued that the globalisation of media has increased risk perceptions as a consequence. Constant rebroadcasting of isolated events, and the internationalisation of news media generally are factors which can magnify risk perception, or bring the perception of risk closer to home. The most recent example of this phenomenon was the media attention devoted to the attacks on New York and Washington on September 11, 2001. The extent to which the globalisation of media has increased risk perception, however, is not clear-cut. It can be argued for instance, that media attention to events far from home desensitises the ‘viewers’ to the threats, and reinforces a belief that disasters and tragedies happen to ‘other’ people. In this sense, it is likely that the *type* of risk is important. Where hazards and risks are perceived to be contained within the boundaries (or attributes) of ‘other’ localities, the perception of risk may not be increased by the media. Where widely reported threats are seen as applicable to the ‘home’ environment, perceptions are likely to be greater.

According to Elms (1998b), the risk perceptions of the public are easily influenced, and sometimes successfully manipulated through the media by interest groups with strong agendas. Further, he claimed that emotive appeals, information bias, and inability to comprehend the statistical nature of risk, are among the reasons for inaccurate perceptions held by the public. Elms (1998b, p. 46) observed a New Zealand public feeling threatened by the transportation of reprocessed nuclear waste at the perimeter of its economic zone, despite “careful analysis and attention to the facts” revealing the risk of serious incident as “very low”. Similarly, Furedi (1997, p. 16) noted that, although it is “not possible to prove that a single American has died from radiation from the civil nuclear industry... surveys of Americans continually place nuclear power at the top of the list of risks in life”. These observations can be explained in part by situational factors such as voluntariness and controllability (Hartenian et al., 1993; Jungermann & Slovic, 1993; Mullet et al., 1993; Slovic, et al., 1980). In particular, risk perceptions and risk ratings in the above examples are likely to be affected by attitudes toward sovereignty or control over personal destiny. In order to exert political influence, it then becomes discursively advantageous to emphasise ‘risk’ or the absence thereof.

3.3.2 Individual factors affecting risk perception

In addition to situational factors, risk perceptions are also influenced by individual factors. The adapted model (Figure 3.1) considers these in three dimensions: personal experience, personality disposition, and cognitive elements. The latter refers to individual attitudes, values, and beliefs about a hazard or risk feature. The attitudinal dimension is not well differentiated in Tobin and Montz's (1997) discussion, but it is likely that attitudes are both a product of some other variables and a significant contributor to response and action. It seems reasonable to suggest that attitudes, as general, personal dispositions held toward an object, person, or event (Moore, 1995), will influence hazard perception by affecting the extent to which new information is processed and accepted. The interrelationships between attitude and experience, and between attitude and personality are acknowledged, and their individual treatments are not intended to imply mutual exclusivity.

3.3.2.1 Experience

Critical within the individual dimension is the role of both direct and vicarious experience. Perceptions are constructed using experiences from everyday life, and the perceived lives of others, including the experiences of others portrayed by the media such as television, newspapers, magazines, and the internet. The degree of influence that certain experiences have on perception is complicated. For example, regular exposure to media reports of motor vehicle fatalities (approximately 500 fatalities annually in New Zealand) is likely to have less effect on people's negative evaluation of driving, than reported air accidents will have on fear of flying, despite the fact that only about 25 people die as a result of aviation accidents in any one year (Statistics New Zealand, 2000). This suggests that people tend to focus on threats that are "exotic, personal, erratic, and dramatic" (K.C. Cole, 1998, p. 33). As a consequence, people ignore the more ordinary hazards of everyday life such as burns, falls, drowning and choking. Other risks are not perceived as significant threats simply because they are familiar and the effects are slow to accumulate (K.C. Cole, 1998; Singer and Endreny, 1993; Wildavsky, 1993). In this vein, Rück (1993) observed that cigarette smoking kills 100,000 people in Germany every year, a number equivalent to a jumbo jet with a full complement of passengers crashing every day. Yet the 365 'crashes' cause little reaction at all, compared to the occasional actual jumbo crash, which creates official investigations and sends fear throughout the air travelling public. Rück uses the jumbo jet analogy to demonstrate how the

concept of risk is all in the mind. Yet risk is a powerful construction, which shapes attitudes and behaviours.

Rück's analogy is a good example of the rhetoric that surrounds the subject of risk. Here the facts are presented in such a way that casts the general public as irrational, although for any individual smoker, the chance of dying from a smoking-related illness today, is probably lower than the chances of an air traveller dying in an air accident today. Hence, to fear flying more than smoking can be interpreted as a perfectly rational response.

In support of these observations and analogies, considerable research in the psychology of human judgement has shown that most people overestimate the occurrence of rare events and underestimate the frequency of common events (Fischhoff, 1985; Lee, 1981; Leiss & Chociolko, 1994; Slovic, et al., 1981). Consistent with the availability heuristic, "people's estimates of causes of death [for instance], are strongly related to the number of people they know who have suffered those misfortunes and the amount of media coverage devoted to them" (Fischhoff, 1985, p. 87). This point was also demonstrated by Slovic et al. (1982, 2000b), who found that when people were asked to estimate the ratio of deaths caused by diseases to deaths caused by accident, they typically estimated that as many people die of accidental causes, although the actual ratio is approximately 15:1. Similarly, in research reported by Slovic et al. (1981, p. 19), "pregnancies, births and abortions were judged to take about as many lives as diabetes, though diabetes actually causes about 80 times more deaths".

Familiarity with an object or event may also influence risk perceptions. For instance, Sitkin and Pablo (1992) studied a group of managers and found that, as management experience increased, decision makers overestimated their ability to cope with problems and underestimated risk. Similarly, other researchers (Oskamp, 1982; Slovic et al., 1981; Tversky, & Kahneman, 1982b) have contended that overconfidence in judgements can result from increasing levels of experience. de Turck and Goldhaber (1989), in their review of the product safety literature, also found that frequent users of products paid less attention to warning labels and signs, perceived fewer risks associated with the product, and were more likely to engage in risky behaviour with the product.

3.3.2.2 Attitudes and beliefs

Further cognitive features that appear to influence risk perceptions include belief in personal judgements, resistance to change perceptions, and a personal feeling of immunity. Judgements made using the availability heuristic are often held with high levels of confidence, despite the tenuous basis for this (Lee, 1981; Margolis, 1996; Slovic et al., 1981). Furthermore, once perceptions of the risk associated with events or objects (such as earthquakes, floods, or smoking) are formed, it is very difficult to change these, even when contrary information is overwhelming (Fischhoff, 1985; Greening & Chandler, 1997; Margolis, 1996; Slovic et al., 1982). This may be because people often view themselves as personally immune to many hazards, adopting a belief that ‘it won’t happen to me’ (Greening & Chandler, 1997; Slovic et al., 1981). For instance, Middleton, Harris and Surman (1996) found that novice bungy jumpers perceived their risk of injury to be less than the risk to the ‘typical jumper’. Other research has demonstrated that the majority of people believe themselves to be better than average drivers, more likely than average to live past 80 years old, and so on (Begg, Langely & Morrison, 2001; Greening & Chandler, 1997; Slovic et al., 1981, 2000a). Cognitive mechanisms contribute to these beliefs; many car journeys are made without incident, creating a schema (eg., of being a good driver) that is rarely contradicted (Greening & Chandler, 1997). Daily experiences inform us that when accidents *do* happen, they appear to happen to other people, further reinforcing individual belief in one’s own ability.

Other beliefs that are likely to influence risk perception include perceived benefits accruing to the individual, or society as a whole. Perceived benefits, for instance, may influence the degree to which a risk is accepted. Risks may be perceived as lower if there are identifiable benefits attributable to the outcome (Mullet et al., 1993; Rohrman, 1996). In this way, attitudes toward, or beliefs about, potential outcomes will affect risk perception. Mullet et al. claimed that dimensions such as economic justification, social well-being, and societal benefit are evaluative factors that influence risk perceptions.

3.3.2.3 Personality disposition and risk-taking behaviour

Many authors have linked risk perception and risk-taking behaviour to personality type or disposition, and included biology, psychology and culture among the determinants. For instance, Sitkin and Pablo (1992) argued that individuals each have a risk propensity – a

general tendency to take or avoid risks. According to Sitkin and Pablo (1992, p. 19), a risk averse personality characteristic will encourage the individual to disproportionately consider negative outcomes, “thus overestimating the probability of loss relative to the probability of gain”. The converse is implied for the risk-seeking decision maker with high risk propensity, resulting in lower risk perception.

Similarly, Williams and Narendran (1999) examined the managerial risk preferences of managers in India and Singapore, and found that gender, culture, and nationality were significant predictors of risk preference, with males and those holding ‘modern cultural values’ expressing a stronger willingness for risk. In a completely different context, Harrell (1991) determined that older adults and women demonstrated greater awareness of traffic hazards and exercised more caution than male pedestrians using an inner city intersection.

MacCrimmon and Wehrung (1986) argued that people can be categorised as risk takers or risk averters on the basis of their responses to particular situations. According to these authors, a risk taker will accept higher exposure to risk and require less control and information than the risk averter. While risk takers are optimistic, and believe they can control outcomes, risk averters focus on worst case scenarios, and devote more effort to reducing risks than their less conservative counterparts (MacCrimmon & Wehrung, 1986).

Another important psychological component thought to influence perception and behaviour is the locus of control (McCool & Braithwaite, 1992). Individuals who generally feel as though they have some control over what happens in their lives are said to have an internal locus of control. Those who perceive events to be beyond their influence are said to have an external locus of control. As Lee (1981, p. 13), explained, “people differ in the extent to which they tend to consistently attribute events to their own behaviour or see them as a function of external forces beyond their control”. This is relevant to the discussion on risk perception because those individuals with an external locus of control are likely to have higher levels of anxiety and expect hazards more frequently than those with an internal locus (Tobin & Montz, 1997).

Other authors have implied that a risk-taking personality has an evolutionary basis, aiding the survival of the species (the rationale being ‘he who hesitates is lost’, and ‘nothing ventured, nothing gained’) (Konner, 1990; Sinn & Weichenrieder, 1993; Trimpop, 1994). Adopting

such a stance, Sinn and Weichenrieder (1993) suggested that success in evolutionary terms has little to do with longevity, and that risk-taking may have been an important strategy to ensure that genes were passed to the next generation. Risking life and limb to avoid starvation may have been what differentiated survivors from the failures. Other biological perspectives suggest that it is possible to be genetically predisposed to exploratory or risk behaviour (a risk gene), and that some individuals become addicted to adrenaline and, therefore, seek dangerous, extreme, and challenging situations (Moore & Rosenthal, 1993; Roberts, 1994; Toufexis, 1996).

Although this evolutionary explanation for risk taking has some intuitive appeal, it is simplistic to suggest that all individuals within a population would gain advantage through a risk-taking disposition. It is equally likely that in any given population, risk-taking individuals would be balanced with risk-averse individuals, hence allowing for the selection of strategies suitable to a variety of conditions.

Rather than a biological explanation, Sulloway (1996) claimed that risk-taking has social and cultural roots, and that family birth order helps determine the risk propensity of individuals. Sulloway asserted that ‘later borns’⁹ were more likely to become risk takers than their elder siblings. His theory is based on an application of Charles Darwin’s *Origin of Species*, and treats the family as a niche, aspects of which individual members potentially exploit. In order to survive and maximise their environment, later borns are rewarded when they ‘rebel’ and effectively take risks. This explanation for risk taking borrows from the principles that underpin evolution theory, yet it is entirely social rather than biological. Social conditions determine the necessity for certain individuals to engage in risk behaviour. Sulloway argued that conditions within the family create and reinforce personalities to a significant extent.

In contrast to the explanations above, proponents of a cultural theory of risk have rejected the notion of risk taking or risk avoidance personalities, and argued that people who undertake high risks in one arena, may go to great lengths to avoid risks in another (Wildavsky, 1993). According to this perspective, it is the particulars of the situation, which define the extent to which a risk will be taken or avoided (Rayner & Cantor, 1999; Wildavsky & Dake, 1998). Further, Wildavsky and Dake found no evidence for a personality structure as suggested by

⁹ Those with one or more elder siblings.

Sitkin and Pablo (1993), and claimed instead that risk taking and risk avoidance are dependent on how people feel about the object of attention. Consistent with the view that individuals perceive risk in ways that support their ways of life (Douglas, 1992; Douglas & Wildavsky, 1982; Fox, 1999), Wildavsky and Dake (1998, p. 104) argued that “those who endorse egalitarianism are also more likely to be personally risk taking but societally risk averse, while those who favour hierarchy tend to be personally risk averse but societally pro-risk with respect to technology and the environment”.

Despite the evident disagreement on why the differences exist (cultural or psychological), the research literature has generally suggested that there are important differences between individuals with respect to risk perception and risk taking. Part of these differences can be attributed to personality disposition, either to maintain a particular set of values, or to satisfy internal drives. The cultural theory seems plausible in that risk, as a social construction, is perceived differently by different people and different societies. Few people, or societies can be described as ‘risk takers’ in all aspects of life. The idea that particular risk personalities exist also has merit (and some empirical support), yet may be most useful in clearly defined risk contexts, rather than generalised across all possible risk situations. The balance of these dimensions is dependent on ontological perspective. In the present study risk perception and risk-taking are approached from a multidisciplinary perspective, which recognises both the individual and situational influences. No single dimension is sufficient to describe the concept of risk perception or behaviour completely.

3.4 Risk perception in the recreation and tourism context

3.4.1 Introduction

Relative to other areas of risk perception research, there have been few studies or discussions on the phenomenon of risk perception in recreation and tourism. Most research to date has focused on public perceptions of risks associated with various technologies and consumer goods (Slovic and colleagues), and some work on perceptions of natural hazards (Drabek, 1994, 1996; Gough, 1998b). No studies were found in which tourists’ perceptions of natural hazards were assessed with regard to non thrill-seeking settings.

Risk perception in recreation and tourism has typically been discussed in one of two contexts. One focus has been the perception of risk associated with adventurous activities, and the relationship between perceived risk and competence levels of participants (Carpenter & Priest, 1989; Morgan, 1998; Morgan et al., 1997, 2000; Priest & Bunting, 1993; Priest & Carpenter, 1993). These authors have been interested in the pre- and post- activity perceptions of risk among participants actively pursuing risk or thrills. A second area of research has investigated the role of risk and safety perceptions in tourists' destination decisions, and to a lesser extent, the risk perceptions of participants in adventure tourism.

3.4.1.1 Risk perception in adventure recreation and tourism

Following the wider risk perception literature, Priest and Baillie (1987, p. 18) defined perceived risk as “an individual’s subjective assessment of the actual amount of danger involved in an adventurous setting”. While it is questionable that settings must be ‘adventurous’ in order for risks to be perceived, the critical difference between risk perception in recreation and tourism settings, and risk perception in other spheres of life, is that recreation and tourism participation is largely voluntary. This does not mean that participants necessarily assume responsibility for risk, but exposure to settings in which risks may inhere is often within the control of recreationists and tourists, unlike the risk exposure in the wider environmental and technological context.

Morgan et al. (1997, 2000) explored the link between risk and competence in the context of the adventure tourist’s experience. The researchers aimed to investigate various dimensions of Priest’s (1992) Adventure Experience Paradigm (AEP), and to test its applicability in the adventure tourism setting. The AEP suggests that participants’ experiences can be classified in multiple ways depending on the relationship between risk and competence. According to the model, low competence coupled with high risk, has the potential to result in a negative experience (such as fear or physical harm). Similarly, a high level of competence, and low perceived risk may also result in a negative experience (such as boredom). A ‘peak adventure’ experience is possible only when the perceived level of competence of the participant equals the perceived risk. Morgan et al. (2000) surveyed participants in two separate adventure tourism activities (white-water rafting and sea-kayaking). The researchers found specific combinations of risk and competence were associated with different levels of danger, fear, concentration, anxiousness, boredom, and control, implying that the AEP model

has some utility for understanding the experiences of adventure tourists. The researchers also reported that perceived risk among respondents was higher before involvement in the activity than following it.

In other recreation research exploring risk perception, Levine and Gorman (1994) assessed skiers' perceptions of danger as a function of their knowledge of danger. The researchers found that knowledge of fatalities in skiing was an important factor in increasing skiers' ratings of the dangerousness of the sport. The authors also noticed a decrease in self-reported risky behaviour when knowledge of previous accidents was high. The results of this study add credence to the postulate that individual risk perception is influenced by the availability heuristic, in this case by awareness of the history of an activity or the history of a place.

3.4.1.2 Risk perception and tourism destinations

Within the literature on risk perception and tourism, two themes can be identified. First, there are studies that have examined the general risk perceptions of travellers, including some in which visitor perceptions of specific destinations have been explored. Second, there is literature which has examined the impact of particular events on tourist perceptions and travel behaviour. This section is organised around these two themes.

Many authors specifically suggest that the destination decisions of potential tourists will be influenced by perceptions of the relative risk or safety of those places (Carter, 1998; Cha, 1997; Clift & Page, 1996; Mawby, Brunt & Hambly, 2000; Page, 1997; Pizam & Mansfield, 1996; Pizam, Tarlow, & Bloom, 1997; Ryan, 1993; Sirakaya, Sheppard & McLellan, 1997; Sönmez, Apostolopoulos, & Tarlow, 1999; Sönmez & Graefe, 1998a, 1998b; WTO, 1996). This is not altogether surprising given that potential tourists are likely to evaluate the relative costs and benefits of all destinations. Sönmez and Graefe (1998a) observed that, in addition to the typical vacation costs of transport, accommodation, and entertainment, other costs that may enter the decision-making process are the potential physical (health, sickness, or injury), psychological (disappointment), and social costs of visiting particular places. Pizam et al. (1997, p. 23) made this point more explicitly, claiming that “most tourists select their destinations not only on the basis of price and destination image, but, most importantly, on personal safety and security”.

Included among studies of prospective travellers' risk perceptions are fears of equipment failure, financial loss, physical injury, and disappointment (Roehl & Fesenmaier, 1992), as well as concerns about ill health, political instability, and terrorism (Sönmez & Graefe, 1998a). Similarly, Tsaur, Tzeng, and Wang (1997) found that Taiwanese tourists on group package tours were most concerned about law and order, followed by transportation, hygiene, medical support, accommodation, and the weather.

Additional support for the centrality of risk perception in tourist decision making is provided by Sönmez and Graefe (1998a) who conducted a study to assess the risk perceptions of potential travellers. Overall, the results indicated that alongside attitudes and income, potential travellers' risk perception levels were significant predictors of intended travel behaviour. These factors "determine if potential tourists will go abroad or vacation at home, how much information they will gather about the destination, and how concerned they will be about its safety" (Sönmez & Graefe, 1998a, p. 134).

Other research has also linked risk perception with travel destination choice. Demos (1992), for example, examined the impact of an increasing rate of violent crime with a declining tourism industry in Washington DC. Demos conducted a study of visitor perceptions of safety, revealing that about one third of respondents were "skeptical about safety conditions in Washington before they [arrived]", and that "the majority of tourists fear for their safety at night" (Demos, 1992, p. 83). While Demos' study gives no indication of *who* the fearful visitors were (business travellers or leisure travellers, for instance), the results imply that safety is in the minds of tourists to Washington at least. It is interesting to note that Demos' respondents, although perceiving a high rate of crime, were not dissuaded from visiting Washington.

In another investigation of tourists' beliefs and ideas about risky destinations, Carter (1998, p. 350) found that travellers' intentions to visit or avoid particular geographic regions was based, in part, "on a mental representation of the difference between 'home' and distant areas". Carter's qualitative study of international business and leisure travellers originating from Scotland, showed that locations perceived as 'risky' were those most distinct from the respondents' home localities. Where relative perceived differences between the home and visited culture and geography were greatest, so too were perceptions of risk. Africa, and to a lesser extent Asia were reported as risky destinations by respondents, whereas Europe and

North America were perceived as places with little or no risk. Where dangers (such as murder and HIV infection) in these latter localities *were* identified by respondents, Carter suggests that these fears were ‘neutralised’ by placing them within a cultural landscape that is familiar. In destinations where visitors feel alienated, these risk perceptions may be magnified.

Not all tourists, however, will be influenced by risk and safety information to the same extent. Evoking Plog’s (1974) tourist typology, Sönmez and Graefe (1998b) suggested that psychocentric (risk averse) travellers paid greater attention to safety features of tourism destinations than their allocentric (risk seeking) counterparts. Cha (1997), in a study of Korean travellers’ motivations for visits to Australia and New Zealand, also determined that some groups of tourists (notably package tourists) placed comparatively greater emphasis on safety as a factor influencing destination choice.

The findings of Mawby et al. (2000) also offer some mild contrasts to the suggestion that tourists choose destinations on the basis of safety or risk perceptions. Mawby et al. (2000) conducted a survey of British holidaymakers in which respondents were asked to recall and evaluate various dimensions of recent holidays abroad. The authors compared reported incidence of crime among their sample with national crime statistics, revealing that tourists do suffer significantly higher rates of victimisation. In terms of risk perception, however, the tourists sampled were less concerned than was expected. While 42 per cent of the sample said they had ruled out at least one country because of perceived crime problems (most commonly Egypt, Spain and the United States), ‘feeling safe’ on holiday was rated as less important than environment, weather, scenery, relaxation, and specific activities. Mawby et al. noted that the relationship between incidence and perception of crime risk is contrary to that revealed in other (non-tourist) crime literature, where it is more common for fear to exceed risk. Similarly, in the risk perception literature a disparity between ‘actual’ risk and perceived risk is evident. Fears associated with specific events including violent crime and nuclear accidents typically exceed technical risk estimates (Slovic et al., 1980). Mawby et al.’s results regarding tourist perceptions of risk may have implications for tourist vulnerability and behaviour.

Similarly, Sirakaya et al. (1997) suggested that safety and risk are not primary factors in tourist destination choice, yet they are likely to be important secondary features. Using a scenario method to study how people were affected by information regarding a destination’s

safety, these authors found that perceptions of risk and safety had a stronger influence on the avoidance of destinations rather than likelihood of travel to them. In other words, high safety is not a feature that will attract visitors, but low safety is one that may discourage them from visiting.

Although some specific events (such as warfare, murders, and other ‘dread’ risks) are clearly associated with travellers’ avoidance of certain geographic locations, other perceived risks (such as natural hazards) may attract tourists to a destination. Media coverage or promotional material may also encourage tourists to visit dangerous natural areas (D. Johnston, 1995). Carter (1998) claimed that guidebooks are often deliberately ambiguous on the subject of health and safety in order that feelings of both fear and excitement can be attributed to the place. Some books employ the concepts of isolation or political instability to differentiate these locations from routine, mass tourism destinations – using the idea of risk to sell the destination to a market segment intrigued by possible danger.

The effects of specific events on risk perception and travel behaviour have also been a feature of some research. In particular, studies have focused on the safety of visitors to areas of conflict, war, and violent crime, and examined the impacts of these events on tourism. Brayshaw (1995), for instance, documented the negative publicity afforded to Florida as a tourist destination following a spate of violent attacks on visitors to that state. Brayshaw reported that, between 1992 and 1994, nine tourists were killed as a consequence of theft-motivated crimes (a figure not disproportionate to crimes inflicted on non-residents in previous years). According to Brayshaw, the resultant media attention to these deaths had a major impact on tourism to Florida, with European newspapers referring to Florida as the “State of terror” and describing events as the “wave of killing” (Brayshaw, 1995). In 1993, bookings for Florida among European and United Kingdom visitors fell by ten per cent, and 25 per cent of tour packages to the state were cancelled (Brayshaw, 1995). Smith (1999) reported similar effects following violent crimes against international tourists in other North American cities.

Wilks, Pendergast and Service (1996) undertook a content analysis of selected Australian newspapers which showed that a high proportion of total tourism health and safety stories identified were negative in content. Acknowledging the powerful influence of news media on public risk perceptions, the authors noted the potentially damaging effects for national and

international tourism destinations. Ryan (1993) also observed that news media attention to adverse events such as civil unrest, terrorism, murders, and robberies might influence the risk perceived by potential travellers to affected regions.

Sönmez and Graefe (1998b) studied the risk perceptions of tourists within the context of terrorism. Like other researchers, they found that international tourism was seriously affected by the reactions of potential travellers to perceived risks such as political instability and terrorism. The authors cite figures which show that “nearly two million Americans changed their foreign travel plans in 1986, following the previous year’s terrorism and the US-Libya military confrontation” (Sönmez & Graefe, 1998b, p. 113). At the time of writing, it is still unclear what the effects of terrorist attacks on the World Trade Centre and Pentagon will have on the travelling public. Initial indications are that air travel will become tightly monitored, and time delays and bomb threats will deter many people from using air transport for leisure travel. A survey conducted by Yesawich, Pepperdine and Brown in October 2001 claimed that 22 per cent of American leisure travellers had changed their travel plans as a result of the attacks on Washington and New York (“Poll shows Americans still travel”, 2001). The effects of the attacks, however, are likely to extend well beyond America’s borders. Despite the isolated circumstances of the incidents, intense global media attention may have amplified the risk perceptions and lowered confidence among visitors to completely unrelated locations. Recent inbound tourism statistics for New Zealand also showed decreases in several international markets, including the United States and Japan (both down 15 – 25%) (Espiner, 2001; “Some hefty losses”, 2001).

In addition to crime and terrorism, accidents and injuries resulting from tourism and recreation activities can also have an impact on destination regions. For instance, following the deaths of six Japanese tourists in a scenic flight accident at Milford Sound, New Zealand in 1989, it took three years for market confidence to return to this adventure tourism sector (Greenaway, 1996). Page and Meyer (1997) attributed this slow recovery to adverse publicity about the destination in Japan. Similarly, Clift and Page (1996) observed that India experienced a 70 per cent decline in foreign visitors following widespread international publicity about an apparent outbreak of pneumonic plague.

In New Zealand, the Ministry of Commerce reacted to a spate of accidents in the adventure tourism sector by preparing a paper on safety management in that industry. The authors of the

report found that well-publicised accidents involving participants in white-water rafting, jet boating, and ballooning, were followed by a drop in patronage. The Ministry expressed concern at the “potential for long term damage to occur to the tourism industry if New Zealand is perceived by overseas travellers as unsafe” (Ministry of Commerce, 1996, p. 1).

3.5 Interim summary

Risk perception research in recreation and tourism has focused on intended travel behaviour and the safety perceptions of visitors to specific tourism and recreation settings. In particular, the research emphasis to date has examined the impacts of crime and terrorism on tourism.

Subjective assessments of relative risk and safety do appear to be features of the tourist’s destination decision making, although the dimensions are not clear-cut. Research suggests that the risk perceptions of recreationists and tourists are influenced by setting characteristics, and knowledge of dangerous events. Destinations perceived as dangerous are likely to suffer from reduced visitation in the wake of certain adverse and (especially) violent events, although there is no conclusive evidence showing which other perceived risks affect tourist choices. Where a dreaded risk is publicised and evident to potential travellers and recreationists, it seems likely that resultant risk perceptions will lead to avoidance behaviour. In other situations, however, the relative safety of destinations appears to be less important in the destination selection. Furthermore, not all tourists will respond identically to risk information, and some visitors may even evaluate certain risks or dangers as positive features of the destination.

Research on risk perception has developed over four decades, and explored the subjective assessments of a wide variety of people in different contexts. Common among the findings is that people perceive risk as greatest in situations where the dread factor is high, information about the hazard is scarce, and where many people are thought to be affected. These outcomes are the result of perceptions about risk. They are not objective assessments of the likelihood of harm, but personal, subjective feelings based on a variety of experiences (both personal and vicarious) and personality dispositions which, within a cultural context, combine to help determine attitudes and behaviour. Studies have also indicated that there are differences between groups with regard to specific risk perceptions, including a significant divide between the general public and technical experts. While risk perceptions may not seem

relevant to some experts, the ways in which individuals and communities respond to risk and risk information is entirely dependent upon their perception and understanding (Gough, 1998b). This is an important acknowledgement for risk managers to make, and implies the need for effective risk communication.

3.6 Communicating risk and hazard

When risks are present but not perceived, behavior based on these false perceptions may have serious repercussions (Bean, 1989, p. 17-18).

3.6.1 Introduction

The advent of mass communication has contributed to heightened risk perceptions in some parts of the world. Information about exotic and sensational risks and hazards travel easily and rapidly between geographically distant communities, influencing the risk perceptions of millions (Kottak & Costa, 1993). Because of its influence on perception, communication becomes an important aspect of risk management. After all, it is people's perceptions of risk that will determine their behaviour, rather than objective information about the risks themselves (Leiss & Chociolko, 1994; Sjöberg, 1998; Taig, 1998). Slovic et al. (1980, p. 17) observed that people respond to the hazards that they perceive: "If their perceptions are faulty, efforts at personal, public and environmental protection are likely to be misdirected".

Understanding perceptions is crucial to effective decision making and risk communication.

Risk communication includes all attempts to inform, persuade, or warn others about risks to which they might be exposed. An important facet of this is understanding the risk perceptions and beliefs of the intended message recipients. Effective risk communication is critical in many recreation and tourism settings because visitors will often have limited familiarity with the environment, and potential language and cultural differences may exist between management agencies and visitors.

Risk communication can be viewed as serving two main purposes. The most commonly identified of these is to advise people of risks and hazards, and to alter (or maintain) their behaviour to realise some specified outcome. A less explicit purpose of risk communication is the transfer of some of the responsibility for risk. As Fischhoff (1995, p. 144) noted, "effective risk communication can fulfil part of the social contract between those who create

risks (as a byproduct of other activities) and those who bear them". The majority of the literature focuses on the first of these purposes, although many public and private organisations have an interest in the latter.

One dimension of the present study is how risk and hazards are communicated through static messages. Hence, this section is limited to a review of research concerning written message effectiveness and warning compliance. General literature is presented first, followed by discussion on the communication of risk and hazard in resource-based recreation and tourism settings.

3.6.2 Communication

At the most basic level, communication involves the transmission of an idea from one person to one or more others. Modes of communication are many, the most common including verbal, visual, and written formats. In general terms, the process of communication comprises four components: a source (the communicator of the message); the receiver of the message (subject to processes of perception, processing, and learning); the channel (the medium through which the message is transmitted); and the message itself (Burgoon & Burgoon, 1975; Moscardo, 1999; Philipchalk, 1995). These components each influence the outcomes of the communication, including effects such as change in attitudes, knowledge, action, or behaviour. In this section, aspects of the communication process are discussed, and factors influencing message effectiveness are identified. This is important material to review because how people perceive risk and hazard in natural resource settings is, at least in part, influenced by communication.

3.6.3 Message effectiveness: Persuasion

Message effectiveness can take several possible forms. To be effective, a message must be recognised and attended to by its intended recipient. Without this awareness, the communication will not proceed. Hence, designers of advertisements will use eye-catching colours, phrases, or photographs to attract the attention of their target markets. The second stage in effectiveness is the ability of the recipient to comprehend successfully (or decode) the message. If the people for whom the message is intended are unable to decipher its meaning, the communication will be unsuccessful. A third critical point, only reached if the initial

criteria are met, is the extent to which the message is accepted, believed, or acted upon by the recipient. Message effectiveness can, therefore, be measured along several dimensions, including awareness of the message, recall of the message content, attitude change, and observed behaviour change. The degree to which individuals alter attitudes or behaviour as a consequence of the information communicated is otherwise known as *persuasion*, the subject of thousands of social-psychological studies (Petty & Cacioppo, 1981).

Essentially, persuasion can be understood as a series of interdependent steps, incorporating message exposure, attention, comprehension, acceptance, yielding, and behaviour change (D.N. Cole, 1998; Manfreda & Bright, 1991; McCarthy et al., 1995; McGuire, 1985; Wogalter & Laughery, 1996). Persuasive messages contain a set of arguments supporting a particular position and one or more recommended actions (Burgoon & Burgoon, 1975; McGuire, 1985; Petty & Cacioppo, 1981). The primary goal of persuasive messages is to change (or produce) certain behaviours in the message recipient. There are a variety of factors common to persuasive messages that are useful to review. These factors exist within the broad framework of the communication process described above, relating to the components of the communication process.

In their review of persuasion literature, Petty and Cacioppo (1981) found that several factors attributed to the message source influence persuasion. For instance, research indicates that ‘source credibility’ and perceived power will contribute to persuasiveness. Communicators who are believable, physically attractive, and perceived to be similar to the message recipients, are likely to be effective in their communication (Petty & Cacioppo, 1981). These and other authors (Cacioppo & Petty, 1982; Cacioppo, Petty & Morris, 1983) have also determined that characteristics of the message recipients, such as intelligence, self esteem, and gender, can affect the likelihood of persuasion. While the results are not always consistent, a common finding is that those with higher intelligence are less likely to be persuaded, while those with low self esteem are more likely to adopt the target attitude (Petty & Cacioppo, 1981, 1986).

Furthermore, recipients’ ‘need for cognition’ has been identified as an important factor influencing persuasion. Cacioppo and Petty (1982) identified differences among individuals in their tendency to engage in and enjoy thinking. ‘Need for cognition’ is the degree to which individuals seek to “structure relevant situations in meaningful, integrated ways. It is a need

to understand and make reasonable the experiential world” (Cohen et al., 1955; cited in Cacioppo & Petty, 1979, p. 116). Individuals with a high need for cognition are more likely to scrutinise message content, and require quality arguments for messages to be effective in altering attitudes (Cacioppo et al., 1983). Similarly, Chaiken (1980) reported that high levels of issue involvement led message recipients to systematic processing strategies in forming opinions, whereas low involvement recipients tended to rely on heuristic strategies. Chaiken’s conclusions imply that the degree of issue involvement influencing how a message is processed, lies within the ability of the communicator to effect. This appears to be in mild contrast to Cacioppo and Petty (1979) who imply that ‘need for cognition’ is a personality disposition, and as such may be less likely to be affected by communicators.

In addition to source and recipient characteristics, aspects of the message itself have a role in the persuasion process. Elements such as the message complexity, number and order of arguments presented, degree of repetition, intensity of language, and use of fear appeals have all been shown to influence persuasion (Burgoon & Burgoon, 1975; Cacioppo & Petty, 1979; Chaiken, 1980; Petty & Cacioppo, 1981; Philipchalk, 1995). It is recognised, however, that the relationships between persuasion and any of the above variables are not straight forward, and are subject to interactive effects. For instance, while intense language may increase persuasion, this is mediated by the relationship between the communicator and the recipient. Extreme appeals are less likely to be effective if the communicator is held in low regard by the recipient (Burgoon & Burgoon, 1975).

Petty and Cacioppo (1986) utilised some of the findings in persuasion research and developed a model in an attempt to illustrate the process of persuasion. In their Elaboration Likelihood Model (ELM), later adapted by Manfredo and Bright (1991) to help understand the attitudes and behaviour of recreationists, the authors argued that persuasion is ultimately influenced by the degree to which recipients are encouraged into message-relevant thinking (elaboration). If elaboration is low, persuasion may take place, but only in a temporary sense. In this circumstance, recipients are thought to adopt a ‘peripheral route’ to persuasion in which they are more likely to be influenced by features of the communicator, or presentation of the message, rather than message content. The alternative, and more enduring persuasion is thought to occur when the ‘central route’ to persuasion is enacted (Manfredo & Bright, 1991; Petty & Cacioppo, 1986). Chaiken’s (1980) discussion of heuristic versus systematic information processing is analogous to the peripheral and central routes discussed by Petty

and Cacioppo, in suggesting that content-mediated opinion change will persist longer than source-mediated persuasion. The ELM is used to describe the effects of communication on recreationists in Section 3.7.3. The discussion now turns to another aspect of persuasive communication, compliance with warning messages.

3.6.4 Warning compliance

People in a wide variety of situations fail to respond to warnings directed at them, implying lack of awareness, poor comprehension, and/or limited confidence in the credibility of the message. This section reviews literature on the effectiveness of warning labels and signs, most of which explores features of the message rather than characteristics of message recipients. Further, few studies have evaluated actual behavioural compliance in warning situations, owing to the ethical difficulties associated with exposing people to potentially dangerous situations, and the highly labour intensive nature of observation research (Adams, Bochner & Bilik, 1998; Glover & Wogalter, 1997; Wogalter & Laughery, 1996).

One of the themes in warning compliance research is the investigation of the signal words used to convey risk (Friedmann, 1988; Wogalter, Jarrard, & Simpson, 1994; Wogalter & Laughery, 1996; Wogalter & Silver, 1995; Wogalter & Young, 1991). For instance, Wogalter et al. (1994) attempted to assess the influence of various signal words and a signal icon by presenting study participants with a range of common household consumer goods with hazardous potential. Product labels were authentically altered to include different signal words including 'note', 'caution', 'warning', 'danger', and 'lethal', and a signal icon (an exclamation mark embedded within a triangle). Following scrutiny of the labels, subjects were asked a series of questions about the products, one dimension of which was to ascertain the perceived hazard associated with each product. The results showed that, for products where no warning was given, the hazard ratings were lowest. The signal word 'note' led to significantly lower hazard ratings than did 'danger' and 'lethal', and 'caution' and 'warning' returned lower hazard scores than 'lethal'. The authors concluded that the presence of signal words on product labels will raise the hazard perceptions of consumers, although no significant differences in effect were found between the moderate signal words 'caution' and 'warning'. Furthermore, no effect for the signal icon was demonstrated. Wogalter et al. (1994, p. 554) suggested that although the signal icon may attract attention to the warning, "it has no additional influence beyond this (such as affecting hazard perception)".

In other research on signal word choice, Wogalter and Silver (1995) investigated the responses of non-native English speakers to lists of signal words and found that perceived hazard levels did not differ significantly from fluent English speakers. Poor comprehension of some signal words, however, such as 'hazardous' and 'halt' was found. Wogalter and Silver argued that the choice of appropriate signal words for warning labels is important if an accurate message is to be given. These authors cited examples of legal cases in which the words used to warn consumers have been determined as insufficient to communicate the extent of a hazard.

Further research has examined the effects of warning colour and signal word on hazard perception level and safety compliance (Braun & Silver, 1995; Wogalter et al., 1997; Young & Wogalter, 1990). Typically, the studies have shown that colour influences the awareness and recall of warnings, the level of hazard conveyed, as well as compliance behaviour. In an experiment where subjects were set a simple task involving a fictitious adhesive product, Braun and Silver determined that signal words such as 'danger', 'deadly', 'fatal', and 'lethal', were significantly more effective in conveying serious hazard when compared to signal words such as 'caution', 'attention', 'warning', 'notice', and 'important'. Perceived hazard levels printed in red were significantly higher than for other colours tested. Braun and Silver were also able to show that compliance with safety instructions was significantly higher among participants whose instructions were written in red compared to those who received green or black instruction information.

In addition to signal word choice and colour, some research has looked at other ways to increase warning awareness and compliance through increasing sign salience. Glover and Wogalter (1997) used a technique in which subjects were presented with a computer simulation of a mine evacuation to test the effects of different sign types. During the experiments, participants (under several different treatments) were required to exit the 'mine' through a series of tunnels, shafts, and intersections. In their efforts to complete this task, participants were exposed to warning signs that were of either high salience or low salience (high salience signs were larger and featured more prominent colours and fonts). Signs either directed subjects towards the mine exit, or away from hazardous areas. The researchers established that subjects exposed to high salience signs were significantly more likely to

comply with the directions than those exposed to the low salience signs. The researchers also found that women were more likely than men to comply with the warnings.

Pictorials and icons are commonly used in warning messages with the intention of simplifying communication, and conveying ideas without heavy reliance on words and language. While some authors have claimed that well-designed pictorials have the potential to communicate concepts and instructions at a glance (Moscardo, Woods, & Pearce, 1997), others have found that pictorials often fail to convey the intended message through poor design or the inapplicability of the specific warning to the pictorial format (Hathaway & Dingus, 1992; Wogalter et al., 1997). Wogalter et al. (1997) conducted a study in which they investigated subjects' comprehension and recall of various pictorials. Significant improvements in comprehension followed simple training and explanation of the most difficult to interpret pictorials, leading the researchers to conclude that a brief (verbal or textual) description of the pictorial's meaning is sufficient to advance comprehension of pictorial warnings.

Other message characteristics that have been found to influence effective warnings include the number of warnings presented and novel message formats. While no studies directly assess the effects of increasing the number of signs or labels, McCarthy et al. (1995) suggested that recent research is indicative of an inverse relationship. These researchers found that, as additional warning messages were issued, subject recall of specific warnings decreased. The effectiveness of warnings is likely to decline when they compete with many other warning messages. In addition, some research has indicated that out of the ordinary labels and signs may be more likely to gain attention and obtain compliance than those conforming to standards (Hathaway & Dingus, 1992; Wogalter & Young, 1994). In one experiment conducted to examine the effectiveness of behavioural compliance with warning labels, Wogalter and Young revealed a significant difference between novel and conventional formats. The study assessed the observed behaviour and other responses of subjects presented with a differentially labelled glue product and required to perform a model assembly task under incidental exposure conditions. The authors concluded that warning noticeability was an important factor affecting compliance, a finding supported by both the experiment observations, and the post-task questions. For instance, a strong relationship was found between reported awareness of the warning, accurate recall of its content, and compliance. The ability of the warning to attract the attention of the subjects appeared to facilitate

compliance. Wogalter and Young (1994) also acknowledge, however, that, although noticing the warning is necessary, it is not a sufficient condition to ensure compliance.

In addition to the recognised warning sign attributes accepted in the warnings literature, there are other social and psychological factors which are likely to affect compliance. Much of the literature on the effectiveness of warning messages focuses on the message, rather than the source or target of communication. However, effectiveness may also be a function of the message recipient's assessment of the costs of compliance, and the role of normative influences. For instance, McCarthy et al. (1995) argued that warning compliance imposes a 'cost' on those at whom it is targeted. Costs can include time, money, effort, lost opportunity, etc.. According to McCarthy et al. (1995, p. 2167), "people are frequently unwilling to take such simple steps as seeking another exit, going to the next room for protective equipment, or wearing a seatbelt". Where the cost of compliance is low, a greater proportion of people are likely to adhere to warning messages. Where the compliance cost is perceived to exceed the potential compliance benefit, individuals are less likely to act in accordance with the warning message, than if the benefits outweigh the costs (Hathaway & Dingus, 1992; Wogalter & Laughery, 1996).

Other beliefs and attitudes may affect how people process warning information. Where a product is believed to be safe, for example, product safety information is less likely to be attended to, or accepted where it is contrary to existing beliefs. Familiarity with a product also reduces the level of perceived hazard associated with that product, and reduces the likelihood that warnings will be read (Wogalter & Laughery, 1996).

Adams et al. (1998) also attempted to explain message effectiveness by reference to the message recipient. These authors suggested that lack of compliance with warning signs can be explained by processes including 'psychological reactance' and the 'third person effect'. For instance, psychological reactance (Brehm & Brehm, 1981; Manfredo & Bright, 1991) suggests that people do not like to be told what to do, and will oppose attempts to influence them when perceived control is at stake. Further, the 'third person effect' (Davison, 1983) helps account for a sense of invulnerability to harm by shifting the nature of the problem on to other people. Hence, warning messages can be interpreted as irrelevant to the individual, intended for other people who are less experienced or less skilled (Adams et al., 1998).

In another study, de Turck and Goldhaber (1989) found that subjects instructed to memorise all they could about a product had greater recall of its safe use, and were more likely to comply with recommended safety precautions than those simply instructed to form an impression of the product. de Turck and Goldhaber argued that, because of the small cognitive effort required, most consumers adopt an ‘impression-set objective’ to information processing and, as a consequence, fail to internalise important safety information. The authors concluded that consumers need to be encouraged to adopt a ‘memory-set objective’ and pay more attention to the specific content of warning messages, and be made aware of this objective before they examine safety information. While the authors’ explanation for poor recall of safety instructions is plausible, their solution is potentially problematic. Given that individuals are likely to develop ‘impression-set’ approaches to information processing in order to cope with the volume of messages competing for their attention, attempts to encourage a less peripheral approach to information processing present considerable challenges.

3.6.5 Summary

The research literature indicates that, to a certain extent, it is possible to influence hazard perception and awareness of warning messages, although ‘real world’ situations are largely untested. Most research on the effectiveness of warning messages has focused on the features of the message itself and, in particular, warning labels on consumer products. It is recognised that warning labels differ from warning signs, and that behavioural compliance may be more difficult to achieve in the former (McCarthy et al., 1995). While warning labels accompany virtually every consumer product, signs may be more effective because they are situation specific, and can be erected in relevant locations and conditions. These features may increase the likelihood that sign content will be attended to and acted upon.

According to the existing literature, to be effective, warnings need to be conspicuous relative to their context, with factors such as novelty, size, and contrast likely to affect salience. Signal words or icons, and pictorials also attract attention and can be used to convey the consequences of non-compliance. Other components of the communication process are important in persuasion and compliance. Factors such as source credibility, and the psychological disposition of message recipients will influence the efficacy of warning

messages. So too will the perceived compliance costs and benefits and normative influences operating.

3.7 Communicating risk in natural resource recreation and tourism settings

Communication is a common activity in recreation and tourism settings, and a wide range of situations exist in which information needs to be given to visitors, including basic safety messages, orientation information, and heritage education (Moscardo, 1999). It is possible to identify three primary management justifications for effective communication including enhancing visitor experiences, minimising visitor impacts, and managing visitor safety.

While there is some literature on the development of interpretation as a tool for enhancing the visitor experience (Cable, Knudson, Udd, & Stewart, 1987; Hall & McArthur, 1996; Light, 1995; Moscardo, 1996, 1999; Pierssene, 1999), and for the reduction of visitor impacts through communication (D.N. Cole, 1998; Hammitt & Cole, 1998; Vander Stoep & Gramann, 1987; Roggenbuck & Berrier, 1982), few published studies have examined the effectiveness of risk and hazard messages in a natural resource recreation or tourism context.

In nature-based recreation and tourism settings, the most common communication channels used by managing agencies are brochures, talks, signs, panels, and personal contact by agency staff (Knudson, Cable, & Beck, 1995; McCool & Braithwaite, 1992; Woods, Moscardo, & Greenwood, 1998). Signs and panels are often considered to be the most cost effective means of communicating with visitors, although managers should not assume that the signs they erect will attract the attention of visitors or that they will stop, read, process, and recall the information, and act in accordance with it (Cole, Hammond, & McCool, 1997). Sandiford and Kelly (1996, p. 27) argued that natural resource management agencies have become overly reliant on signs and other written text to convey messages, “despite research indicating that this medium is passive and one of the least effective forms of communication”.

The importance of persuasion cannot be underestimated in recreation and tourism settings, where managers often seek to protect the biophysical environment from the impacts of visitors, or improve the safety of visitors themselves. Gramann, Bonifield, and Kim (1995), for instance, observed that a major problem currently facing outdoor recreation management agencies is the damage to natural and cultural resources resulting from visitors’ violation of

protective rules. The potential of effective communication to address this management issue was recognised by McCool and Braithwaite (1992, p. 318) who emphasised that persuasive messages can cause visitors to “question their initial attitudes, evaluate the recommended adoption of a new attitude, and provide the incentives for yielding to and retaining new attitudes”.

Opinions on how to inform visitors of risks, and manage risk taking behaviour in natural settings, is part of a broader debate about direct and indirect management techniques (see Cole, 1995; Cole et al., 1997; Gramann et al., 1995; Hammitt & Cole, 1998; Manning, 1999; McCool & Braithwaite, 1992). Some authors have urged caution in becoming too involved in what is essentially the visitor’s experience (Griswold, 1989; McAvoy & Dustin, 1990), including authors who advocate almost complete individual responsibility for safety (Hardin, 1969; Sax, 1980). In contrast, those with economic interests in the tourism industry are naturally cautious about how much emphasis to place on safety given the possibility that visitor perceptions of risk can lead to a decline in business. With a growing emphasis on safety and agency accountability, risk management and risk communication has become a significant aspect of recreation and tourism provision, a phenomenon discussed further in Chapter 4.

A review of the literature suggests that specific studies addressing the issues of message effectiveness in nature-based tourism and recreation settings are few (Cole et al., 1997; McCool & Braithwaite, 1992). Signs and trailside information panels are widespread in outdoor recreation and tourism settings, yet little has been done to assess the impacts of these on visitor knowledge, attitude, or behaviour. Moreover, studies investigating the impact of safety messages are virtually absent in the literature. For this reason, and because the underlying principles are likely to have some applicability across a range of message topics and compliance situations, the literature reviewed in this section includes communication in recreation settings generally, rather than that which specifies a risk or safety focus only. The material can be logically organised around what is known about the message content and format, the message source, and the characteristics of the message recipient. The dimensions used as a framework for this discussion allow the various elements of persuasive communication to be identified.

3.7.1 Message characteristics

Of the previously identified dimensions of communication, the most widely studied in the recreation context are the characteristics of the message itself. This is consistent with the wider literature (Adams et al., 1995), and may reflect the fact that there is greater potential for manipulation of message characteristics compared to the characteristics of the message source and recipient. Additionally, recreation and tourism providers have available to them a range of communication strategies in these settings, from personal guides or interpreters, to brochures, outdoor panels, and signs, and it is within the interests of most management agencies to make assessments of the effectiveness of the various strategies in order to ensure that benefits are maximised. There are also aesthetic considerations in recreation and tourism management that may not be as important in some other settings where the natural character of the environment is less central to the individual's experience. The emphasis of recreation and tourism managers on the value of visitor experiences is a feature which makes communication, via written means especially, a challenging exercise.

Several studies have revealed that signs can be effective in resource-based recreation settings, although the effectiveness is not always complete. For example, Cole et al. (1997), in a study of the effectiveness of trailside bulletin boards in the back-country, found that recreationists exposed to messages encouraging low impact behaviour were more likely to acquire new knowledge about recommended practices than those not exposed to the messages. However, according to the authors, a threshold of approximately two messages was evident, beyond which information overload appeared to result. As the quantity of messages posted increased beyond two messages, attention per message and retention both declined. This finding is supported by other researchers who report that the effects of abundant visual stimuli can reduce the chances of each message being identified and absorbed by visitors (Bitgood, Patterson, Benefield, & Landers, 1986; McCool & Braithwaite, 1992). Cole et al. (1997) also found that only 55 per cent of visitors to the site stopped and looked at the messages on the board, and few visitors were willing to spend more than 25 seconds to read low impact messages. This implies the need to select and promote key messages only, and the potential value of pictorial communication.

D.N. Cole (1998) examined the effectiveness of written appeals for attention in a back-country recreation context. Six messages, comprising both text and basic illustration, were

systematically posted on a trailside bulletin board, and appealed to recreationists to comply with simple requests for appropriate behaviour in the wilderness setting. Message effectiveness was assessed both in terms of the proportion of visitors who stopped to read the notices, and the length of time that attention was held. Assessments were made in each of the six treatments and later analysed for differences. Results showed that, overall, 61 per cent of visitors stopped to look at the messages, and that the mean length of time spent attending to the messages was 52 seconds. Of the appeals used, the most effective was a simple appeal which read: 'please take time to read these messages', an appeal that increased visitor attention to the bulletin board by 88 per cent. Notwithstanding the impact of this simple statement, D.N. Cole (1998, p. 77) emphasised that "compliance with a request for attention to messages, does not guarantee compliance with the behaviors recommended in those messages".

Another study of visitor response to low impact messages examined visitors' understanding of pictorial messages at Great Barrier Reef, Queensland (Moscardo et al., 1997). Managers of this natural attraction had reported continuing issues related to the protection of the sensitive reef environment from inappropriate visitor behaviour. The researchers designed and constructed eight pictorial symbols, some with accompanying text, each of which was intended to convey a single aspect of reef visitor behaviour and its appropriateness (such as 'do not sit or stand on coral', and 'do not drop litter in the water'). The study found that the pictorial communications resulted in improved knowledge about the reef in only a minority of the messages. This was consistent for both English speaking and English as a second language groups. The authors attributed this result, at least in part, to the high level of existing knowledge of appropriate reef behaviour among visitors. Further, the authors concluded that the symbols were not effective in representing 'grey' areas, and should only be applied in situations where simple ideas can be conveyed. Interpretation of symbols is also highly context dependent, and influenced by culture, implying that a single set of symbols for all visitor groups may not be realistic (Moscardo et al., 1997).

Other studies have examined the potential of different information formats to influence visitor behaviour and knowledge. Roggenbuck and Berrier (1982), for example, compared the effectiveness of an information brochure and personal contact as methods intended to redistribute use within a popular wilderness camping area. The authors demonstrated that both treatments were effective in dispersing all recreationists, although when the treatments

were combined, the compliance was greatest for recreationists lacking experience in the setting. The researchers concluded that even a message communicated by a simple brochure can be effective, and that early information is most effective in dispersing wilderness use. Overall, most studies have concluded that messages delivered verbally, especially by agency staff, are the most effective (McCool & Braithwaite, 1992; Moscardo, 1999).

Vander Stoep and Gramann (1987) examined resource damage at a front-country recreation site, and found that inappropriate visitor behaviour (such as vandalism) could be reduced using management tools such as information and education brochures, signs, and personally delivered messages. Another study looked at the effects of personality and situation on intentions to obey rules in outdoor recreation areas. This laboratory study determined that “subjects were more willing to comply with regulations when they were told of the reasons for the rule, as well as the negative consequences... of not obeying them” (Gramann et al., 1995, p. 340). The authors concluded that information about consequences, in tandem with threats of sanction, could be an effective management strategy for directing visitor behaviour. If this conclusion is transferred to the hazard context, concrete examples that describe the consequences of risks may be more effective than vague suggestions that certain activities are dangerous.

Moscardo (1999) also considered the elements of effective communication in recreation and tourism contexts. She reviewed a small number of studies which identified features that attract visitor attention. Common among these are extreme stimuli, movement and contrast, novelty, and personal interest (Moscardo, 1999). Manipulating the size, colour, shape, and statements used in sign composition, can increase the likelihood that visitors will attend to the message (Bitgood, Benefield, Patterson, & Litwak, 1990). Bitgood et al. (1986) also found that the more salient the sign, the greater the attracting and holding power it has. The authors reviewed two studies both of which reported that by reducing the number of words on signs by approximately two thirds, sign reading increased by 25 per cent (Bitgood, Nichols, & Patterson, 1986; cited in Bitgood et al., 1986; Hodges, 1978; cited in Bitgood et al., 1986).

From the research examining the features of effective messages in recreation settings, it is clear that enhancing the salience of the sign can increase visitor attention. However, two caveats need emphasising: i) attention does not equate to acceptance or retention of the information contained in the sign; and ii) in some natural resource recreation settings it may

not be appropriate to use the extremes of size, colour, and movement to attract the interest of visitors.

3.7.2 Source characteristics

As identified in the earlier discussion on persuasion (Section 3.6.3), source credibility appears to be an important feature of successful hazard communication, and remains so in the recreation context (Manfredo & Bright, 1991; McCool & Braithwaite, 1992; Moscardo, 1999; Pearce, 1988; Pettigrew, 1996). The source of the message is considered to exert a powerful influence over message acceptance, and on resultant behaviour. Attractiveness, expertise, and trustworthiness are key features of increasing credibility (McCool & Braithwaite, 1992), and may have their greatest influence over people with an external locus of control (Pettigrew, 1996).

Highly credible communicators will be more persuasive, especially in situations where low processing occurs (Petty & Cacioppo, 1986). Source credibility, however, is not necessarily a characteristic exclusive to the communicator of a message. Rather, source credibility may have as much to do with the recipient's attitude. For instance, compliance with regulatory signs may depend on the recipient's attitudinal disposition toward the person or organisation responsible for the message. Manfredo and Bright (1991), in their study of the effects of information and source credibility on visitors to a North American wilderness area, found that recreationists with more positive perceptions of the USDA Forest Service were more likely to devote attention to informational brochures distributed on site. Attention does not equate to behavioural compliance, but it is an important step in the information processing chain, which may lead to persuasion.

Another critical feature of the message source, likely to influence persuasion and message effectiveness, is the perceived power of the message source to effect penalty or punishment. D.N. Cole (1998) suggested that the recreation manager is likely to be more persuasive if he or she is perceived by recreationists as having a legitimate right to prescribe their behaviour. Similarly, research has found that the presence of uniformed authority figures increased subjects' compliance with regulations in recreation settings. For instance, Swearingen and Johnson (1995) found the presence of uniformed park employees to be a significant deterrent to off-trail hiking in a major North American national park. Importantly, these researchers

also found that visitors accepted the presence of park staff where there was a perceived need for management action related to information dissemination, visitor safety, and resource damage. The authors emphasised that park staff need not assume a confrontational, authoritarian stance, since “the mere presence of the uniformed employee may dramatically reduce non-compliance” (Swearingen & Johnson, 1995, p. 80). Credibility and power of the message source is more potent if authority is physically present and the likelihood of punishment is more real. This represents a problem in the New Zealand park management context, where only limited staff presence is possible. Furthermore, penalties for non-compliance with management messages may be perceived as unlikely or slight.

3.7.3 Visitor characteristics

Research on the characteristics of message recipients includes the examination of individual cognition, socio-economic features, levels of experience in the recreation setting, and normative influences on behaviour. For instance, Manfredi and Bright (1991) adopted Petty and Cacioppo’s (1986) Elaboration Likelihood Model (ELM) in order to help explain the effects of communication on recreationists. In Section 3.6.3 the ELM was described as comprising two pathways to persuasion, with the central route encouraging a high level of message relevant thinking, resulting in more lasting attitude change (Petty & Cacioppo, 1986). Manfredi and Bright (1991) proposed that the likelihood of behaviour change is linked to the process of elaboration. These authors studied the effects of six factors thought to influence elaboration: prior knowledge, direct experience, topic involvement, need for cognition, perceived status in social group, and perceived source credibility. To a certain extent, all of these factors can be interpreted as characteristics of the message recipient. Results indicated that perceived source credibility and level of prior knowledge were significant factors influencing the generation of new thoughts and change of prior beliefs. These features of elaboration are considered to affect persuasion and, in turn, behaviour change. Manfredi and Bright (1991, p. 14) concluded that information given to recreationists prior to their visits was “effective in influencing the behavior of less knowledgeable users and [did so] by generating thought and introducing new beliefs”.

Other researchers have emphasised the importance of engaging the visitor in order to achieve management aims such as visitor responsibility, and the sustainability of both visitor experience and the biophysical resource (Moscardo, 1996; Pearce, 1988). Moscardo (1996,

1999) used Langer's (1989) concept of 'mindfulness' to describe a mental state in which visitors actively reconstruct their environment by creating new categories, thus directing attention to new contextual cues that may be consciously controlled. According to Moscardo (1999), mindfulness is a necessary condition for learning new information and has been associated with better decision-making, increased self esteem, and other individual and societal benefits. The theory implies that mindful visitors are more likely to respond positively to appeals relating to safety or the sensitivity of natural environments, although it is less clear how people's minds are best engaged, especially on topics as peripheral to the visitor's intended experience as risk and safety are likely to be.

Message recipient factors beyond the cognitive realm are also thought to influence persuasive communication. Important among these are normative influences, which can significantly affect the reception and acceptance of persuasive messages (Fishbein & Manfredo, 1992; McCool & Braithwaite, 1992). For instance, the expectations of the social group concerning behaviour appropriate in the recreation setting are likely to mediate the effects of persuasive communication attempts by the agency. This is especially important in natural resource recreation and tourism settings, given the fact that people rarely visit alone.

In another study investigating aspects of message recipients, Gramann et al. (1995) used a laboratory-based experimental procedure to examine the effects of social responsibility and 'awareness of consequences' information on subjects' intentions to obey regulations in outdoor recreation settings. Social responsibility was considered by the authors to be "a dispositional trait which reflects an individual's dependability, sense of obligation to the group, and willingness to accept the consequences of his or her own behavior" (Gramann et al., 1995, p. 329). The authors found partial support for their hypothesis that those with higher social responsibility levels would be more likely to accept and comply with messages pertaining to the negative environmental consequences of rule violation in outdoor recreation areas. Given the study's parameters, this result is unsurprising. How traits such as 'social obligation' influence *actual* behaviour in the recreation setting remains unknown.

3.7.4 Summary

The central findings from the studies reviewed, suggest that there are multiple mechanisms through which to improve message effectiveness in recreation and tourism settings.

Understanding visitors is one aspect of this, as characteristics, perceptions, and beliefs will determine the appropriateness of particular communication approaches. The form of the message itself is also central to its effect. While the success of pictorial messages is largely untested in the recreation and tourism context, such approaches seem to have the greatest potential in terms of attention, salience, and comprehension. (A pictorial message format is adopted in the present study). The communicator of the message (the source) can also influence message effectiveness to the extent that it is perceived to be credible. In many dispersed recreation settings, it is not feasible for agency staff to maintain a strong regulatory presence, which implies the need to adopt alternative strategies for fostering positive perceptions of the agency. The characteristics of those for whom the messages are intended further influence the outcome of communication attempts. Cognitive need and state, degree of social responsibility, level of experience, prior knowledge, as well as various social demographic features have been shown to affect communication in recreation settings. With the important exception of prior knowledge, these latter dimensions are largely beyond the influence of recreation and tourism managers.

Many of the principles of effective communication applied and tested in generic contexts are applicable in recreation and tourism settings. It is important to emphasise, however, that recreation and tourism settings differ from the settings in which most persuasion research has been conducted. In many workplaces and home environments, for example, signs, labels, and instructions are likely to be commonplace. Similarly, consumer products all have labels, and people are accustomed, although not necessarily attentive, to the printed warnings and instructions on these. In contrast, the volume of warnings and other information messages is likely to be both lower and less anticipated in natural recreation and tourism settings. Furthermore, visitors to most natural resource areas are a select group, not typical of the general public in terms of educational attainment, income, or occupation (Booth & Peebles, 1995; Manning, 1999), factors likely to positively influence message attention and comprehension (McCool & Braithwaite, 1992; Petty & Cacioppo, 1986). It is perhaps surprising, then, that the literature to date suggests that visitors attend only briefly to information messages in outdoor settings. The communication of risk and hazard messages is likely to be complicated by visitors' risk perceptions, attitudes, social influences, and perceived cost of compliance. These are subjects of discussion in Chapter 6.

3.8 Chapter summary and conclusions

Risk perceptions are influenced by what people believe, what they see, hear, and interpret for themselves. They are also a function of social and cultural influences which help filter information, including risk communications, selecting that which is attended to and accepted. As Jungermann and Slovic (1993, p. 87) observed: “individual risk perception has turned out to be a function of both the qualities of our cognitive and motivational systems and of the conditions of our social, political and cultural environment”.

This chapter has reviewed literature on risk perception and risk communication. The chapter creates a foundation for the analysis of the current research which examines the risk perceptions of visitors to, and dimensions of communication effectiveness at, two natural attractions in New Zealand. Aspects of communication and message effectiveness form an important part of the discussion on risk perception, and ultimately have an influence on behaviour in recreation and tourism settings. The inclusion of this latter research is instrumental in addressing the issues of warning compliance and visitor management raised later in this study.

To date, the research on risk perception and hazard communication in recreation and tourism is limited. There are, however, a number of broad conclusions that can be drawn, supported by the wider, more comprehensive literature. First, it is evident that individual judgements and decisions are influenced by perceptions of risk and safety. These judgements, however, are often not related to ‘actual’ assessments of risk determined by technical means, and hence, recreationists and tourists are likely to engage in behaviours experts view as risky, yet fear things that are unlikely to harm them. Second, risk perceptions are likely to be influenced by a variety of individual and situational factors. Tourists and recreationists, then, can be expected to form perceptions based on their own experiences, expectations, and beliefs, as well as through wider social influences including the media, promotional material, site managers, and other visitors.

Third, the communication literature suggests that people often ignore messages, and fail to comply with written instructions. Multiple explanations for this phenomenon include limited awareness or comprehension, the perceived costs of compliance, over-confidence in personal ability, lack of personal relevance, and lack of confidence in the communicator. While there is limited specific research on the effects of hazard communication in recreation and tourism

settings, the wider literature implies that recreationists and tourists are unlikely to attend to safety messages, potentially exposing them to physical risk in some natural resource environments.

The literature reviewed in this chapter indicates several important gaps in tourism and recreation research. In particular, there have been no studies examining how, or if, tourists perceive risk at New Zealand tourism destinations, or the significance of hazards at natural attractions. Further, little is known about the effectiveness of communication in these settings, especially the communication of natural hazards such as those identified at the glaciers of Westland National Park. The present study explores these questions, and considers the interaction between hazard communication and risk perception in the resource-based tourism setting.

In Chapter 4, some of the risk management issues in recreation and tourism settings are introduced. Specific attention is given to tourist behaviour and the visitor management challenges that arise from this, as well as the legal environment in which New Zealand managers must operate. Chapter 4 extends the discussion established in Chapters 2 and 3, building on the argument that risk is a significant phenomenon in current Western society influencing both the management and visitor experiences of natural resource attractions.

Chapter 4 Natural hazards and risk in recreation and tourism settings

4.1 Introduction

Natural resource recreation and tourism form an important and increasingly significant portion of the developed world's leisure and travel preferences. While outdoor recreation has been popular in many countries since the early twentieth century (Devlin, 1993, 1995; Manning, 1999; Shultis, 1991), the emergence of nature-based tourism as a distinct form of commercial activity is a relatively recent phenomenon. A new special interest tourism has developed, often differentiated from the traditional mass tourism by labels such as 'ecotourism', 'adventure tourism', 'alternative tourism', and 'green tourism'. The phenomenon is especially apparent in New Zealand, where tourists' use of natural heritage sites is increasing at a rate greater than the rate of inbound tourism generally (Higham, 1996). Notwithstanding the possibility of genuine differences between these styles, each implies close interaction between the tourist and the natural (or cultural) environment. These forms of tourism appear to have grown in popularity throughout the 1990s and into the 21st century (Ewert & Shultis, 1997; Hall & Lew, 1998; McKercher, 1998; Valentine, 1992).

The development of nature-based tourism has been facilitated by several important social trends that deserve comment. First, access to communication technologies (including television and the internet) has exposed people to the world's natural wonders, while other technological improvements have increased the comfort and accessibility of previously remote destinations. A large industry in leisure clothing and travel equipment has been part of these developments, and new technologies have helped create strong, lightweight materials that allow the adventure recreationist to go further and faster than ever before. Furthermore, advancements in other industries have improved the perceived safety of travel in remote regions. Cell-phones and global positioning devices, for instance, now provide an enlarged 'comfort zone' for those wishing to depart from more established travel routes.

The second important social trend contributing to the interest in nature-based tourism, is an apparent increase in environmental awareness. Various authors have observed that the

citizens of some developed nations, including New Zealand, have become concerned about human effects on the biophysical environment and, as a result, the social value of nature is relatively high compared to recent centuries (Boerwinkel, 1995; Bürhs & Bartlett, 1993; Dunlap & Van Liere, 1978; Philipsen, 1995). Rather than resulting in net benefit for the environment, however, it is possible that concern for the environment has led to an increase in the number of people interested in travelling to unique and ecologically sensitive places, thereby creating a net disbenefit (Gössling, 2000; Wheeler, 1991). This is, as yet, difficult to confirm. There is little doubt, however, about the high level of interest in the various incarnations of nature tourism.

The new level of interest in, and concern for, the environment may be related to the absence of nature experiences in the everyday lives of many people living in Western societies. Most economies in the developed world dictate that a growing proportion of people live in urban environments. It is possible to speculate that this contributes to a motive for people to 'escape' built environments and visit places that are removed from the effects of industry and commerce (Pigram, 1993). In this sense, nature-based tourism represents an opportunity to experience places of permanency in a world of rapid change.

Superimposed on these other important social trends, is the influence of the risk society. As discussed in Chapter 2, a concern for safety is a characteristic of modern Western life, and is also a feature likely to influence the management and administration of recreation and tourism. The concern for tourist safety and security is reflected in the World Tourism Organization's recent publications directed at government and private sector officials interested in improving tourist safety in their destinations (WTO, 1996, 1998).

Paradoxically, some travellers appear to react against the safety consciousness of their home environments and seek adventure and thrills through tourism. The recent rise of adventure tourism is perhaps a reaction to the decreasing opportunities to experience physical risk in everyday life. Western society is highly regulated with controls and systems that ensure that physical risk to citizens is minimised. Adventure tourism activities, such as bungee jumping, white water rafting, and shark feeding provide thrills - albeit carefully managed - that are strenuously avoided in the course of normal modern living. The adventure activities, however, are undertaken in the context of a society with low tolerance for genuine danger. If these activities were, in fact, shown to be dangerous or risky, the majority of current

participants would not undertake them and, society, through the imposition of regulations, legal penalties, or simple ‘market forces’, would ensure the closure of such operations. Notwithstanding a genuine desire for adventure, most tourists no doubt want the thrills without the associated risk of injury. In this sense, the identified paradox is only an apparent one. As tourists, people may be drawn to activities that are thrilling, but are likely to be repelled by genuine risks to their safety. Modern adventure tourism pursuits exploit this tension between the real and perceived risk by offering activities previously considered to be high risk but now made relatively safe through regulation and control. The individual adventure tourist now participates in highly protected adventure, attracted to the notion of danger, yet expecting that the experience is contained within a regulated, safety-conscious environment.

Within the context of this burgeoning interest in nature and adventure tourism, and against a general background of societal risk aversion, this chapter examines some of the hazards and risks faced by tourists and other visitors to natural resource settings. Brief consideration is given to the adventure and thrill-seeking aspects of the tourist industry, although the emphasis of the discussion is on the risks that are not deliberately sought by visitors. In the next section, the nature and scope of risks are outlined, and examples of hazardous situations, and attempts by agencies to manage the risks arising from them, are described. Consideration is given to the legal context for the management and provision of recreation and tourism experiences in New Zealand. Finally, literature from the field of tourism studies is reviewed to highlight aspects of tourist behaviour that are significant for risk and hazard management.

4.2 The nature and scope of risk in natural resource recreation and tourism

For the purposes of the current discussion, the nature of risk in natural resource recreation and tourism settings can be considered to be predominantly physical. By ‘physical risk’ is meant the likelihood and significance of physical harm to visitors. Tourists and recreationists also expose themselves to social, financial, psychological, and satisfaction risks (Cheron & Ritchie, 1982; Roehl & Fesenmaier, 1992), but the present study is principally interested in the influence of natural hazards and physical risk on tourists’ perceptions and behaviour. Financial and legal risks potentially incurred by managing agencies are included in the discussion presented in Section 4.3, and later in Chapter 7.

Observation of tourism trends suggests that, increasingly, tourists want to get close to nature. Adventure tourism, in particular, has become a high profile component of the tourist activity sector in New Zealand (Cloke & Perkins, 1998; Page, 1997; Page & Meyer, 1997). This demand has increased the pressure on those agencies responsible for the provision of recreation and tourism opportunities to do so safely, without compromising the integrity of the tourist experience. As the demand for authentic nature experiences increases, so too does the potential for accident, injury and death, as many natural attractions are inherently dangerous places for people to visit.

There are many ways in which visitors to natural areas may be exposed to physical risk. It is first important to differentiate between the hazards that confront recreationists, and voluntary recreation or tourism activities that entail elements of risk (McCool & Braithwaite, 1992). In adventure tourism and risk recreation, participants are often testing mental and physical skills by engaging with natural hazards such as a rock face, a white water river, or the behaviour of wild animals. The thrill or adrenalin rush achieved through balancing competency against danger can be an important part of the recreation experience (Csikszentmihalyi, 1990; Priest, 1992). The risk-taking recreationist is aware of the potential for injury, as well as actions needed to control exposure to hazards (McCool & Braithwaite, 1992). In contrast, “to non-risk-seeking visitors, hazards are impediments to an optimal experience” (McCool & Braithwaite, 1992 p. 294).

4.2.1 The natural hazards of tourism and recreation

In national parks and other protected areas around the world, people are frequently exposed to natural hazards, many of which they fail to recognise. There are a variety of situations in which visitors to natural attractions can be exposed to hazards without intentionally seeking these. The particular hazards are obviously highly site-specific. In New Zealand, common (but not necessarily frequent) hazards to tourists and recreationists include extreme weather conditions, river crossings and floods, rockfall and avalanche, steep drops, ice collapse, volcanic eruptions, and thermal mud pools. International examples include most of the above, with the addition of wildlife (bears, crocodiles, poisonous fish, etc.), lightning strikes, extreme heat, and others. Ironically, it is often the attraction of these natural features that motivates

people to visit in the first place (Bean, 1989; Greenway, 1996; Johnston, 1989a; Martin, 2000).

Although natural hazards are not unique to New Zealand tourism, they are, perhaps, more significant than in some other tourist destinations owing to the centrality of nature experiences in the New Zealand tourism product. In mountain settings especially, hazards are an inherent component of recreation, and not necessarily associated with the degree of public accessibility (Boyes, Thompson, Grant, & Newby, 1995). Boyes et al. (1995) noted that relatively accessible outdoor recreation settings such as Mt. Taranaki could pose high levels of danger due to rapid weather changes. Many other New Zealand settings are rugged, steep, or densely forested, and rivers, isolation, and weather conditions can all pose problems for visitors (Johnston, 1989a). To this extent, it is possible to differentiate between natural area visitors generally, and those pursuing adventure activities, for whom risk *is* an important and integral element of the recreation experience. Some members of the former group may accept risk as “a necessary condition” of recreation in particular environments, while “others remain totally unaware of the risk element until they experience it by chance” (Johnston, 1989b, p. 324).

Although climate and terrain can create hazardous conditions throughout the natural areas of New Zealand, there are several popular attractions where specific concerns about visitor safety have been raised. These areas include the geothermal areas of the North Island’s central plateau (Beetham & Mongillo, 1995), the Hunua Falls (K. Floyd, personal communication, March 9, 1998), the Huka Falls and Punakaiki Blowholes (P. Dale, personal communication, September 24, 1998), Tongariro National Park (Martin, 2000), and the glaciers of Westland National Park (DOC, 1997b; McSaveney & Davies, 1998; TRC, 1995). Each of these sites is easily accessible, receives high numbers of visitors each year, and contains some physical risk to visitors. Injuries, near misses, and deaths have been recorded at each of these sites. Accidents and incidents occur in these natural settings in part because people are present in large numbers. There are also concerns about visitor behaviour at these sites, a factor identified as important in understanding risk in recreation and tourism further discussed in Section 4.5.

4.3 Risk management in recreation and tourism settings

There is an inherent conflict between the visitor's desire to see nature in its natural state, and at the same time to be protected from natural hazards which may arise (Martin, 2000, p. 48).

A variety of circumstances exist in which visitors to natural settings can inadvertently be at risk. Managing agencies usually recognise this fact and take steps to minimise the negative consequences. Common to most parks and recreation agencies in North America, the United Kingdom, Australia, Canada, and New Zealand, is the concept of a risk management plan for maximising visitor safety. These plans take many forms but typically address the processes of identifying, assessing, controlling, and monitoring hazards and risks (Christiansen, 1987; Peterson & Hronek, 1992; Planck, 1996; Spengler & Hronek, 1995; Sutton, 1989). Risk management is about developing a logical and systematic approach to managing uncertainty.

Risk management in recreation and tourism settings usually addresses two central concerns: i) protection of the visitor from harm; and ii) protection of the agency from legal action, financial loss, or diminished reputation (Ewert & Boone, 1987). In North America, in particular, there appears to be significant emphasis on the latter of these functions, to the extent that fears of litigation and rising liability insurance costs have meant that some outdoor recreation programmes have been made unavailable to the public (Brademas, 1991; Direnfeld-Michael, 1989; Ewert & Boone, 1987; Kozlowski & Mertes, 1990; McAvoy & Dustin, 1990). Kozlowski and Mertes (1990, p. 27) argued that in order to limit the likelihood of visitor injury and agency liability, a "when in doubt, throw it out" strategy is best for dealing with possible premise facility defects.

In natural resource recreation and tourism settings, there are commonly three basic approaches taken to the management of hazards, including removal of the hazard, limiting access to the hazard, and warning of the hazard (Christiansen, 1987). The options selected by managers will vary according to the nature of the physical environment, the assumed competency of the visitors, actual or perceived legal duty, and the general ethos of the management agency regarding visitor responsibility and safety. In many situations, removal of the hazard (such as a rock face) is either impractical or impossible. Furthermore, if removal of natural hazards involves modification to the environment, this may be detrimental to both conservation and visitor satisfaction aims. Similarly, the construction of barriers and railings can detract from the visitor's perception of freedom in the natural setting and interfere

with the aesthetic character of the site. Construction and maintenance of major structures is also a significant financial cost. For these pragmatic and fiscal reasons, many outdoor recreation agencies elect to provide warning signs as an important strategy in their communication with visitors and in the management of hazards to which visitors might be exposed.

Risk management plans and strategies have become part of the common discourse among park and recreation managers, as well as many tourism operators. The initiative for risk planning can be traced to several sources including state or national legislation, moral obligation, and market forces. The adventure tourism industry in New Zealand, for instance, was prompted to initiate a code of practice among its members in order to encourage safe operations (Adventure Tourism Council, no date). While legal and moral motives may have been present, an important factor influencing the development of an agreed safety code was the threat that the perception of unsafe tourism experiences could have severe financial consequences for an industry so dependent on image. In Canada, public policy directs that all national parks and historic sites complete risk assessments and produce a Public Safety Plan (Parks Canada, 1996). The policy is justified on the basis of reducing visitor accidents and agency liability exposure, minimising agency expenditure in message development and search and rescue operations, and enhancing visitor satisfaction (Parks Canada, 1997). Such policies are an acknowledgement of the general lack of visitor experience and understanding of natural environments, a consequence of their separation from the urban, developed setting.

Some authors observe that risk management has become a major component of business for North American recreation and park agencies as a result of the liability insurance crisis experienced there (Gold, 1991, 1994; Kozlowski & Mertes, 1990; McAvoy & Dustin, 1990; Spengler & Hronek, 1995). Risk management is one process through which agencies can reduce the likelihood of costly compensation settlements. Gold claimed that never before in the history of park management had there been such compelling reasons to develop sophisticated risk management programmes. According to Gold (1991), the principal factors driving this need included increasing participation by people who were not aware of the risks in natural resource recreation, a legal system that offered remedial action for people injured through the park agency's lack of safety checks, and the technology and expertise to prevent many accidents. It is interesting to note that Gold's analysis did not include reference to an increase in the actual number of accidents or injuries among visitors. It seems reasonable that

such a statistic would be an important justification for risk management planning. This adds support to the suggestion that risk management planning is driven by factors other than the number of recreationists who are suffering injuries.

The protection of visitors to natural settings is now an important feature of park management business. Parks agencies in countries such as the United States, Canada, and Australia have developed special programmes and processes for risk management and the communication of risk to the general public (Batt, 1996; Brown, 1999; Hamilton-Smith, 1996; Parks Canada, 1996, 1997). The Department of Conservation in New Zealand has also been active in the development of risk management processes for visitors to conservation lands, especially since the accident at Cave Creek¹⁰. DOC is now committed to identifying and meeting best practice through its membership of agencies such as the Australian and New Zealand Environment and Conservation Council, and a hallmark of its Quality Conservation Management philosophy is an emphasis on reducing risk to the organisation and visitors (DOC, 1996a). At the field level, DOC personnel are required to develop hazard management plans in which the suite of possible dangers to the public (and DOC employees) are identified, assessed, mitigated, or reduced (eg., DOC, 1997a, 1997b).

In addition to the widespread development of risk management plans and codes of practice within the outdoor recreation and tourism industries, there are a number of risk management tools used at specific recreation and tourism sites. For instance, common site strategies for limiting the risk exposure of both agency and visitor, include interpretation and education, agency personnel (such as guides and park rangers), and warning signs. The latter are especially common in dispersed recreation settings (McCool & Braithwaite, 1992), and while their effectiveness is not well established (Sandiford & Kelly, 1996), signs are relatively inexpensive and may satisfy the agency's duty of care and limit liability. According to Fullagar (1996), in his discussion of Australian parks and recreation management, warning signs may, in fact, remove agency liability, although the author acknowledged that this will depend on the nature and obviousness of the hazard to 'ordinary' participants, the capability and experience of visitors to the site, and the adequacy of warning signs to convey accurately what the hazard is. Planck (1996, p. 168), also discussing the legal value of warning signs in

¹⁰ In April 1995, 13 students and a DOC employee fell 30 metres to their deaths when a viewing platform collapsed beneath them. The platform was the responsibility of DOC, and the accident resulted in a high level of scrutiny of the Department's risk and safety management systems (see Chapter 7 for additional discussion).

Australian natural resource recreation areas, suggested that in order to meet their duty of care, agencies must adopt the Australian standard for danger signs (AS 1319), and the various specifications concerning design, shape, and colour. Planck (1996) also noted that where it is identified that particular groups of international visitors are present, there should be a requirement for those languages to be used to convey warning messages. Notwithstanding the need to communicate effectively with a broad range of visitors, such a requirement may be difficult to sustain as a management strategy in locations where a wide range of international visitors are present, and in an industry where markets are constantly changing. Plank's comments, however, illustrate the degree of concern about visitor risk and resultant liability among some recreation and tourism agencies.

The following section describes the legislative framework within which New Zealand recreation and tourism agencies must operate. The statutes reviewed are relevant to the discussion on managers' perceptions of risk discussed in Chapter 7.

4.4 The legal context for visitor management in New Zealand

Some recreation and tourism agencies around the world operate within a highly litigious environment, where important financial implications can be associated with visitor injuries (Brown, 1999; Gold, 1991; Rankin, 1989, 1990; Spengler & Hronek, 1995). In the United States, for instance, recreation and tourism providers may be sued for visitor injuries if their conduct is determined to be negligent. To be found negligent, it must be proven that: i) the agency had a duty to protect the recreation visitor; ii) the agency breached that duty; and iii) the visitor was injured as a result of that breach (Christiansen, 1987; Rankin, 1989, 1990; Spengler & Hronek, 1995). In Australia, there is also evidence of a legal impact on the recreation industry. Concerns among managers of outdoor recreation sites have been exacerbated by the lack of clear law relating to the liability of public recreation authorities (Rigby Cooke, 1998).

Parks, recreation, and tourism agencies in New Zealand have been protected from many of the legal and financial implications of visitor accidents due to the existence of a comprehensive accident compensation scheme which effectively limits the extent to which individuals or organisations can be held financially responsible for damages resulting from personal injury (see Section 4.4.1.3 below).

4.4.1 Specific legislation affecting recreation and tourism management

There are several important laws which affect the management of risk and public safety in the protected natural areas of New Zealand. These are important to review in the context of management perceptions of legal liability, which forms part of the discussion in Chapter 7.

4.4.1.1 Occupiers Liability Act

The Occupiers Liability Act (1962) is intended to ensure the safe use of premises by visitors or tenants. At tourism sites such as Fox and Franz Josef glaciers, DOC, as the ‘occupier’ has a responsibility to ensure visitors are free from harm. Although it does not specify recreation and tourism providers, the Act requires that managing agencies demonstrate the ‘common duty of care’ to all visitors so that the visitor may be “reasonably safe in using the premises for the purposes for which he is invited or permitted by the occupier to be there” (Section 4 (2)). In discussing the Act’s relevance to tourists, Heilbronn (1992, p. 326) stated that occupiers of all premises have a duty to protect travellers “from injuries suffered by: (a) dangerous activities performed there... and (b) the defective state of the premises”. According to Heilbronn (1992, p. 328), common law defines the ‘occupier’ as “any person(s) exercising control over the premises”.

The degree of responsibility accepted by the management agency is likely to be affected by the nature of the activity, its locality, and the level of visitor competency or experience. It is also important to emphasise that, under the common law rule of *volenti non fit injuria*¹¹, the Department of Conservation has no obligation to visitors in respect of risks willingly accepted by the visitor. According to the authors of DOC’s ‘Visitor Strategy’: “this absolves the Department from liability where visitors choose to undertake potentially dangerous activities knowing that these activities may be dangerous” (DOC, 1996b, p. 54). In addition, Martin (2000) has argued that warnings that identify hazards and advise avoidance action are sufficient to provide management agencies with a defence under the *volenti* clause. That is, it would be reasonable to expect that visitors, if warned, are then acting in acceptance of the known risks. There are, however, two key elements to a plea of *volenti*: i) full knowledge of the risk; and ii) free and voluntary acceptance of the risk (Martin, 2000). These are critical

elements to emphasise, given that it cannot be assumed that visitors to public conservation areas *have* recognised and accepted the risks arising from natural hazards. This is, of course, only relevant to the extent that a duty to protect visitors exists.

4.4.1.2 Health and Safety in Employment Act

Under the Health and Safety in Employment Act (HSE) (1992), managing agencies of recreation lands such as the Department of Conservation, as employers, are legally required to “take all practicable steps to ensure that people in the place of work, and in the vicinity of the place of work, are not harmed by any hazard that is or arises in the place of work” (Section 16). All practicable steps must also be taken to “ensure that no action or inaction of any employee while at work harms any other person” (Section 15). Members of the public are classified as ‘other persons’, thereby making employers responsible for the safety of all people in the work place. While the Act is primarily intended to protect employees at work, the safety of visitors on land managed by the Department of Conservation is also implied.

The extent to which many conservation, recreation, or tourism areas can be considered ‘workplaces’ is critical in terms of the implications for liability in recreation and tourism management. This aspect defines the boundaries of the agency’s duty to non-employees but is open to interpretation, and is, as yet, undefined by case law (Martin, 2000). For instance, if sections of the front-country and back-country of New Zealand’s national parks are defined as places of work (temporarily or permanently), this has important ramifications for DOC under the HSE Act. If this were the case, a duty to visitors would be imposed, and any breach could result in the Department, or its employees being held accountable. In this context it is instructive to note that in the Commission of Inquiry following the platform collapse at Cave Creek in 1995, it was determined that DOC had breached a duty to its visitors under this Act. An important factor in this ruling was that the platform itself could be considered a place of work (for the DOC staff member and the Polytechnic tutor accompanying the group). Private organisations, or members of the public, might have been prosecuted in these circumstances (Department of Internal Affairs, 1995).

¹¹ “No harm is done to one who consents” (Todd, 1997, p. 1103).

Since the introduction of the HSE Act, there has been considerable concern, both in the public and private sector, regarding the extent to which individuals and organisations can be held responsible for accidents at their places of work (R. Moir, personal communication, July 7, 1999). Given these concerns, it is important to emphasise that the Act was intended to achieve two main purposes. First, to achieve the comprehensive protection of employees, workers, and anyone affected by work (workplace visitors, for instance), the safety of these groups was coordinated under one single Act, rather than laws that covered groups of workers within specific industries. Under previous legislation, the safety of workers was dealt with individually through occupation-specific statutes such as the Machinery Act (1950), the Harbours Act (1950), and the Agricultural Workers Act (1977). With the passing of the HSE Act, the same principles applied to all work places, with only a few exceptions (Heffernan, 1995).

The second important intention of the Act was what its creators called a ‘transfer of ownership’, as the following comments illustrate:

Historically, the legislation has tended to have the effect that safety was the government’s responsibility – that you didn’t worry about it until the inspector told you what to do, and then you did what the inspector told you to, and that was the end of it. Everyone waited to be told what to do, and perceived no individual responsibility. So the Health and Safety in Employment Act moved away from that by putting the responsibility on employers, and people who control workplaces, to be proactive and make an assessment of what could happen, its likelihood, and how it could be prevented from happening (R. Moir, personal communication, July 7, 1999).

While the intention of the HSE Act was to transfer the responsibility for safety to employers, a degree of government involvement was retained under the new system. This took the form of the Occupational Safety and Health Unit (OSH). This unit administers the HSE Act, develops and monitors standards for the safety of people at work, investigates accidents, and provides education and advice to employers and others with responsibilities under the Act (Occupational Safety and Health Service, 2001). The Unit, however, is small, and has a limited capacity to monitor the range of workplaces and employers covered by the Act (P. McIntosh, personal communication, July 9, 1999).

The introduction of health and safety legislation can be interpreted as a microcosm of wider social change and neo-liberal policy in New Zealand. The reduction of government influence within industry, and increases in individual responsibility and accountability, were consistent

with this stance. Whereas previously the rules and technical requirements were prescribed, under the HSE Act employers (and others with responsibilities in the workplace) became obliged to construct their own safety indicators, with an emphasis on performance standards. The shift in responsibilities had the potential to heighten the perceptions of risk for those now held accountable for safety.

4.4.1.3 Accident compensation and insurance legislation

Since 1974, the New Zealand government has operated a no fault accident insurance and compensation scheme that aims to rehabilitate and financially compensate those people who suffer personal injury, irrespective of where or how the injuries occur. The accident compensation legislation has also made it impossible to sue for compensatory damages resulting from personal injury, where provision for that injury is made in the legislation, thereby minimising liable cases in New Zealand to date. This means that no party can sue any other party on the basis of personal injury in New Zealand. Claims for damages other than personal injury (exemplary damages) may be sought, as these are not covered by the Accident Insurance Act (1998).

Since its inception, the legislation governing the accident compensation scheme has been altered several times¹². Changes to the scheme, and the introduction of specific health and safety legislation, have both reduced the extent to which the State is willing to underwrite personal injury claimants, as well as increased the accountability of employers to provide safe working conditions (Wren, 1997). Notwithstanding the significance of these changes, two key principles of the New Zealand legislative arrangements remain: i) it is not possible to sue for personal injury; and ii) compensation is payable to victims suffering injury accidents (although no longer in lump sum payments).

Under the Accident Insurance Act (1998), overseas tourists suffering personal injury are eligible for compensation in the form of medical treatment and rehabilitation costs while in New Zealand. Tourist entitlements are similar to those available to New Zealand citizens, but

¹² The original scheme was administered under the Accident Compensation Act (1972). In 1992, the Accident Rehabilitation and Compensation Insurance Act was introduced, later replaced by the current Accident Insurance Act (1998). This act is to be repealed, as of April 2002, by the Injury Prevention, Rehabilitation, and Compensation Act (2001).

remain valid only while the claimant is in New Zealand, and do not extend to the costs associated with loss of income or altered travel arrangements (Page, 1997).

New Zealand's injury compensation legislation has prevented the development of a highly litigious environment as observed in some other parts of the world. On the one hand, the legislation has allowed experiences and opportunities to be offered by recreation and tourism agencies, without the threat of tort law. On the other hand, the existence of comprehensive accident compensation may have reduced the economic incentives for provision of 'safe' experiences. In either case, the accident compensation scheme represents an important contextual feature of recreation management in New Zealand.

4.4.1.4 National Parks Act and Conservation Act

Although their primary purpose is not related to health, risk, or safety, the National Parks Act (1980) and the Conservation Act (1987) create the administrative context in which tourism and recreation are managed in many natural areas. The Conservation Act (Section 6(e)), for instance, establishes a mandate for the Department of Conservation to "facilitate" recreation and to "allow" for tourism in the areas for which it is responsible. Further, the National Parks Act contributes to the complexity of visitor risk management because it specifies "freedom of entry" to a large number of predominantly natural and unmodified areas, including popular visitor attractions such as the glaciers of Westland National Park. The Act (Section 4(2)e) states:

Subject to the provisions of this Act and to the imposition of such conditions and restrictions as may be necessary for the preservation of the native plants and animals or for the welfare in general of the parks, the public shall have freedom of entry and access to the park, so they may receive in full measure the inspiration, enjoyment, recreation, and other benefits that may be derived from mountains, forests, sounds, seacoasts, lakes, rivers, and other natural features.

Managers of national parks, therefore, are limited in their powers to prevent people entering park areas where hazards exist, and indeed, managers are expected to keep rules and regulations to a minimum. It is lawful, however, for DOC to close facilities (such as tracks, huts, or bridges) for reasons of safety or environmental damage (Booth, forthcoming; DOC, 1999b; Martin, 2000), although in practical terms track closures are especially difficult to enforce. There is limited literature on the restriction of public access to national parks and,

consistent with the intention of the National Parks Act, the focus to date has been the restriction of access for protection of natural and historic values, rather than for visitor safety.

A review of the *General Policy for National Parks* (National Parks and Reserves Authority, 1983) is also instructive. The policy states that, “while individuals are primarily responsible for their own safety in national parks all reasonable precautions will be taken for the safety and protection of the public” (Section 28.1). It is also clear that the protection of natural resources within a park take priority over providing “a reasonable level of safety for users” (Section 4.1). Given the primary emphasis of the National Parks Act, this position is unsurprising. Martin (2000) noted, however, that any policy or plan made under legislation is subject to challenge by judicial review. Importantly, in the present context of this discussion, he also observed that:

we live in libertarian times in which the rights of the individual are not lightly to be subordinated to ‘the public good’. It is now very questionable whether the kind of prioritizing which we see in the National Parks Policy is a solid enough foundation for confident management decision making (Martin, 2000, p. 10).

4.4.1.5 Other Acts

In addition to the laws discussed above, several other statutes require brief acknowledgement of their influence on the activities of land management agencies. For instance, the Resource Management Act (1991) is used to determine whether visitor facilities and services can be provided. A ‘land use consent’ must be obtained before any new visitor facility can be developed. The Building Act (1991) is also relevant as it specifies codes and regulations that help ensure that buildings and structures meet their intended purposes. These two acts provide the legislative basis for the initial land use approval, and the safe construction and use, of all structures or buildings, including those in national parks and other PNAs. The Crimes Act (1961) is also part of the legal framework affecting natural hazard management. Managers of recreation or tourism sites could face charges under this Act where it is proven that their negligence has led to death or injury.

4.4.2 Risk and responsibility in natural resource settings: An emergent management paradox

The visitor attractions in New Zealand are predominantly natural areas that are managed on behalf of New Zealand citizens by the Department of Conservation. As such, these are public

areas where access is free to all. People visit these areas for a variety of reasons, but common among these is the desire to escape the urban and developed aspects of life, experience something new, and to get close to nature (Bean, 1989; Booth & Peebles, 1995; Espiner & Simmons, 1998). Managers of nature-based recreation and tourism settings attempt to satisfy visitor needs through the provision of opportunities aligned to these motives. Herein lies the current paradox: managers must balance visitor demand for nature experiences with a growing demand for safety. The paradox is mirrored in wider society where a balance is attempted between the freedom of the individual to act without restraint, and the desire of society to create environments that are devoid of unacceptable danger (Boyes et al., 1995; Hughes-Johnson, 1996).

Managers of nature-based recreation and tourism areas have legal obligations to ensure the relative safety of visitors to these areas. Yet managers face a difficult challenge because many of New Zealand's recreationists and tourists are seeking close encounters with nature, and are unlikely to be satisfied with experiences that have been tamed beyond recognition. Internationally, New Zealand is marketed as a major adventure destination, and this aspect of the industry has grown rapidly in the last decade and a half (Bentley & Page, 2001; Bentley, Page, Meyer, Chalmers, & Laird, 2001; Berno, Moore, Simmons, & Hart, 1996). Boyes et al. (1995, p. 3) observed that New Zealand is now referred to in promotional material as the 'adventure capital of the world', a label they say has historical roots in New Zealand's pioneer development. Independence, challenge, and risk-taking were essential features of a nation based on a rural economy, "...and the consequences of such a lifestyle were accepted" (Boyes et al., 1995, p. 6). Historically, the right of New Zealanders to access the outdoors was guaranteed through legislation allowing freedom of entry, and a welfare system that provided compensation in cases of injury and loss.

Natural resource recreation managers must attempt to balance their obligations against public expectations for safety and natural experiences. Various authors have cautioned against eliminating the risk from recreation (Batt, 1996; Bean, 1989; Greenaway, 1996; Griswold, 1989; Hardin, 1969; McAvoy & Dustin, 1990; Sax, 1980; Shivers, 1986). A common theme among the arguments is that it is not possible nor appropriate to fence entire cliff lines, construct pathways over rough terrain, or place warning signs at every foreseeable danger point (Batt, 1996). Even if this were possible, it is important to recognise that the desire to

participate with risk, or simply get near to and experience natural features, is what motivates some recreationists (Shivers, 1986).

McAvoy and Dustin (1990) argued that with too much emphasis on safety, the spectrum of recreation opportunities provided might be lost. Moreover, the authors claimed that a “preoccupation with safety and risk is stifling. At a time when the public needs more stimulation and adventure in their lives, the [recreation] profession is inclined to offer less” (McAvoy & Dustin, 1990, p. 58). The argument here is that risk is an essential part of life, and to eliminate danger from recreation may reduce the potential benefits available to the individual. Adopting a similar argument, albeit with a broader brush, Hanna (1991, p. 2) claimed that the development of standards, regulations, and numerous technologies have significantly reduced the risk of injury and premature death, to the extent that “the lives of most Canadians, while longer, have become relatively routine and mundane”. In this sense, outdoor recreation and tourism are seen as mechanisms through which balance can be brought to “information rich and experience poor lives” (Hanna, 1991, p. 2). Holyfield (1999) also argued that voluntarily placing ourselves at risk carries symbolic weight in routine lives.

The arguments for retaining risk in recreation imply a social value for experiencing challenge or hardship, and assume that some people seek exposure to risk. To suggest that, because many areas of life are secure and controlled, individuals will benefit from less comfortable physical conditions may be explained in evolutionary terms (see Chapter 3), as contributing to the survival of the species by taking chances. An alternative evolutionary argument can also be developed that, in order to survive, people adopt strategies of risk avoidance, and minimise exposure to physical hardship. Notwithstanding the possibility that some personal benefits, such as improved fitness and self-esteem, may be realised through participation in outdoor recreation, it seems most plausible that the conditions described by Hanna (1991) and others, contribute to the problem of people visiting unfamiliar natural resource areas with high expectations of safety. The authors highlight some important characteristics of a risk averse society, yet do not acknowledge that many people are ill-equipped to deal with natural hazards in outdoor recreation environments.

4.4.3 Interim summary

Visitor risk and safety in New Zealand's natural resource settings is influenced by several acts of parliament, although none has been written specifically with the health and safety of recreationists or tourists in mind. Hence, the legislative context for managing visitor safety in these settings is varied and at times ambiguous in meaning. Despite this, a duty to protect visitors is evident in several statutes, contributing to an emergent paradox in which managers must respond to visitor demands and visitor competencies within a society concerned about risk. A further complication in visitor management relates to the characteristics of tourist behaviour, the focus of the next section.

4.5 Tourist behaviour and the relevance of risk

One of the objectives in the present study is to investigate the nature of visitor perceptions of risk at natural attractions in New Zealand. One component of this theme concerns the behaviour of tourists in natural recreation settings. It is, therefore, important to review relevant literature on tourist behaviour, in order to explore the possibility that some characteristics of being a tourist influence risk perceptions and / or increase the likelihood of risk exposure. This section considers claims that tourists are a vulnerable group in society, that accidents and incidents are common to the tourist experience, and that behavioural characteristics play a significant role in tourist risk exposure.

4.5.1 The vulnerable tourist

That tourism involves some out of the ordinary risks for many travellers is clearly illustrated in such basic components of the traveller's armoury as water purification tablets, money belts, and travel insurance (Carter, 1998; WTO, 1996). Roehl and Fesenmaier (1992, p. 17) evoked the risk concept with the observation that "the very nature of the travel experience promotes uncertainty as to its outcome". While this does imply that tourists are prepared for some risk during their travels, several authors have suggested that health and safety awareness among tourists is low. As Wilks and Atherton (1994, p. 6) observed, in their discussion of marine tourism in Australia, "many tourists and holiday makers have a serious lack of appreciation of the potential dangers associated with swimming in unpatrolled beaches and inland waterways". Similarly, Clift and Page (1996, p. 6) recognised that tourism can "expose

unsuspecting and inadequately prepared tourists to new and dangerous threats to their health, which are not present in their home environment”.

Tourists, by their nature as temporary migrants, may be a vulnerable sector of the population, especially in situations where there are language differences, a lack of local knowledge, and limited access to information. This set of circumstances is compounded by the fact that many tourist destinations are located in natural hazard prone areas (Drabek, 1996; Greenway, 1996).

Irrespective of the presence of natural hazards, tourist destination areas are likely to be risky in other ways. Page and Meyer (1997) argued that tourists face risks in all aspects of their experience, including the risks associated with attractions, transportation, and activities. Furthermore, Mawby et al. (2000), in a study comparing British holidaymakers with the general population, found that tourists reported higher rates of crime than those who did not travel.

Tarlow and Muehsam (1996, p. 19) also implied a certain vulnerability in their emphasis on the “make-believe” nature of tourism. These authors suggested that tourists often let down their guards making them susceptible to crime, and fail to differentiate between safe and unsafe neighbourhoods, thus entering areas that locals might avoid. Furthermore, Tarlow and Muehsam proposed that, in risky situations, tourists often confuse good luck with caution or proper planning. The authors speculated that, “when tourists pass on their travel tales to their relatives and friends, unrealised risks that do not result in dire consequences by pure chance, may influence others to try the same. Others who repeat these risks may not be fortunate enough to escape unscathed” (Tarlow & Muehsam, 1996, p. 20).

Tourists might also be considered vulnerable because of the availability and accuracy of information they receive about a destination or attraction. Many tourists are reliant on the host community for information about hazards, danger, and general security (Drabek, 1994), yet some information sources may be misleading. The tourism industry is loosely coordinated (Leiper, 1990) and, in particular, the links between the promotion and marketing information on protected natural areas, and its management and delivery are tenuous. An incongruity may exist between the image presented of the insulated tourist experience and the potential consequences of that experience. Greenway (1996, p. 195) has even suggested that information about natural hazards may be concealed by tourism industry stakeholders owing

to their reliance on “images of pleasantness and safety for attracting economic activity”. Similarly, Drabek (1994) reported a study of tourist business managers, among whom a common reason given for limited availability of hazard information at their premises was a fear of scaring customers and discouraging their patronage.

Intuitively, it seems plausible that tourists should be considered vulnerable to risk, given their likely unfamiliarity with their destinations, the absence of personal contacts, and little knowledge of the host community’s systems and procedures. If tourists are vulnerable to risk, as some authors have suggested, the consequences should be revealed in accident and incident statistics. The following section examines available evidence for this claim.

4.5.2 Tourist accident research

To a certain extent, it appears that tourists are over-represented in the accident and incident statistics, although the evidence is not complete. A small number of studies have explored the relationships between tourism and health (Clark & Clift, 1996; Clift & Page, 1996; Peach & Bath, 1999; Ryan & Robertson, 1997; Wilks & Atherton, 1994; WTO, 1996) including some attention to accidents (Bentley & Page, 2001; Bentley et al., 2001; Johnston 1989a, 1989b; Page, 1997; Page & Meyer, 1997). Although the data are elusive, several New Zealand studies have attempted to explore the relationship between visitor origin and accidents in the adventure tourism industry. Page (1997) and Page and Meyer (1997), using Accident Compensation Corporation (ACC) records to analyse tourist accidents, found that overseas visitor claim rates were below those of New Zealanders for non-work injuries. Page (1997) concluded that either tourists are less likely to experience accidents than their New Zealand counterparts, or less likely to register claims when they do. Further, owing to the limitations of the available data, the research was unable to confirm whether or not adventure tourism is more dangerous than other tourist activities, although Page and Meyer (1997) were able to show that, for international tourists, ACC claims associated with travel and sport were two times greater than those made by the resident population of New Zealand. This finding is unsurprising given that overseas visitors are wholly engaged in travel and recreation during their time in New Zealand.

In other research, Bentley et al. (2001) studied hospital discharge and mortality records for non-New Zealand residents in order to determine the nature and extent of adventure tourism

injuries. The authors claimed that there was evidence for the role of adventure tourism in overseas visitor injuries. According to Bentley et al. (2001), adventure tourism activities represented approximately 20 per cent of all overseas visitor injuries. Although the authors gave no indication of the proportion of tourists who participated in these activities, they did report an injury-incidence rate of approximately eight injuries per 100,000 overseas visitors. The authors suggested that this injury rate was “unacceptably high”, given the low exposure to adventure tourism activities in comparison with driving, for which there was an injury-incidence rate of 12 per 100,000 overseas visitors (Bentley et al., 2001). Further analysis revealed that the greatest number of accidents occurred in unguided, independent adventure activities, although it is unclear what proportion ‘unguided activities’ represented. The authors concluded that the providers of tourism and recreation activities could do more to improve visitor safety, although they acknowledged that communication can be problematic, and that visitors may not attend well to safety messages when preparing to take part in activities (Bentley et al., 2001).

Brown (1999) in a study of visitor accidents in Australia’s Uluru – Kata Tjuta National Park found that, while only 50 per cent of visitors to the Park were from overseas, this group were represented in 75 per cent of the accidents. Greenaway (1996, p. 46) also implied that visitors to New Zealand were at higher risk than the domestic population, citing statistics from the New Zealand Water Safety Council to suggest that “a visitor to New Zealand is about four times more likely to drown than a resident during any one day”, although, once again, overseas visitors may be over-represented in water-based recreation pursuits at many times of the year. Similarly, Page and Meyer (1997) reported that, of over 8,500 rescues undertaken by the Surf Life Saving Association of Australia in 1990-91, 60 per cent were migrants, visitors or residents living more than 50 kilometres away from the site. While this allows no comparative analysis with the resident population, it does illustrate that visitors and tourists make an important contribution to accident statistics.

Contrary to the recent research findings of Bentley, Page and others, Johnston (1989a, 1989b) found no evidence to suggest that overseas visitors to New Zealand’s mountain areas were exposed to more danger than their New Zealand counterparts. Using coroners’ reports and a survey of visitors to outdoor recreation sites, Johnston revealed that visitor reports of near misses (and other experiences with risk), and recorded fatalities throughout the twentieth century, indicated that the domestic and international visitor populations were similar.

Johnston (1989b) suggested that the perception that international visitors experience more accidents is related to the sharp increase in international visitors to New Zealand's mountain areas since about 1980, and the appearance of these recreationists in the accident statistics. Further, she speculated that "more frequent mention of non-New Zealanders might give the impression that accidents have increased out of all proportion to the increase in baseline numbers for that group" (Johnston, 1989b, p. 327).

The available studies of tourist accidents are inconclusive on the subject of tourist susceptibility to accidents. The apparent lack of consensus between studies may be due to the different research methods used and the limitations associated with available data. For instance, Bentley et al. (2001) used hospital discharge records, whereas Johnston (1989a) used coroners' reports and a visitor survey. Furthermore, Johnston's focus was a specialist recreation group (visitors to mountains, many of whom were experienced climbers), whereas Bentley, Page and associates were examining tourist accidents both more generally, and attributable to a broad range of adventure tourism activities. Notwithstanding the absence of agreement, the potential for accident and injury is undoubtedly high. The nature of the activities often pursued, and the contexts in which they are undertaken, imply that tourists are vulnerable to physical risk. The next section examines some social psychological and sociological explanations for tourists' susceptibility to risk.

4.5.3 Tourist behaviour: The freedom from constraint

Concerns about how tourists behave in natural resource settings are growing. This is not altogether surprising, considering the popularity of nature-based recreation and tourism in societies where access to the knowledge and resources required to travel is increasingly available. Discussions about behaviour typically focus on two areas: i) visitor impacts (biophysical and socio-cultural); and ii) visitor safety. Visitor impacts are the subject of attention for those wishing to communicate more environmentally appropriate behaviour for resource protection purposes, as well as to maintain the quality of visitor experience (Gramann et al., 1995; Hammitt & Cole, 1998; Manning, 1999; Moscardo, 1999). Concerns about the various social, cultural, and biophysical impacts of tourists have led to the development of voluntary codes of conduct for tourists visiting a variety of countries (Mason & Mowforth, 1996).

The issue of visitor risk and safety is a more recent development, and is probably a consequence of increasing numbers of tourists, a change in activity preferences, and the perceived potential for legal and moral accountability for accidents. Some observations suggest that tourists act in surprisingly risky ways in a variety of unfamiliar settings. For example, a recent media report documented tourist antics off the Australian coast, where members of a tour party had gathered to witness white pointer sharks feeding on a dead whale – thought to be the victim of a collision with a cargo ship. Videotape footage (TV 3 News, Wednesday July 26, 2001) showed one tourist climbing from the boat onto the back of the dead whale to get a closer look at the feeding sharks. Other tourists in the boats were observed to reach out and touch the frenzied sharks as they consumed the whale. Reports from managers at other nature-based attractions, including New Zealand’s geothermal areas, the ‘blow holes’ at Punakaiki, Huka Falls, and the Glaciers, indicate that tourists often act in ways (either consciously or otherwise) that create the potential for injury or loss (see Section 4.2.1). Rushlo (1997) reported the case of Grand Canyon hikers who failed to perceive the risks to their health and underestimated the temperatures in the Canyon, a misjudgement that prompted 200 heat-related rescues in 1996, including four deaths. According to Rushlo (1997), park rangers report that visitors are “shockingly unprepared” and “very naive”, comments that reflect the problem of unconditioned visitors in unfamiliar environments.

In terms of tourist motivation, it is evident that tourists change their behaviour while on holiday, doing things they would not do while in their home environments (Page & Meyer, 1997; Pearce, 1988; Peillon, 1993; Ryan, 1993; Ryan & Kinder, 1996). This may include undertaking risks which they would not normally consider acceptable. For example, Dawood (1993; cited in Page & Meyer, 1997, p. 62) noted that: “Motorists who wear seatbelts at home, use child seats for their children, observe speed limits and drink-drive laws, seem less inclined to do so abroad”. One possible explanation for this difference is that people are more relaxed on holiday, and inclined to ‘throw caution to the wind’, and ‘make the most’ of their experience. There may also be a perception of safety, or a feeling of invincibility in being a tourist. Furthermore, because some activities and events undertaken by tourists are more organised or planned than at home, the responsibility for safety may be displaced onto the agency or industry thought to be responsible for providing the experience (Dann, 1996). Conversely, having travelled to places beyond their home environments, tourists can often be outside the structural contexts of their own societies. Weber (2001) suggested that this separation may lead to a state of antistructure and liminality, in which social norms and rules

are suspended or ignored. Some of these explanations for tourist behaviour are considered below.

Ryan and Hall (2001) developed the liminality theme in their discussion of sex tourism. The authors examined the relationship between prostitutes and tourists as two groups who (albeit temporarily for the latter) occupy the social margins. Ryan and Hall (2001, p. 1-5) argued that to be a tourist “is to occupy a liminal role within a temporary marginality.... [existing] in an irregular world that is both strange and familiar”. Kruhse-MountBurton (1995), and Ryan and Kinder (1996), both reporting on the deviant tourist, suggested that some tourists justify their indulgence in the sanctioned margins of behaviour because they are not at home. In addition, Ryan, Robertson and Page (1996) suggested from their study of New Zealand and British university students on holiday, that some tourists were more likely to engage in risky behaviours while away.

Further support for the idea of risk-taking as part of the tourist mentality is presented by Wickens (1997), who also used sex tourism as the subject matter. Wickens (1997, p. 151) argued that some tourists take “voluntary health risks in pursuit of thrills and pleasure”. Reinforcing the claim that tourists occupy liminal space, Wickens (1997, p. 155) suggested that anonymity, and freedom from social constraints experienced by tourists, leads to a “suspension of customary rules of moral conduct. The tourist experiences her / his holiday as a legitimated break from everyday life”, and risks are taken that may not be acceptable to either the individual tourist or his / her society. Evoking Goffman (1967), Wickens (1997, p. 156) contended that “in society there are special times and places set aside for role reversals, for opening up oneself to risks in the pursuit of thrills and adventures which are normally denied to us in everyday mundane and routinized life”. Similarly, Ryan and Robertson (1997, p. 135) described holidays as “socially sanctioned escape routes into periods of irresponsibility”. Holidays and travel offer such opportunities for experimentation and adventure in a variety of contexts. Carter (1998, p. 350) also suggested that in visiting unfamiliar places, tourists experience a degree of alienation which “may elicit a sense of excitement and thrill”. Hence, some tourists are drawn to marginal or dangerous places as they represent opportunities for activities or behaviour that are neither possible nor acceptable at home.

While the present research is not concerned with sex tourism or ‘marginal’ activities *per se*, the analysis of Ryan and Hall (2001), Wickens (1997) and others, may have some applicability to other manifestations of tourist behaviour. If it is possible to generalise from the findings of these researchers, it is reasonable to suggest that tourists act in a variety of ways that are distinct from their behaviour at home. This is no major revelation; it has long been observed and, indeed, it is a key assumption of all tourism businesses, that when on holiday people are more relaxed, consume more food and drink, spend more money (Dann, 1996; Peillon, 1993), and undertake activities that they may not otherwise attempt. Peillon, for example, described the holiday as an inversion of everyday life, during which the principles of ordinary living are challenged: “Sensitivity to nature, care for the body, sensory gratifications, creativity, spontaneity and autonomy, those are the values which are placed at the centre of the holiday experience” (Peillon, 1993, p. 259).

The themes of freedom, absence of constraint, vulnerability, and paternalism are brought together in Dann’s (1996) analysis of *the tourist as child*. According to Dann, the liberty offered by tourism can be interpreted as a return to the realm of childhood, a time of fun, sun, and no responsibilities. If this analysis is accepted, it is also possible to consider that tourist behaviour will be affected by this temporary state, and that as tourists, people will sometimes act in ways inconsistent with their behaviour in the home environment. We might expect tourists to be irresponsible, take risks, or be less aware of threats to their safety, as well as less willing to accept responsibility for their actions. If Dann is right about the tourist frame of mind, this places considerable pressure on managers of tourist settings to adopt highly paternalistic approaches to visitor management.

4.6 Chapter summary and conclusions

This chapter has indicated that tourists to natural resource recreation settings in general are confronted with a variety of hazards and risks, many of which are not sought or anticipated by the visitor. This has become a significant risk management issue for recreation and tourism management agencies who hold, or perceive, legal and moral responsibilities to protect visitors from harm at the sites over which they preside. In New Zealand, several laws combine to impose both a duty of care, and of open access to many natural areas. This contributes to a paradox for managers, which is further complicated by the likelihood that tourists act in ways that make them vulnerable to risk. A potential tension is evident between

the views of some authors who contend that risk in recreation is important to retain (Griswold, 1989; McAvoy & Dustin, 1990; Shivers, 1986) and the conclusions of Dann (1996) and Peillon (1993) who suggest that tourists can be irresponsible and unaware of risks to their safety.

Despite relatively limited attention in the literature to date, the subject of risk is highly relevant to the study of tourism, including that tourism which occurs in natural resource settings. Such settings represent some unique challenges to managers of protected natural areas because of circumstances such as: communicating safety information to non-English speaking visitors; counter-acting preconceptions of the site obtained via tourist guidebooks and promotional material; a lack of familiarity and experience with natural settings among visitors; a desire to experience nature first-hand; and the transient status of most visitors, for whom the peripheral and less interesting topics of health and safety are unlikely to be high priority.

The purpose of the current research is to explore the phenomenon of risk and its significance in natural resource recreation settings, including their management. To a certain extent this aim has been addressed within Chapters 2, 3, and 4, in which aspects of social context, individual perception, communication, risk management, and tourist behaviour have been considered. The more specific objectives are addressed in Chapters 6, 7, and 8. The next chapter (Chapter 5) outlines the multiple strategies used to collect data, and presents a discussion on the various ethical dimensions of the study.

Chapter 5 Methods

[Our research methods should be] a choice made according to the requirements of our problems, not a necessity that follows from an epistemological dogma (Mills, 1959, p. 74).

5.1 Introduction

This chapter begins with a consideration of the theoretical foundations upon which the selected research strategies and tools are based. A brief description of the case study area (more fully described in Chapter 1) is then given, including criteria used for its identification and selection. This is followed by a detailed explanation of the specific methods and tools employed in this study, as well as a discussion of various ethical issues raised during the selection, development, and implementation of the methods. The chapter is concluded following a consideration of research limitations and the unique challenges of social research in predominantly natural environments.

5.2 Theoretical bases

Research methods of any kind are the means through which researchers investigate a particular topic, situation, or circumstance. In deciding which method is appropriate, more than mere technicalities are at stake. Research methods are strongly embedded within theoretical viewpoints and associated ontological and epistemological assumptions.

Implicit in all social theories is some conception of the individual and society, and the relationship between the two. This is also true of the methods used to study social life. Research methods are dependent upon both the researcher's commitment to a particular theory (whether made explicit or not), and the nature of the material to be studied. Ackroyd and Hughes (1981, p. 9) acknowledged the interdependence of method and ontological and epistemological assumptions in saying: "methods should not be regarded as atheoretical tools which do their job independently of any other consideration.... They do their job because of other justifications which serve to underpin them". A researcher's theory about the nature of social phenomena affects which method is chosen. In addition, every method itself makes implicit assumptions about social phenomena.

Although in using particular methods it is impossible to be free of such assumptions, it is possible to be aware of them and, by being aware, to achieve the richest interpretation of the material that is possible. Such awareness is also part of what Bell and Newby (1977) have termed ‘methodological pluralism’. This pluralism implicitly rejects the exclusiveness and certainty of specific research paradigms. This is not, of course, a claim that there should be *no* method, but, rather, it is an attempt to dispel the belief that there can be only *one* method that is to be *the* method for any particular situation or research question.

The present study aimed to assess the hazard and risk perceptions of visitors to natural resource tourism settings, and to investigate the wider influence of risk on the management of New Zealand’s conservation estate. The multifarious nature of the research topic necessitated several distinct research tools. The tools have sometimes been viewed as representing competing perspectives (Hammersley, 1989), yet combine here to clarify different aspects of the topic under examination. In order to investigate visitor awareness of hazards, for instance, a quantitative survey instrument, combined with a field experiment, has merit. This is especially so given the researcher’s interest in examining the effect of alternative warning messages on the visiting public’s hazard perceptions. This should not imply, however, that other methods could not have been used. Qualitative interviews with visitors to the glaciers were also undertaken, and served to enhance some of the responses obtained through the initial quantitative survey. In this instance, the two methods can be used to explore the phenomenon of visitor hazard and risk perceptions.

Simmons (1984) and Simmons and Berno (1995) have discussed the merits of integrated methods in the study of tourism. These authors have concluded that formal surveys can improve all stages of less structured work, especially with regard to the representativeness of cases. In addition, qualitative methods can add to the success and depth of formal investigation (Simmons, 1984). Similarly, Sieber (1972, p. 1337) claimed that the “integration of research techniques within a single project opens up enormous opportunities for mutual advantages” in research design, data collection and analysis. A more detailed account of the specific quantitative and qualitative methods used follows the description and discussion of the research site.

5.3 The identification and selection of a case study area

The study had two core interrelated themes: i) the management of risk in natural resource recreation and tourism areas; and ii) visitor perception of hazards and risk. In order to address the first of these, public lands managed by the Department of Conservation were selected for several reasons. First, areas managed by DOC are predominantly unmodified areas (including national parks, conservation parks and reserves), and as such include features and circumstances that imply risk in a variety of forms. Second, almost without exception, New Zealand's most popular tourism and recreation sites exist within the lands administered by this agency. Third, DOC is a national organisation with area, regional, and centralised decision-making procedures. This contributes to a high level of co-ordination and coherence and allows the Department's risk management beliefs and practices (both past and present) to be examined at several levels.

The research also required the selection of a case study site that allowed the perceptions, attitudes, and behaviour of visitors to be investigated. Several sites were assessed for suitability on the basis that the area must be:

- managed by the Department of Conservation;
- predominantly natural and unmodified;
- accessible to *most* visitors, thereby attracting people from across a broad spectrum of ability and experience;
- a high use site (attracting a minimum of 100,000 visitors annually); and
- understood (by experts, locals, and/or managers) to include, within its immediate boundaries, a degree of physical risk to visitor safety.

Following consultation with the supervision team, tourism and conservation agency personnel, and public authorities, the Fox and Franz Josef glaciers of Westland National Park were identified as fulfilling the criteria outlined above. Collectively, these two sites attract approximately 400,000 domestic and international visitors each year (see Chapter 1), most of whom are classified as 'Day Visitors' (DVs) or 'Short Stop Travellers' (SSTs) (DOC, 1996b, 1997). Consistent with this classification, the glacier access tracks are maintained at a standard appropriate to the inexperienced visitor. Despite the ease of access at Fox and Franz

Josef glaciers, a number of natural hazards are known to exist, several of which may not be immediately obvious to an inexperienced observer (refer to Chapter 7).

5.4 Quantitative tools

A quantitative survey was used to assess visitor risk perceptions, and to assess the relative effectiveness of alternative hazard warning styles at the glaciers. The latter dimension was approached in two ways: i) intermittent presentation of introduced warning signs; and ii) structured observations of visitor behaviour. The first of these strategies was directly linked to the quantitative survey, and perception responses later analysed in relation to the specific signs present at the time of survey completion. The visitor observation dimension of the study was not connected to the survey responses. The visitor survey and each of its dimensions is described below.

5.4.1 The survey

5.4.1.1 Aims and construction

A questionnaire was designed for specific use at the glacier valley sites (Appendix A). The main objective of the survey was to determine, using Likert-type scales, three aspects of visitor perception or attitude: i) the extent to which visitors were aware of hazards in the area visited; ii) the extent to which visitors felt safe in the area visited; and iii) the extent to which visitors felt responsible for their own safety while at the site. Respondents used a seven-point scale to show extent of agreement or attitude. The survey also assessed awareness of existing and introduced hazard signs, and self-reported behaviour on-site. Other aspects included typical visitor characteristics and visitation information.

An important consideration in the construction of any survey is its target population. Both the style and content of the survey must be appropriate to the intended respondents. In the case of the glaciers, visitors were expected to represent a range of domestic and international origins (NZTB, 1996; TRC, 1995). The convergence of a large number of visitors who originate from places outside New Zealand, meant that it was necessary to consider English language comprehension among potential respondents. Using available descriptive data (DOC, 1996b; NZTB, 1996; TRC, 1995), it was estimated that some groups of international visitors would

not be sufficiently competent in their use of the English language to complete an English language questionnaire. German and Japanese visitors were identified as the largest of the affected groups and, hence, the survey was translated into these two languages (Appendix A).

Assessing attitudes in a cross-cultural setting is potentially problematic. Segall (1986, p. 266) emphasised that considerable effort is required to “ensure that the methods are reliable and valid...[and] yield information consistently and in a fashion that is not misleading”. One strategy that is used to compensate for potential cross-cultural complications is a technique called ‘back-translation’ (Segall, 1986). In back-translation using the English language as the source, a bilingual speaker translates from the original language to the target language. A second bilingual speaker then converts the first translator’s work back to the source language. If identical English versions result, it is likely that the translation is sufficiently equivalent to the original to allow for comparisons to be made (Brislin, 1986; Segall, 1986). In the current study of visitor perceptions, the English survey was translated into two target languages (German and Japanese), then back-translated to English. Minor amendments and negotiations resulted in three survey questionnaires that were sufficiently similar to allow cross-cultural comparisons in the analysis.

5.4.1.2 Development of attitudinal scales

Three scales were created for the purposes of the visitor survey. Items for each of the scales were designed to determine the extent to which visitors: i) perceived the sites as hazardous; ii) perceived the sites as safe; and iii) considered themselves responsible for their personal safety while at the glaciers. Following accepted practice in the construction of scale items (Brislin, 1986; Kline, 1993; Loewenthal, 1996; Ryan, 1995), statements were written, each of which was either mildly positive or mildly negative in relation to the attitude under scrutiny. Statements were presented in both positive and negative directions and later reversed for the analysis. Scale items and the various hazard warning designs were pre-tested over two days in December 1997.

Likert scales were chosen as the most convenient and appropriate means to assess perceptions of visitors. This method is widely used and accepted in psychological testing, and for gathering data on attributes of people, events or activities (Bryman & Cramer, 1997; Kline, 1993; Loewenthal, 1996; Segall, 1984), including those investigating risk perceptions

(Hartenian et al., 1993; Roehl & Fesenmaier, 1992; Slovic et al., 1985). A seven point, graphic scale was used, employing ‘completely agree’ and ‘completely disagree’ as anchors. Respondents indicated their extent of agreement by choosing a number between 1 and 7 for each scale item. Guilford (1956; cited in Kline, 1993) showed that using a greater number of steps increases the reliability of a scale. The literature appears to support this up to a certain point, after which it seems little can be gained through the addition of further steps to the scale. Reviewing several psychometric studies which concluded that nine categories is the memory threshold for most respondents, Kline (1993, p. 160) claimed that it was “obvious that Likert scales should have either seven or nine steps”.

Following factor analysis, which resulted in the removal of items which loaded heavily on more than one factor, or where item-total correlations were poor (below 0.25) on the original scale (Bryman & Cramer, 1997), 28 items were used in the analysis (see Section 5.7.1).

5.4.1.3 Implementation

Three field workers implemented the survey over a total of 14 days, which spanned late January, February and March 1998. The initially decided upon and preferred method had been to survey visitors at the two glacier valleys concurrently. Owing to the closure of the Franz valley access track in mid January 1998, this method was revised, and a consecutive implementation plan adopted. A comparison of the two valleys was made possible with the reopening of the access track in March 1998.

All questionnaires were administered on site by trained interviewers, with the exception of those completed by visitors whose preferred language was Japanese or German. These latter respondents self-completed questionnaires provided in their own language on-site, and returned them to the interviewer directly. Visitors to each of the research sites were sampled on a random (next to pass) basis according to a prepared implementation schedule (see Appendix B). Detailed field notes were written to maximise consistency between interviewers in their application of the survey instrument (see Appendix C for details concerning the selection of respondents).

Interviewees were provided with a set of response cards, which were bound together in the exact question sequence. Each card presented the question in large bold font. Participants were asked to select the majority of their answers from the response cards which were contained in a flip-folder and laminated in order to protect them from the weather and frequent use.

The response cards increased the efficiency of the survey interview in two main ways. First, the clarity of each question was maximised given that it was both read aloud by the interviewer, and available in print for the respondent to read. Second, the interviewer was able to direct the flow of the questionnaire more successfully by asking each respondent to turn to the next response card at the appropriate time. Respondents appeared to appreciate the structured nature of the procedure, as there was little ambiguity over what was required of them. The negative consequence of this structure, however, is the loss of some opportunity to discuss responses with visitors. This, of course,

is often the nature of quantitative surveys and is a constraint of the method that is difficult to overcome. An attempt to reconcile this limitation was made, in part, through the addition of less structured visitor interviews later in the research implementation (see Section 5.6.5).

Questionnaire completion times varied between ten and fifteen minutes.

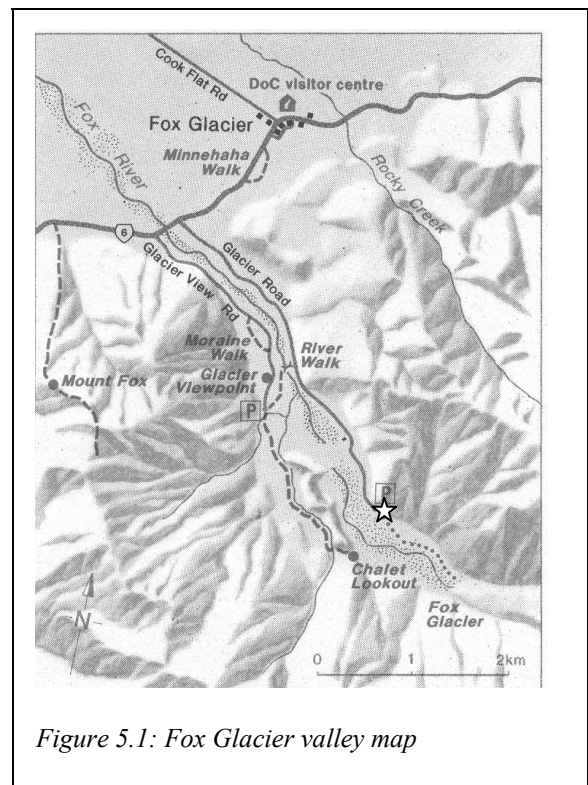


Figure 5.1: Fox Glacier valley map

Surveying was conducted at predetermined locations on each of the glacier access tracks. At Fox Glacier, the interviews took place at the top of the small incline above the current carpark, adjacent to an area known locally as the ‘[19]60s moraine’. At Franz Josef, interviewing was undertaken on the riverbed immediately following the point at which the track exited the bush. In Figure 5.1 and Figure 5.2, a star shape marks the interview point. The dotted lines represent the walkways leading to the glaciers. All interviews were carried out as visitors *returned* from their walk¹³, ensuring that all respondents had equal opportunity to form impressions of the site and its characteristics. The visitor carpark areas were deliberately avoided as interview locations to ensure that all visitors surveyed had some exposure to the glacier sites and the introduced warning signs.

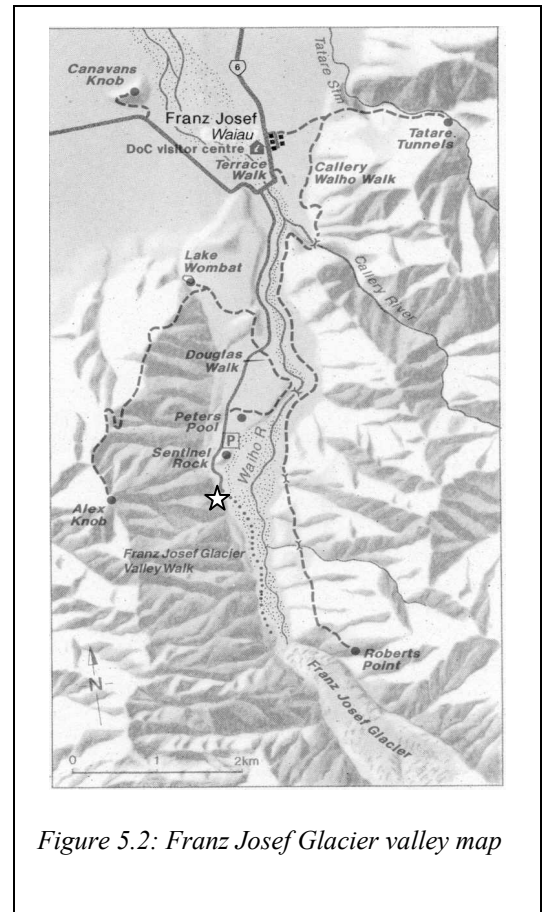


Figure 5.2: Franz Josef Glacier valley map

5.4.1.4 Response rate

Over the sampling period, 428 visitors were approached for interviews. Of these, 378 (88.3%) complied. When responses at the two visitor sites were compared, Franz Josef had

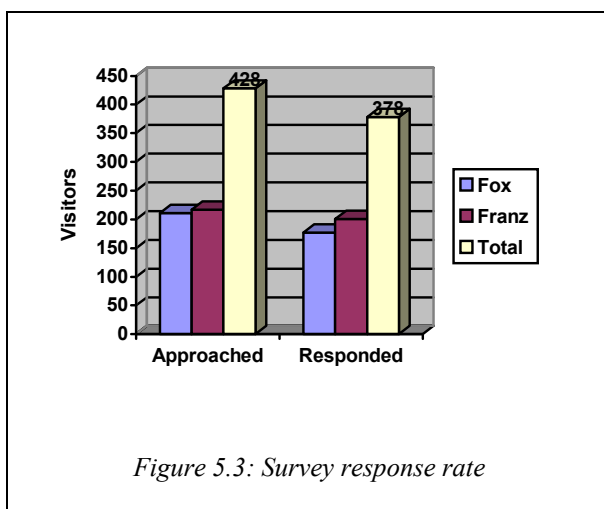


Figure 5.3: Survey response rate

the higher response rate (92.6%). Summary data on non-respondents were recorded (Appendix D). The majority of those visitors who declined to take part in the study gave reasons relating to time (64%), weather (16%), or language difficulty (12%). The overall response rate of nearly 90 per cent is well above the generally accepted minimum level (Babbie, 1989; Loewenthal,

¹³ It was not assumed (nor considered important) that all visitors had completed the walk to the glacier terminus. The survey indicated that approximately 70% of visitors had done so (Chapter 6).

1996; Singleton, Straits, & Straits, 1993), and is an important component in the representative nature of the results. It should be emphasised that the sample of 378 respondents is intended to represent visitors to the Westland glaciers during the period between January and March, and is not necessarily representative of annual visitation to the region.

5.4.2 Introduction of pictorial hazard warning signs

One aspect of the study was an assessment of the existing and an introduced hazard warning sign style, in terms of the effectiveness of each in conveying hazards to visitors. In order to do this, surveys and behavioural observations were undertaken during times when different numbers and varieties of signs were in place. At all times, the existing DOC warning signs remained in place (see Section 5.8). The maximum number of introduced signs at either site was five, and the minimum was zero.

Six pictorial hazard warning signs were constructed and temporarily erected along sections of the access tracks in both the Fox and Franz valleys as per the limitations of weather and terrain. These signs were presented intermittently at the sites, and visitors' perceptions of hazards monitored during the different conditions. Signs were placed in logically consistent and credible locations and followed accepted principles for the placement of warning messages (DOC, 1998; Western Ergonomics, 1995).



Each of the introduced pictorial messages was designed to represent one of the following conditions (also see Table 5.1):

1. Hazards that were currently both present and identified in DOC signs
2. Hazards that were currently present but unidentified in DOC signs
3. Hazards that were currently neither present nor identified in DOC signs

Table 5.1: Content of introduced pictorial warning signs

Condition	Hazard Message
1	<ul style="list-style-type: none"> Falling rocks Falling Ice
2	<ul style="list-style-type: none"> Slipping / Falling¹⁴ Falling into the river
3	<ul style="list-style-type: none"> Strong winds Stinging insects

The hazards in condition 3 are bogus messages. This was an important methodological inclusion, without which it would be difficult to determine if visitors were reporting hazards that were evident to

them, or hazards about which they had been warned via the signs. Following Cole et al. (1997), visitors were considered to have been exposed to the messages if the signs were erected when they visited the site. The introduced pictorial signs used in this study are contained in Appendix E.

The choice of message content in the introduced hazard signs was made following site inspection visits by the researcher, and in consultation with the Department of Conservation field managers. Selecting suitable ‘bogus’ messages involved a balance between hazards that were plausible in the



Plate 5.2: Introduced pictorial warning sign (stinging insects) at Fox Glacier

environment, and those which, to the average visitor, were ludicrous. Signs warning of the presence of bears, for instance, might have drawn special attention from visitors, many of whom would be suspicious about such a sign and question its credibility.

¹⁴ The slipping / falling hazard sign was damaged during transit to Fox Glacier early in the fieldwork phase and was unable to be used further.

Signs were designed in direct contrast to the existing hazard warning signs at the sites. The key points of differentiation are evident in comparisons of Plate 5.1, Plate 5.2, and Plate 5.3. In summary, the introduced signs were pictorial, rather than text-based; triangular, rather than rectangular; and employed black figures and some brief text on a bright yellow background, rather than yellow text on dark green background. The introduced signs all included the words ‘attention’ and ‘caution’ beneath the pictorial

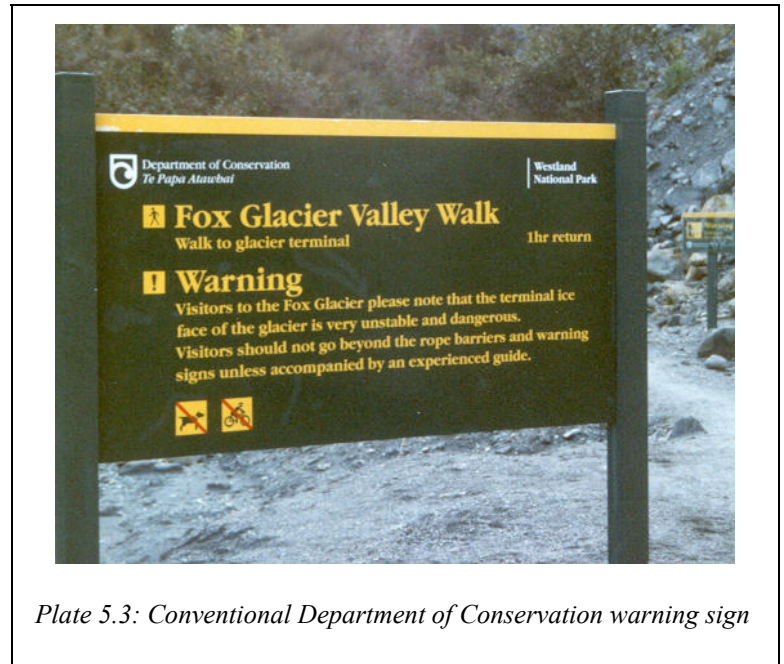


image. Moderate signal words were chosen for consistency and credibility reasons. Strong signal words such as ‘lethal’ and ‘deadly’, although successful in the product warning literature (eg., Wogalter, et al., 1994), were considered inappropriate in the glacier environment.

The introduced signs were designed to correspond in their style to those used for international road signs. Two of the designs (strong winds and stinging insects) were adapted from existing research on warning signs in which effectiveness in Canadian field settings had been established (Western Ergonomics, 1995). All signs had to be adapted to the glacier situation, and followed identical design elements. Sign colour and shape have been found to affect sign salience and influence visitor attention and recall of the message (Bitgood et al., 1990; Glover & Wogalter, 1997; Western Ergonomics, 1995; Wogalter & Laughery, 1996). A schedule was constructed detailing the employment of particular signs, behavioural observation times, and questionnaire distribution (Appendix B).

5.4.3 Behavioural observations

Another objective of the study was to observe visitor behaviour at the glacier sites. This evolved out of management’s concern for the way visitors were thought to ignore hazard warnings issued by the Department of Conservation, thus exposing themselves to the risk of

injury. Such had been the concern of management, that several hazardous zones were roped off in order to dissuade visitor entry (see Plate 5.4).



Plate 5.4: Roped closure at Franz Josef Glacier

During the fieldwork phase of this study, many observations were made, both formal and informal. In order to quantify these impressions, a structured set of observations was undertaken at the terminal face of each glacier. The observation locations were chosen on the basis that the terminal face at both sites:

- a) represented natural end points for many visitors, and logical and convenient places at which to position observers;
- b) had been identified as a hazard of significant magnitude; and
- c) included a history of visitor compliance problems.

The presence of common features at both Fox and Franz Josef Glacier allowed inter-site comparisons to be made.

Behavioural observations were planned for each day of the study period. While weather or access conditions did not always allow this, a consistent procedure was used throughout. The observer located him or herself in a pre-determined place, from which a good view of the glacier's terminal face and approaching visitors could be gained. At both sites, this position

was approximately ten metres back from the rope closure erected by the Department of Conservation aimed at restricting access to the unstable terminal face (see Plate 5.4). As the observations were covert, the observer was required to act in such a way that it would appear to others that he or she was simply another visitor admiring the view or eating lunch. Discrete recordings were made of the total number of visitors who reached the terminal face, and of those visitors who entered the restricted areas (ie., those who proceeded beyond the rope closure). Observations were usually for a period of between one and two hours (Appendix F).

5.4.4 Interim summary

A survey questionnaire and formal behavioural observations formed the basis of the quantitative assessment of visitor hazard awareness. Introduced pictorial warning signs were used in a quasi-experimental fashion in order to estimate the influence of non-verbal warnings on visitor perception of hazards. In addition to these methods, qualitative tools were employed to augment aspects of the quantitative findings, and as the cornerstone of the study's second major investigative component.

5.5 Qualitative tools

In addition to the visitor survey and structured observations of visitor compliance behaviour, the research strategy included qualitative interviews with both visitors and key informants. These processes are described below.

5.5.1 Visitor interviews

In order to enrich the data collected through the quantitative survey of visitors, a small number of semi-structured interviews was conducted. Fifteen visitors, including eight women and seven men, were contacted on site at either Fox (6) or Franz Josef Glacier (9) and asked to take part in the interviews. The primary themes of these interviews included visitors' attitudes to individual responsibility while at the attractions, reasons for their on-site behaviour, and perceptions of safety while visiting the glaciers. Interviews took place at both glacier attractions during October 1998, and ranged between 20 and 60 minutes duration. All interviews were recorded on audiocassette and later transcribed for analysis.

5.5.2 Key informant interviews

Other important objectives in the research were to investigate the perceptions and beliefs of DOC managers with regard to risk and hazard, and explore the ways in which risk is presented to PNA visitors. The case study site fulfilled part of this purpose, but the wider context of risk management at natural attractions was also considered important. In order to address these objectives, a number of key informants were interviewed, having been identified as holding positions or viewpoints of interest regarding risk management on New Zealand's conservation estate. The parameters of the study dictated that many of these informants held policy or management roles within the Department of Conservation, at the field, regional, or national level. Other key informants included geomorphologists (with specialty interests in natural hazard identification and mitigation), outdoor recreation and tourism providers, occupational health and safety advisors, and legal experts (a complete list of key informants is contained in Appendix G).

Each interview was developed independently and in the context of the interviewee's expertise and experience. Thus, questions and topics of discussion were tailored to individual participants in the study. Interviews followed the flexible format adopted by Lofland and Lofland (1984), in which a guide is prepared for each interview. Consistent with this approach, the interview guide in the present study was not a tightly structured set of questions, but a list of points or questions to raise while talking to the informant. According to Lofland and Lofland (1984, p. 59), such interviews "might more accurately be termed *guided conversations*" (italics in original).

Intensive interviews, which ranged from one hour to three hours in duration, were conducted between March 1998 and July 1999. A total of 30 potential informants was identified prior to and during this time, of which 22 were interviewed. Informants were initially contacted by letter (or electronic mail), and meeting arrangements confirmed via telephone. Interviews took place on the West Coast, in Canterbury, and in Wellington. In all but two situations, interviews were recorded on audiocassette with the consent of interviewees (see Appendix I). In cases where audio recording was not possible, contemporaneous notes were made.

5.6 Ethical considerations and strategies

Social research is often, ironically, very personal behavior. Assessing it, therefore, must be done with considerable sensitivity (Segall, 1986, p. 286).

It is interesting to consider the limits of acceptability when research is undertaken involving people. The question of ‘who decides the limits?’ is likely to be under constant negotiation both among researchers, and between researchers and the subjects they study. One thing is reasonably certain. In the late twentieth century, most social researchers have a far healthier respect for their subjects than was generally held by their historical counterparts. According to Lofland and Lofland (1984, p. 18), the social science perspective on research ethics was traditionally one where “everything that could be studied should be studied by anyone who had or could obtain access”. Representing a more contemporary stance on ethics, Segall (1986, p. 286) reminded his readers that people are “not guinea pigs and should not be treated as such”. Experiments such as those undertaken by Milgram (1963) on obedience would be considered ethically indefensible by many social scientists today.

Segall (1986, p. 286) emphasised that there must be very good reasons for examining social behaviour, the ultimate test of which is whether or not the subjects of the inquiry will be direct or indirect beneficiaries of the research. “When they [respondents or subjects] contribute to our research, they are incurring a cost; such cost must, for moral and ethical reasons, be matched or exceeded by benefit” (Segall, 1986, p. 286).

Ethics, then, are an important consideration in modern social science research, and this study is not exempt from this. Efforts were made to stay within the accepted practices of current social research, and respondents were given opportunities to withdraw their participation at any stage. The on-site phase of the project was reviewed by the Department of Conservation, and a formal application to Lincoln University’s Human Subjects Ethics Committee was approved.

The various methods outlined in this chapter raise several interesting ethical issues related to social research. These include the protection of participants, informed consent, use of information, covert observation, and mild deception. These issues are discussed below in relation to the methods through which they arise.

5.6.1 Protection of participants

Good social researchers today take all practicable steps to protect the subjects of their inquiries (Babbie, 1989; Gans, 1982; Lofland & Lofland, 1984; Segall, 1986; Singleton et al., 1993). Part of this process involves identifying and, where necessary or appropriate, reducing the likelihood of inflicting physical, social, or emotional harm to subjects. In the current study, no physical risks were identified as arising directly from the research. It should be noted, however, that the nature of the settings utilised in the project did present some possibility of physical risk – one of the assumptions of this research topic. These risks existed irrespective of the study outlined here.

While physical harm to subjects was not of concern in this study, it was important that some consideration be given to the study's potential contribution to any emotional distress among visitors. The questionnaire, for instance, required respondents to give their attitudes and feelings toward issues, including safety and individual responsibility at natural attractions, as well as report their awareness of hazards or risks. For some people (who may have experienced unsafe conditions in the past, or who may have lost a friend or family member in a natural setting), these questions had the potential to provoke unpleasant memories, or cause other distress. Furthermore, it was also remotely possible that some visitors would suffer loss of enjoyment as a consequence of perceiving the sites as more dangerous than they actually were. Conversely, it may have been just as likely that the hazard signs contributed to visitor enjoyment and sense of personal esteem.

In order to reduce the possibility of these negative consequences, questionnaires were sensitively worded, hazard messages appropriately designed, and respondents advised of their right to discontinue their involvement at any stage. More specifically, in line with the current accepted practice in research involving human subjects, a range of precautions was taken to ensure the sensitivities of respondents were protected.

5.6.2 Visitor survey

Those visitors who were asked to participate in the quantitative survey initially received a short verbal explanation of the study, and an assurance of the anonymity of their responses.

This verbal statement was reproduced in written form on the questionnaire itself in a language appropriate to the respondent (Appendix A). In addition to this, a more detailed information sheet was offered to respondents upon completion of the questionnaire. This provided information about the study, which, if given prior to the survey's completion, might have significantly influenced responses. The detailed information sheet (Appendix F) served to debrief visitors, and represented informed consent¹⁵. Respondents were advised of their entitlement, at any stage and for any reason, to withdraw the information they had provided. The researcher's contact details were supplied to all respondents for this purpose.

Survey respondents were also advised that completed questionnaires could only be referred to using a code, which had no association with a respondent's name or other information that might lead to the identification of the individual. Codes were printed on each questionnaire and its corresponding information sheet. Respondents were informed that, should they decide to withdraw information, it was possible to contact the researcher and, quoting the code from the information sheet, have their data deleted from the sample.

5.6.3 Introduction of hazard signs

The introduction of bogus hazard warning signs can be interpreted as a form of mild deception. This was carefully considered and designed to minimise any negative effects on visitors' experiences, but warrants brief additional explanation and discussion.

In order to gain an understanding of the effects of safety messages, it was necessary to create and introduce signs that identified hazards not, in fact, present in either of the glacier valleys. By interchanging the presence and content of such signs, and continuously assessing visitors' perceptions, it was intended to determine which level of hazard warning was most effective at influencing visitors' awareness and perceptions. Informing visitors of the spurious nature of some signs at an early stage would have served to undermine this objective. Thus, an approach that involved the mild deception of visitors was adopted.

¹⁵ The author acknowledges that informed consent is normally understood to occur prior to participation in research. Given the potential influence of the information on the participants' responses, however, it was decided to withhold some information about the study until immediately after the survey was completed.

According to Singleton et al. (1993, p. 482), the “basic rationale for deception is that it is necessary in order to place research participants in a mental state where they will behave naturally. If subjects knew the true purpose of a study, the results are meaningless”. These authors maintain that the prevailing sentiment among social scientists is not to rule out deception entirely.

In partial remedy to this ethical dilemma, a written information sheet, which contained full details of the study’s practices, was supplied to all survey respondents on completion of the questionnaire (Appendix H). For those people who were not participants, but who may inadvertently have come into contact with the introduced hazard messages, no information was distributed. This was an unavoidable limitation of the method. However, these people, like any other visitors to the conservation estate, were subject to management decisions made by the Department of Conservation, which has statutory responsibility to control these areas. The introduction and manipulation of hazard and safety signs is one such management decision. It is important to emphasise that, while the project hazard signs were presented and removed at different times during the survey implementation and observations, no current hazard or safety signs were manipulated, occluded, or contradicted.

5.6.4 Behavioural observations

In order to appreciate further how visitors to natural attractions behaved around natural hazards, and the effects of hazard warning signs on that behaviour, visitors to particular parts of the attractions were monitored for short periods of time and their actions recorded. The observations were covert but involved the collection of no personal details.

While out of favour among some social scientists (see Erikson, 1967; Lofland & Lofland 1984), the covert observation technique was believed to be unharmed in this case, and crucial to the collection of accurate data. Although public places (such as airports and national parks) are, by definition, places where anyone has a right to be, researchers intent on assessing social behaviour in these settings may still face criticisms related to the ethical nature of their practice. It may be argued, for instance, that, in failing to disclose the true purpose of his or her presence, the researcher is guilty of deceit. Lofland and Lofland (1984, p. 22), however, dismissed this criticism and argued that: i) it is never possible to remove deceit entirely; ii)

observation alone is unlikely to result in harm to the subjects; and iii) the attitude of those under simple observation is often one of indifference.

While the act of observation itself, or indeed, the use of the information recorded, was not considered to be in any way harmful to the visitors under scrutiny, the observations did raise another ethical issue for the observers. This was related to the necessity for fieldworkers to become familiar with the management operations of the glacial valleys, including the current levels of hazard information and risk management practices. Each of the observers was acutely aware, for instance, of the hazards associated with getting too close to the terminal face of either glacier. Furthermore, it was common practice for DOC staff to issue verbal warnings to visitors who moved beyond roped safety zones¹⁶. A dilemma arose for one observer when he was required to witness visitors entering an area he knew to be hazardous. The observer also knew that his intervention would potentially undermine one of the objectives of the research. While this circumstance had the potential to become a serious ethical concern, it should be emphasised that Department of Conservation signs warning visitors of the hazards were in place at all times during the observations.

Unlike observations in some urban public places (Damer, 1974; Humphreys, 1975; Karp, 1980), making observations at the glaciers involved few issues of access and disclosure. As tourists, the vast majority of people observed were transients at the glaciers, and few remained at the terminal face for more than 30 minutes. The presence of an observer, therefore, attracted minimal special attention of the kind possible in a public place with regular occupants who were familiar to each other. The observers did make themselves known to the Department of Conservation staff and commercial guides who, in the course of their daily work, frequented the observation sites. These people were not the subjects of any documented observation.

5.6.5 Visitor interviews

Those visitors agreeing to participate in qualitative interviews had the study explained in full prior to their interview. On completion of the interview (which was recorded on

¹⁶ DOC staff were never stationed at the terminal face during the research period. Such warnings were issued in cases where the staff member was in the area assessing conditions or attending to the maintenance of visitor access.

audiocassette), informants were asked for their written consent with regard to the use of the interview in the study (Appendix I). As above, the opportunity to withdraw all responses (or certain responses only) was offered.

5.6.6 Key informant interviews

Those people agreeing to participate in the study as key informants, some of whom held positions that made them personally identifiable, have been given pseudonyms. Where respondents specified, a suitably general title is used to describe his or her position.

5.7 Data analysis

5.7.1 Quantitative data analysis

Survey responses were entered into a spreadsheet programme (Lotus 123) and later transferred to the Statistical Package for Social Scientists (SPSS) for analysis. The data were subjected to several univariate, bivariate and multivariate analyses. Statistical manipulations included descriptive statistics, factor and item analysis, cross tabulations (non-parametric) and t-tests (parametric tests). Table 5.2 (page 138) provides details of the multiple scale items, including mean item and scale scores, item-total correlations, and reliability coefficients (Cronbach's alpha). Three scales are represented, corresponding to hazard awareness (HAS), individual responsibility for safety (IRS), and safety perceptions (SPS).

According to Kline (1993) and Loewenthal, (1996), the reliability coefficient is the best index of reliability in the sense of internal consistency, and should, ideally, be higher than 0.7.

Table 5.2 shows that internal consistency for each of the scales used in this study was good (Cronbach's alpha = 0.7951, 0.7208, and 0.8595 for the HPS, IRS, and SPS scales, respectively). Item-total reliability scores were also within accepted ranges. Loewenthal (1996, p. 105) stated that: "Correlations of the order of 0.15 or less could definitely mean the death sentence for any item".

Where a scale comprises a small number of items (fewer than about 10), slightly lower reliability coefficients might be expected (Loewenthal, 1996). In this on-site study it was vital that the length of the survey be kept to a minimum. The time, terrain, and climatic

constraints influencing visitors to the glaciers necessitated shorter scales than was considered ideal by Kline (1993). It would not have been appropriate to detain visitors for anything like the maximum length of time that Kline suggested was acceptable for adults (one hour). Other authors, such as Loewenthal, appear less concerned about the minimum number of scale items, rather emphasising the tendency for some test constructors to inflate reliability by increasing the number of scale items beyond what is necessary.

The data are analysed both as a single glacier visitor sample, and as site-specific sub-samples. It was considered valid to approach the analysis in this way due to the many similarities in visitor classification, visitor activities undertaken, and the physical and managerial nature of each of the two locations (see also Sections 5.3 and 5.4.3).

5.7.2 Qualitative data analysis

Interviews were recorded on audiocassette and later transcribed for analysis. Transcripts were examined and indexed by theme, using numerical and colour codes to represent roles, responsibilities and recurrent ideas of participants. These themes were then collated and analysed with regard to the various affiliations of the respondents (such as visitor, policy analyst, senior and field-level managers, or natural hazard expert). The data were then used to illustrate aspects of the quantitative results, and to create a coherent account of how risk and safety is perceived and communicated by those responsible for the management of New Zealand's natural attractions.

Table 5.2: Scale items, scores and reliability measures

Scale	Items	Min.	Max.	Raw mean	Adjusted mean ¹⁷	Item-total correlation	Alpha
HAS	This natural area appears to be stable and predictable	1	7	4.07	4.07	0.5008	
	I would be surprised to find out that this is a dangerous place to visit	1	7	4.13	4.13	0.5372	
	I am not aware of any natural hazards in this area	1	7	5.59	5.59	0.5136	
	I have not thought about hazards at this glacier	1	7	4.61	4.61	0.4818	
	There are dangers at this glacier which are obvious to me	1	7	5.76	2.24	0.3759	
	I would not be surprised to learn that this is a dangerous place to visit	1	7	3.55	4.45	0.5851	
	While here, I have often thought about hazards to which I might be exposed	1	7	3.04	4.96	0.4829	
	I am aware of natural hazards in this area	1	7	5.95	2.05	0.3101	
	This area strikes me as unpredictable and unstable	1	7	3.84	4.16	0.5515	
	9	63		40.05		0.7951	
IRS	Managers should do more to protect visitors from harm in natural areas	1	7	5.21	5.21	0.3563	
	While I am at the glacier, my safety is the responsibility of those who manage the area	1	7	5.57	5.57	0.3972	
	I would like to see more obvious evidence of management at this glacier	1	7	5.5	5.5	0.4014	
	Management should prevent access to areas which might be dangerous	1	7	2.79	2.79	0.3113	
	I am reliant on others for my safety at this glacier	1	7	4.81	4.81	0.4749	
	I prefer others to be in charge of my safety in this area	1	7	5.12	5.12	0.3791	
	Those who manage this area have an obligation to inform me about all things which might affect my safety	1	7	2.06	2.06	0.2762	
	I should be allowed to decide where it is safe to go	1	7	5.36	2.64	0.4492	
	I prefer to look after my own safety while at this place	1	7	3.83	4.17	0.5297	
	If visitors will not accept responsibility for their own safety they should not visit this glacier	1	7	1.68	6.32	0.2532	
	As a visitor to this site, I feel responsible for my own safety	1	7	1.47	6.53	0.2520	
		11	77		50.84		0.708
SPS	This seems like a safe area to visit	1	7	2.88	5.12	0.5161	
	While at the glacier, I have not been concerned for my personal safety	1	7	3.38	4.62	0.4766	
	While visiting the glacier I have felt secure	1	7	2.06	5.94	0.6996	
	As a visitor to this area, I feel as though I am exposing myself to physical danger	1	7	5.77	5.77	0.6543	
	The physical nature of this area makes me concerned for my personal safety	1	7	5.66	5.66	0.6546	
	At this glacier, I have at times felt unsafe	1	7	5.79	5.79	0.6849	
	I feel physically vulnerable in this area	1	7	5.52	5.52	0.6338	
	I feel as though I am taking a risk in visiting this glacier	1	7	5.58	5.58	0.6669	
	8	56		44.0		0.8595	

¹⁷ The adjusted mean represents those items where the anchors have been reversed to reflect their direction of influence on the scale.

5.8 Limitations of the research

Every attempt was made to ensure that the data collected were as robust as possible. It is an inevitability of all research, however, that limitations exist. It is sound methodological practice to at least allude to these.

1. The quantitative data of this study were limited to summertime users of the specific sites surveyed. While some generalisation to other seasons and sites is possible, this can only be tentative. Data collection was originally scheduled to occur concurrently at the two sites in two implementation phases. However, following the closure of the Franz Josef access track between January and March 1998, a consecutive approach was adopted. While not affecting the total data set, one consequence of this non-concurrent data collection method is that the comparison between sites is less precise.
2. Because of the sensitive nature of visitor safety, manipulation of the existing (DOC) hazard signs was not possible. Manipulation was limited to the introduction and removal of pictorial signs only. It is, therefore, not possible to attribute modification in perception or behaviour to the introduced signs alone. Effects may be the cumulative consequence of additional signs, rather than the effects of the sign content or form. However, the analysis revealed no statistically significant relationship between the number of introduced signs and the extent of visitor hazard awareness, or compliance with access restrictions.
3. Observers, while covert, may have influenced the behaviour of visitors under observation. For instance, by remaining at the perimeter of the restricted access area, the observer may have inadvertently encouraged others to do the same, thereby affecting the results. The only way to avoid this is to hide the observer completely from view, or use video surveillance. Neither strategy was considered to be practical or appropriate.
4. Owing to language differences, qualitative interviews with non-English speaking visitors were not possible. Given the importance of communication with international visitors, and potential differences in comprehension and expectation, this is an important avenue for future research.

5. Undertaking research in field settings is naturally distinct from the laboratory environment in which the majority of intervening variables can be controlled. Natural attractions make complex settings for quasi-experimental research methods as utilised in the current study. Several unpredictable variables remain outside of the researcher's control, including the weather, access conditions, and urgent hazard management decisions. While efforts have been made to minimise the effects of these factors, it is impossible to completely remove their influence on the results. In addition, conducting visitor interviews in outdoor environments such as the glaciers, presents a number of challenges relating to visitor comfort and response rate. The high rainfall on the West Coast was an especially frustrating feature of the fieldwork, which necessitated some innovative interview and audiotape recording strategies.

5.9 Chapter summary and conclusions

This study undertook to assess both perceptions of risk in natural settings, and the ways in which risk is communicated and managed in these contexts. The glaciers of Westland National Park were used as site-specific case studies, and the Department of Conservation's risk management processes and practices were examined in order to understand further the presentation of risk on the conservation estate. The research objectives have required the application of multiple methods, the details of which have been outlined in this chapter.

The quantitative survey, behavioural observations, visitor interviews, and key informant interviews, while not necessarily making equal contributions to this study, have each played an important role in examining aspects of health and safety in the context of visitor management in New Zealand's protected natural areas. The attempt here to embrace and integrate a variety of methods represents a strength of the research and is compatible with a case study approach. The use of a single qualitative or quantitative approach would not have yielded the breadth of data realised in this study.

In order that a good level of coherence is achieved, the research results are divided between Chapters 6 and 7 in the initial presentation and later combined to form an integrative discussion and summary in Chapter 8 (Conclusions). The two results chapters address different research questions, which together allow a greater understanding of the significance of natural hazards and the phenomenon of risk in recreation and tourism settings.

Chapter 6 Tourists and risk: Perceptions, attitudes, and behaviour of visitors to Fox and Franz Josef glaciers

6.1 Introduction

This chapter presents results obtained from the quantitative survey, field observations, and a small number of visitor interviews undertaken at Fox and Franz Josef glaciers. The aims of this chapter are to:

- i) describe the characteristics of visitors;
- ii) examine the level of hazard awareness among visitors and to assess the effects of introduced warning signs on awareness;
- iii) examine the perceptions of safety and risk among visitors, and to determine any cross-cultural differences between visitors;
- iv) investigate visitors' attitudes towards responsibility for safety at the glaciers; and
- v) explore the issue of visitor compliance with warning signs and access restrictions.

The quantitative data are drawn from the responses of 378 visitors to Fox and Franz Josef glaciers, and observations of on-site visitor behaviour between January 27 and March 26 1998. The survey responses represent a response rate of nearly 90 per cent (Figure 5.1). Brief descriptive data were obtained from non-respondents who were found to be broadly representative of the respondents in terms of age, gender, and nationality.

In addition to the quantitative survey data, this chapter is supplemented by qualitative data collected from visitor interviews conducted during October 1998. Visitors to the glaciers during October were not considered to differ in significant respects from those visiting in January and March, although the volume of visitors is lower in October (DOC, 1999b; Statistics New Zealand, 1998). Furthermore, the separate data collection periods served different purposes, and the latter qualitative component is used to clarify dimensions of the survey data, rather than for comparative means.

The results are presented in five sections. The first of these describes visitor characteristics and general visitor information, including age, gender, origin, group composition, level of

experience, and visit duration. The next three sections examine the main attitude dimensions under consideration in this study. Respectively, these are: i) hazard awareness; ii) perception of safety; and iii) individual responsibility. The fifth section of the results concentrates on aspects of visitor behaviour (both self-reported and observed) with special regard to natural hazards in the two glacier valleys. The findings are then discussed within an integrative summary which represents the conclusion to Chapter 6.

6.2 Characteristics of the sample

6.2.1 Visitor origin

Consistent with the general trend evident in other recent visitor studies of New Zealand's natural attractions (Booth & Peebles, 1995; NZTB & DOC, 1993), the majority (80.4%) of visitors to the glaciers were from overseas (Figure 6.1). The most common visitor origin was Australia (21.8%), followed by New Zealand (21.8%), and the United Kingdom (19.6%). Visitors from Asia were conspicuous by their absence from the glacier sites, comprising only 5.3 per cent of the overseas visitors. On a nation-wide scale in 1997, Asians made up nearly 20 per cent of the New Zealand international visitor market (NZTB, 1998).

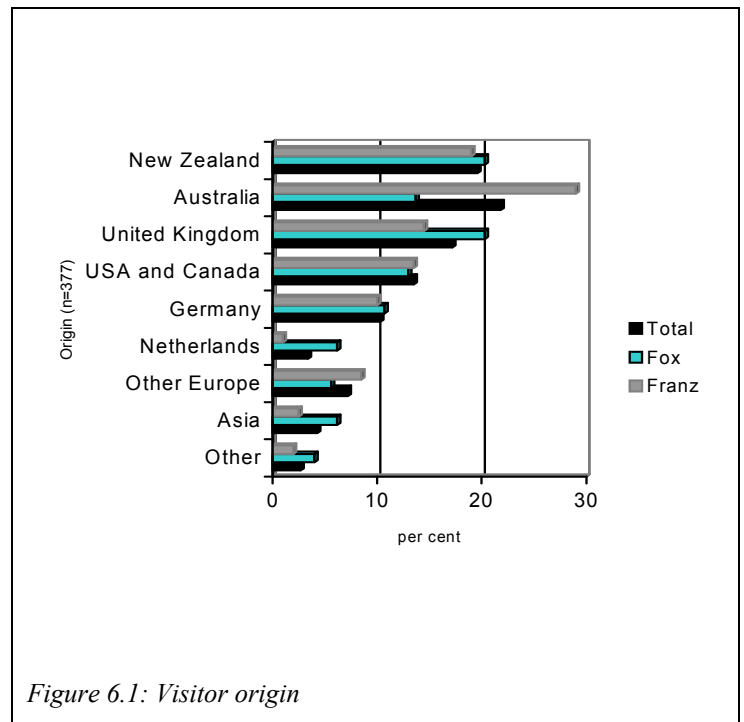


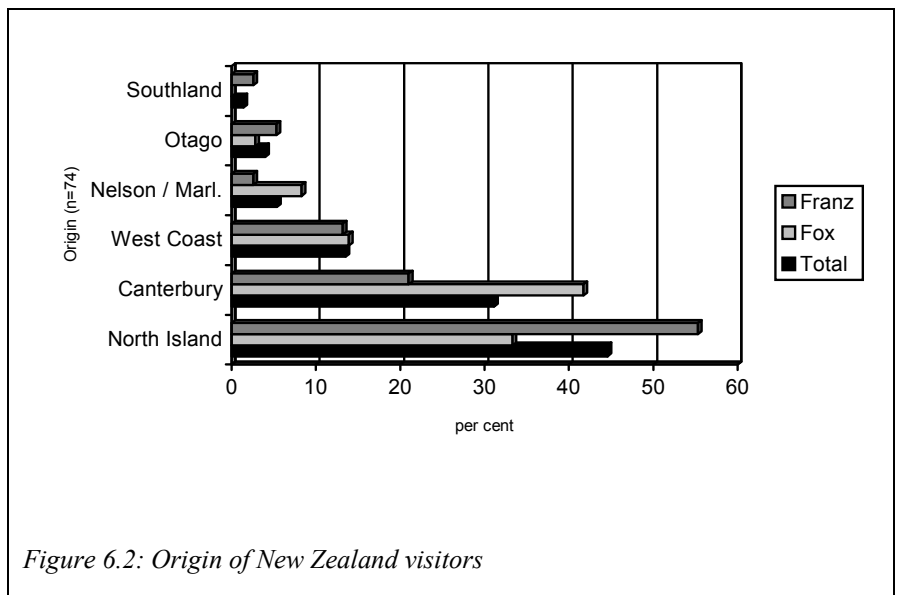
Figure 6.1: Visitor origin

The low representation of Asian visitors may be explained by the economic turbulence experienced in several Asian countries (notably Korea, Taiwan, and Japan) during the late 1990s. A review of international arrival statistics for New Zealand as a whole shows a 27 per cent decline in total visitors from Asia in 1998 (Collier, 1999; Statistics New Zealand, 1998). In addition, the sampling criteria used in the present study may have contributed to the under-representation of Asian visitors surveyed. In order to enter the sampling frame, visitors had to leave the car park and its immediate surrounds (see Chapter 5). Travellers who were part of

large coach parties often appeared to have neither the time nor the inclination to venture more than a few hundred metres from their transport, thus limiting their inclusion in the sample. Given that Asian tourists are over-represented among organised coach tourists (Moore et al., 2001; NZTB, 1996), this might also contribute to their under-representation in this study.

When the two visitor sites were compared (also Figure 6.1), the most striking difference was the proportion of Australian visitors recorded at the glaciers. At Fox Glacier, Australian visitors comprised 13.6 per cent of all respondents, compared with 29 per cent of respondents at Franz Josef. This may reflect a genuine preference for Franz Josef among Australian visitors, or arise out of logistical features of Australians' travel itineraries. It is also possible that the difference is the consequence of the slightly different data collection periods at each of the two sites (see Chapter 5), although this is unlikely since there was no perceptible difference between the number or proportion of Australian visitors to New Zealand in January compared with Australians visiting in March of 1998 (Statistics New Zealand, 1998).

Regional analysis of New Zealand visitors shows that the greatest proportion (55.4%) originated from South Island areas, and nearly one third (31.1%) were from Canterbury. (Figure 6.2). When Fox and Franz Josef Glacier are compared (also Figure 6.2), a slightly different trend is evident. For instance, while over half (55.3%) of all New Zealand visitors to Franz Josef originated from the North Island, visitors from this region represented only a third (33.3%) of visitors to Fox Glacier. Visitors from Canterbury (41.7%) clearly dominate at Fox, but account for only one in every five (21.0%) visitors to Franz Josef.



6.2.2 Age

At both glaciers, the most common visitor age group was 25 – 29 years (16.5%). The smaller proportion of visitors aged between 35 and 49 years (20%) is illustrated by a prominent dip in the centre of Figure 6.3, creating a bimodal distribution. This age group

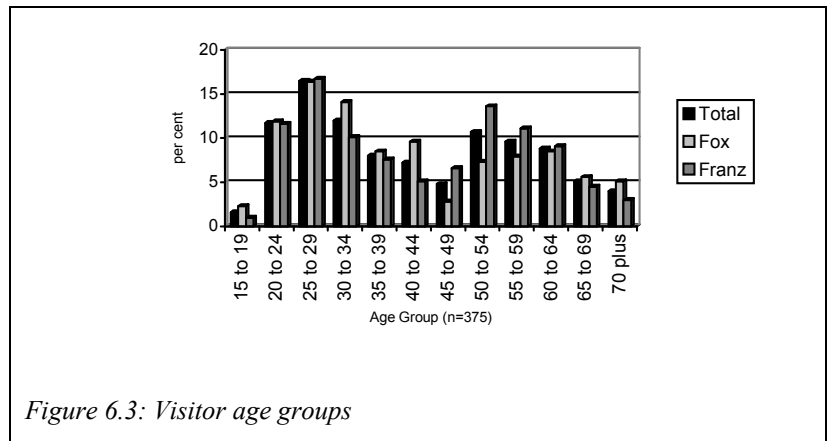


Figure 6.3: Visitor age groups

represents a stage of the life cycle in which children and careers may reduce the potential for travel. Those with children are both less likely to travel, and less likely to explore natural areas (Bagnall, 1998; Espiner, 1995). This is supported by the finding that only a small proportion (7.2%) of visitors were accompanied by children for whom they were responsible. It is typical of both the nature of the attraction, and the age structure of tourists in general, that nearly 40 per cent of visitors to the glaciers were aged fifty years or older. When compared in Figure 6.3, it is apparent that Fox Glacier has a slightly younger visitor age profile than its northern counterpart, a difference that may reflect the higher profile of Franz Josef Glacier, especially among those visitors following the main tourist ‘circuit’ and those on package tours (who are also likely to be older).

6.2.3 Gender

As is common in many on-site visitor surveys (Booth & Peebles, 1995), men (55%) were slightly over-represented in the results (Figure 6.4). This may be attributable to what has been described as the ‘male leader bias’ (Devlin, 1976). However, attempts were made to reduce this effect (see Appendix H). Other visitor studies at national parks and outdoor recreation areas have

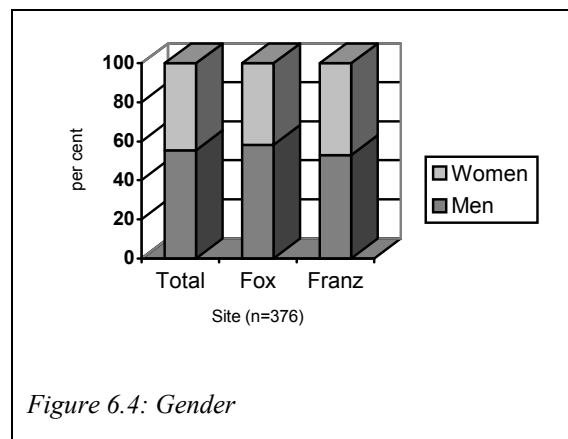
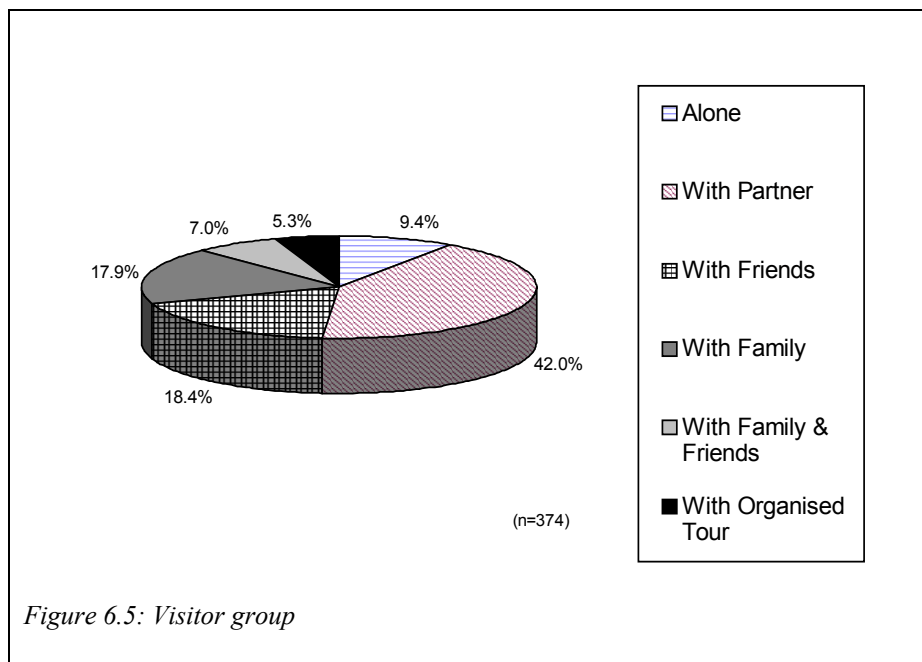


Figure 6.4: Gender

found a male: female ratio similarly close to 60:40 (Booth and Peebles, 1995). The effect is more pronounced at Fox Glacier (58.2% men and 41.8% women) than at Franz Josef (52.8% men and 47.2 women).

6.2.4 Visitor group

Consistent with other studies of leisure, recreation and tourism participation (see for example, Burch, 1969; Colton, 1987; Holman & Epperson, 1984; Kelly, 1980; Labone & Wearing, 1994), the majority of visitors to the glaciers were accompanied by others (Figure 6.5). Most commonly, respondents were visiting with a partner (42.0%), but family (17.9%) and friends (18.4%) were also frequently mentioned. Fewer than ten per cent of respondents were visiting the glaciers alone, and only one visitor in twenty (5.3%) was visiting as part of an organised tour group.



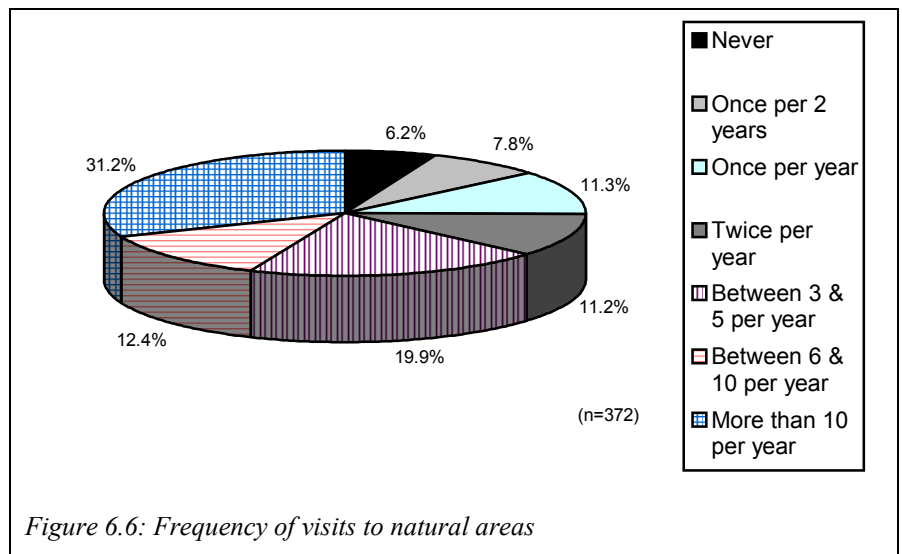
Once again, it is likely that those visitors travelling as part of organised tours are under-represented in the survey. Possible explanations for this include the time constraints on tour group members, and the lack of willingness to explore the sites observed among coach parties. This is not a bias in the sample but, rather, it is a consequence of the chosen sample frame (which included only those visitors who walked at least part of the way to the glacier). It is also feasible that some organised tour group members identified more closely with one of

the other choices offered in this question. The range of categories was intended to be mutually exclusive, yet might not have differentiated sufficiently between all categories. While respondents were asked to select one option that best described the group with which they were visiting, some respondents may have considered their group as ‘with partner’, yet also part of an ‘organised tour’. This is a weakness of the survey instrument.

The life stage of visitors is broadly reflected in the composition of visitor groups. For instance, 71.4 per cent of those travelling alone, and 73.9 per cent of those travelling with friends, were aged under 40 years. Conversely, 63.5 per cent of visitors who were accompanied by their partners were aged 40 years or older. These differences were found to be statistically significant ($\chi^2=38.9$, $df=5$, $p<0.001$).

6.2.5 Level of experience

In order to gain an understanding of visitors’ familiarity with relatively natural environments, respondents were asked to approximate the frequency with which they visited ‘largely unmodified natural areas’ when resident in their home countries. This question produced an unexpected result, in that



while 36.5 per cent of respondents reported visits to such areas two or fewer times per year, as many as 31.2 per cent claimed to visit *more than ten times per year*, thus placing themselves in the most experienced visitor bracket (Figure 6.6). Taken at face value, this result implies that an important proportion of visitors to both glaciers were quite familiar with natural and unmodified environments. However, this result should be interpreted cautiously. The researcher’s observations of, and discussions with visitors, suggested that many were less familiar with largely unmodified environments than is indicated in the result above.

There are at least three possible explanations for the high proportion of respondents who classed themselves as frequent natural area visitors. The first is that the visitors represent an experienced group of nature-based tourists and outdoor recreationists, an explanation that contradicts the observations, and some other findings reported here. Another possibility is that visitors consider themselves more familiar with natural environments than they really are, or at least, they are unfamiliar with the level of naturalness often associated with New Zealand's natural attractions. This suggestion is partially supported in an analysis of the level of experience and visitor origin. For instance, among those who reported more than ten annual visits to unmodified natural areas, visitors from the UK and Ireland (23%) and the USA and Canada (19%) were significantly over-represented ($\chi^2 = 26.6$, $df=10$, $p=0.003$). That few genuinely unmodified environments exist in the UK and Ireland at least, suggests that visitors from these localities consider themselves more familiar than may be the case in a New Zealand context.

A third explanation is that the question may reveal more about how visitors perceived the term 'unmodified' than it does about visitor experience of natural environments. Given the highly modified environments from which most visitors to New Zealand originate, 'largely unmodified' becomes an especially relative term. The rolling pastures of Ireland for instance, while heavily cultivated landscapes, may be perceived as largely unmodified natural areas owing to the absence of built structures. If this is the case, the question is not successful in revealing level of experience in environments such as those found at Fox and Franz Josef. It is perhaps sufficient to assume that, for many overseas visitors to New Zealand, the glaciers represent unfamiliar environments. Observation of visitor behaviour and the comments of individual respondents support this assumption.

A lack of experience is evident in comments made by visitors during short interviews. For instance, despite his claims to the contrary, one middle-aged Australian man revealed his unfamiliarity with the sub-alpine West Coast riverbed environment with these comments:

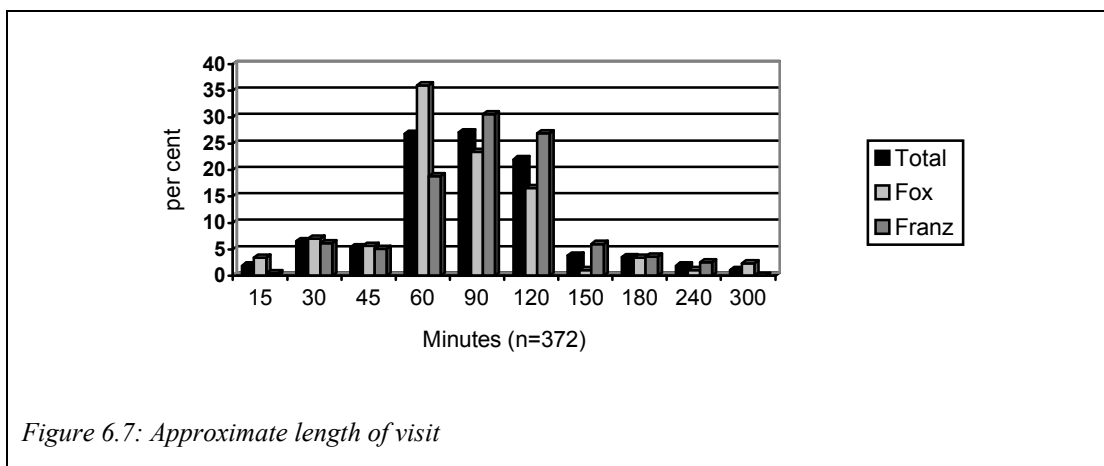
I've done a lot of bush walking - we're bush trained, you see - but I didn't feel entirely safe on this track because I've got a crook back – arthritis in the base of the spine, and I haven't got any recovery if I start to stumble. The only suggestion I'd make is to get the unemployed people up here – and there's a myriad of flat rocks – I don't mean the *really* big ones – and plan out a track, and get these guys to lay them in a stable condition, so that you know when you stand on that rock, it's going to be there for you.

This visitor’s suggestion is impractical to anyone familiar with the power of the river, and the scree slides that continually erode into it, to shift large volumes of debris every day (depending on rainfall). No ‘paved’ track would last more than a few weeks in the glacier valley environment.

Other visitors made unrealistic comments about potential improvements in the glacier valleys which also implied a limited understanding of the environment. An English woman suggested that small cabins be provided in case of rain, while her partner proposed an easier access track and a “coffee or water bottle stand” at the foot of the glacier. Numerous comments such as “why would ice fall from the glacier today when it’s been like that for hundreds of years?”, and “I’d like to see access to a safe bit [of the glacier] just for touching, but I guess thousands of human hands may damage it”, reflect a lack of awareness and understanding of the dynamic state of both glaciers. Although some visitors may have experience of natural environments, the majority have not gained it in areas such as these.

6.2.6 Time spent at the sites

Visitors were asked to estimate the time spent on the glacier access tracks. Overall, more than three quarters (76.1%) of the sample spent between one and two hours at the sites. The most commonly reported visit time was 1.5 hours. When the glacier sites are compared (Figure 6.7), there are significant differences between them ($\chi^2 = 32.2$, $df=9$, $p<0.001$). It is evident that visitors spent longer at Franz Josef (mode = 90 minutes) than at Fox (mode = 60 minutes). Of those visiting Franz Josef Glacier, 69.5 per cent remained at the site for more than one hour, compared with 38 per cent of visitors to Fox Glacier. These differences are largely attributable to the slightly longer access track at Franz Josef.



6.2.7 Visits to one or both glaciers and the information centre

Most respondents (71.8%) visited both glacier attractions. The remaining 28.2 per cent stated that they would only visit one glacier. When the sites are compared (Figure 6.8), it is clear that a significantly higher proportion of respondents at Fox Glacier intended to also visit Franz Josef (79.4%)¹⁸, than was the case

for those visitors to Franz Josef who intended to visit Fox Glacier (65%) ($\chi^2=9.6$, $df=1$, $p=0.002$). Those visiting only one of the attractions may have been more likely to choose Franz Josef as it is the first of the glaciers reached by travellers moving north to south. Studies of the geographical distribution of tourists

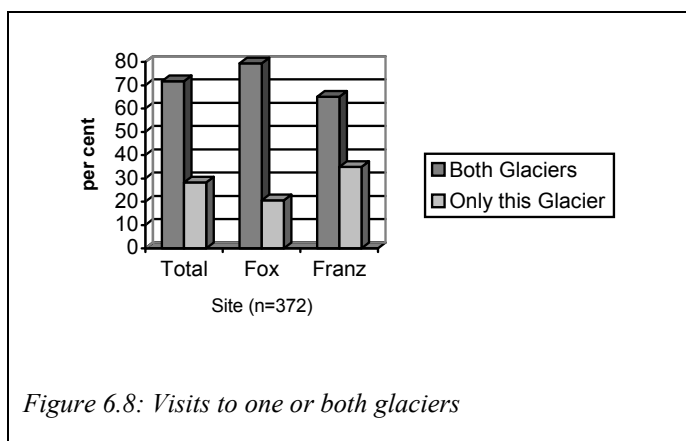


Figure 6.8: Visits to one or both glaciers

in New Zealand have confirmed this north – south travel pattern on the West Coast (Forer & Simmons, 1998). Furthermore, Franz Josef has the higher profile of the two glacier attractions, and as such is likely to be foremost in the minds of both visitors to the region, and the tour operators who influence which attractions are included in tour itineraries. That a majority of visitors intended to visit *both* glaciers is consistent with Corbett’s (2001) study undertaken at Franz Josef, but contrary to the findings of TRC (1995), who claimed that visitors to South Westland are principally interested in visiting *one* glacier.

Visitors were also asked if they had visited the Department of Conservation Information Centre *before* their trip to the glacier access track. In the combined sample, the majority of respondents (63.7%) had *not* visited the Centre prior to arriving at the glacier (Figure 6.9). While the proportions differ slightly between the two sites, the overall trend

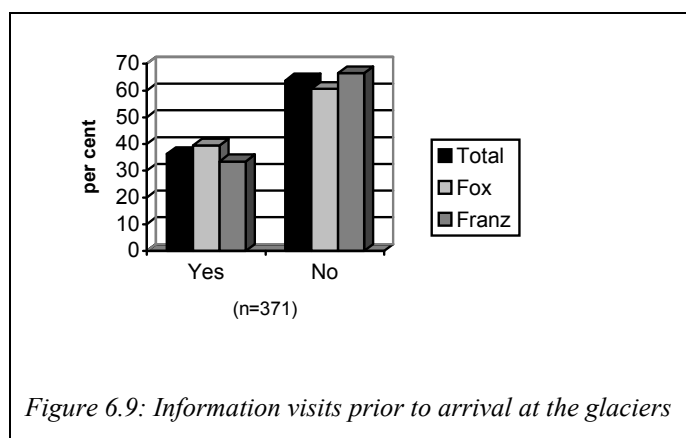


Figure 6.9: Information visits prior to arrival at the glaciers

¹⁸ This is despite the fact that at the time of sampling at Fox, the access track to the Franz Josef glacier was closed to visitors.

remains clear. This finding has important implications for the positioning of visitor information about the area, and, in particular, the dissemination of information relating to hazards at the two sites.

6.2.8 Summary

Visitors to the glaciers of Westland National Park are broadly typical of SSTs in other national parks and natural attractions in New Zealand. For instance, the results show that visitor age distribution was bimodal, reflecting the life stages of the majority of long-haul travellers, and a broad cross-section of visitor nationality was evident. Other New Zealand studies have also revealed high proportions of overseas visitors, although few as high as 80 per cent (Booth & Peebles, 1995; NZTB, 1993). Compared with visitors to national parks in general, however, it is likely that glacier visitors are slightly atypical. The most obvious difference is the greater proportion of domestic visitors recorded in most studies of national park visitation. These visitors stay for longer periods of time overall, and have higher levels of experience in New Zealand's unmodified natural environments. Furthermore, male and female visitor representations are more disparate than reported in the current study, although visitor group ratios appear similar.

The glacier visitor characteristics reported here present management with a number of challenges and potential concerns, some of which are unique to the region. For instance, while short walks are extremely popular attractions throughout New Zealand (DOC, 1996b; NZTB, 1996), many access tracks are not of the duration found at Fox and Franz Josef Glacier. Typical visits to the glaciers are of approximately 90 minutes duration, sufficient time for visitors to be exposed to a range of natural hazards. Furthermore, with the majority of visitors to the glaciers originating from overseas, it is clear that the management focus cannot afford to be on New Zealanders alone. With significant proportions of visitors likely to be from countries where English is not the first language (estimated at 34% of the total sample in the present study), care is needed in selecting the most appropriate strategies for conveying hazard warnings. In this regard it is salient to note that visitors generally did not visit the Department of Conservation information centres prior to their arrival at the glacier access tracks. Attempts to increase the hazard awareness of visitors should be cognisant of this fact. In addition, the results show that most people intend to visit *both* glaciers while in South Westland. This finding stresses the value of continuous and consistent hazard

management strategies between the two sites. Management at one site has the potential to affect awareness and behaviour at the other site.

The next section examines visitor awareness of hazards, and the effects of hazard signs on visitors' perceptions and behaviour.

6.3 Visitors' perceptions of natural hazards and risk

6.3.1 Introduction

Risk perception is a multi-faceted concept, which includes an individual's assessment of the likelihood of loss in any given situation. The degree to which individuals perceive risk is likely to be affected by a variety of factors identified in the literature review as primarily individual or situational. Important among these is the nature of the physical and social environments, previous exposure to information about the hazard or risk, and personality disposition.

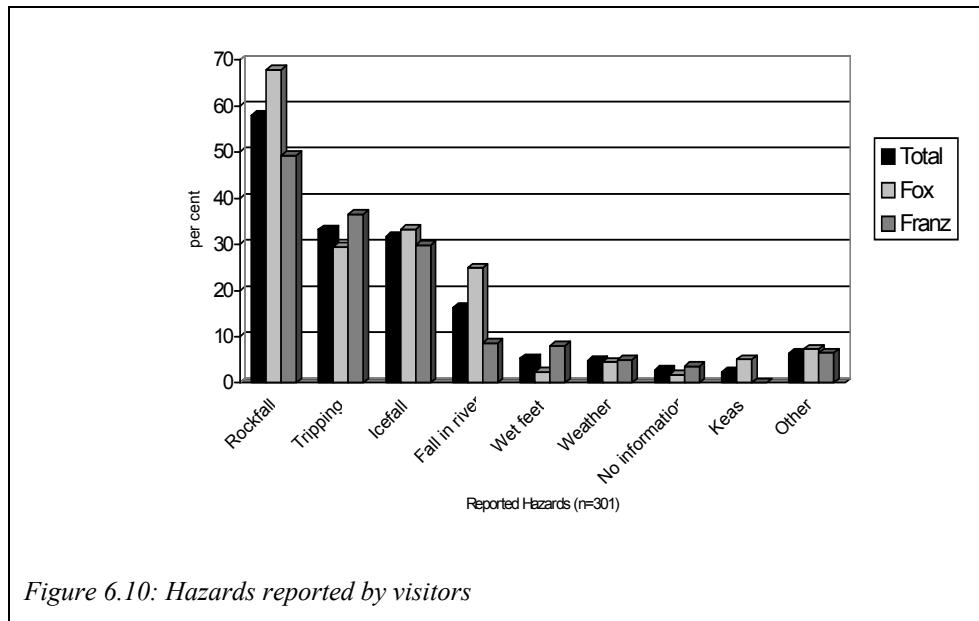
The current study assessed visitors' perceived risk using awareness of natural hazards, and feelings of safety at the sites. Those visitors who perceived risk to be high at the glaciers were those who had high hazard awareness and low feelings of safety (ie., they identified specific dangers and felt a degree of concern for their personal safety). A low level of perceived risk was measured as a poor awareness of hazards coupled with a high feeling of safety. In this section, hazard awareness is explored, and the effects of alternative warning signs are assessed. Safety perceptions among visitors are then discussed, after which visitor perceptions of risk at the glacier sites are estimated.

6.3.2 Hazard awareness

Visitors' awareness of hazards in the Fox and Franz Josef valleys was determined in several ways. These included recording the specific hazards identified by respondents, the application of a hazard awareness scale, and calculating the total number of hazards identified.

6.3.2.1 Hazard identification

Visitors were asked to recall any hazards observed during their time on the glacier access tracks. Overall, one in five (19.3%) respondents claimed that there were no hazards at the sites. Of those who were able to identify hazards, rockfall (58%), tripping or slipping on loose stones (33.2%), icefall (31.6%), and falling in the river (26.5%) were the most frequently reported¹⁹ among total visitors (Figure 6.10).



When the sites are examined independently (also Figure 6.10), some clear differences are apparent. For instance, visitors to Fox Glacier appeared to be more aware of rockfall (67.8%) and falling in the river (24.9%) than their Franz Josef counterparts, of whom 49.2 per cent and 8.6 per cent identified the respective hazards. This is interesting because, technically, the river is a greater hazard at Franz Josef than it is at Fox Glacier (DOC, 1997a). Of the other hazards (6.4%) reported by visitors, the most common were ‘other tourists’, and a small number of visitors who, believing that the track marker posts were, in fact, *hazard* markers, went to great lengths to avoid them.

¹⁹ Visitors were not prompted with any information about hazards (or possible hazards) at the sites. Responses reflect the range of visitor perceptions, beliefs, and understandings.

6.3.2.2 Hazard awareness scores

The extent to which visitors reported awareness of hazards was calculated using a scale created for the specific purposes of this study (see Chapter 5). The Hazard Awareness Scale (HAS) comprised nine items, the scores on which have been standardised²⁰. High scores represent a high level of hazard awareness. The maximum possible score was 100, and the mean for all visitors was 64.2, representing a moderate²¹ level of awareness.

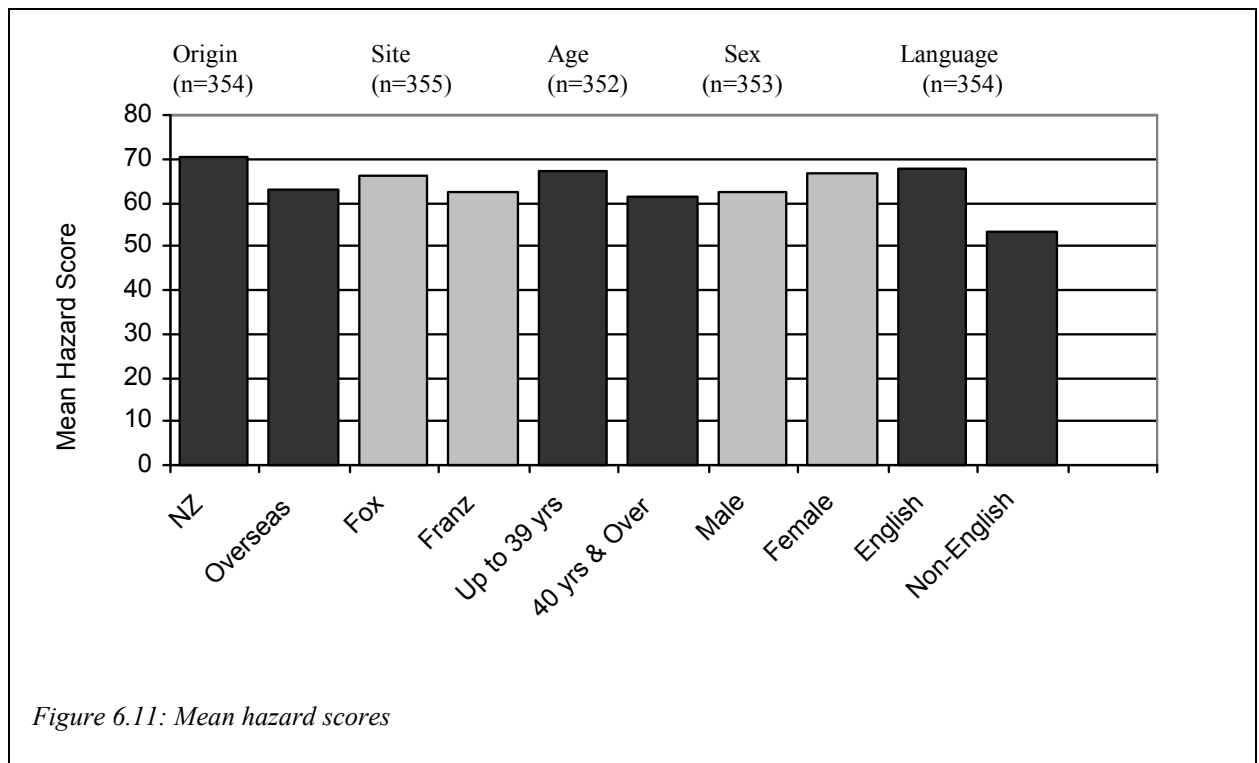
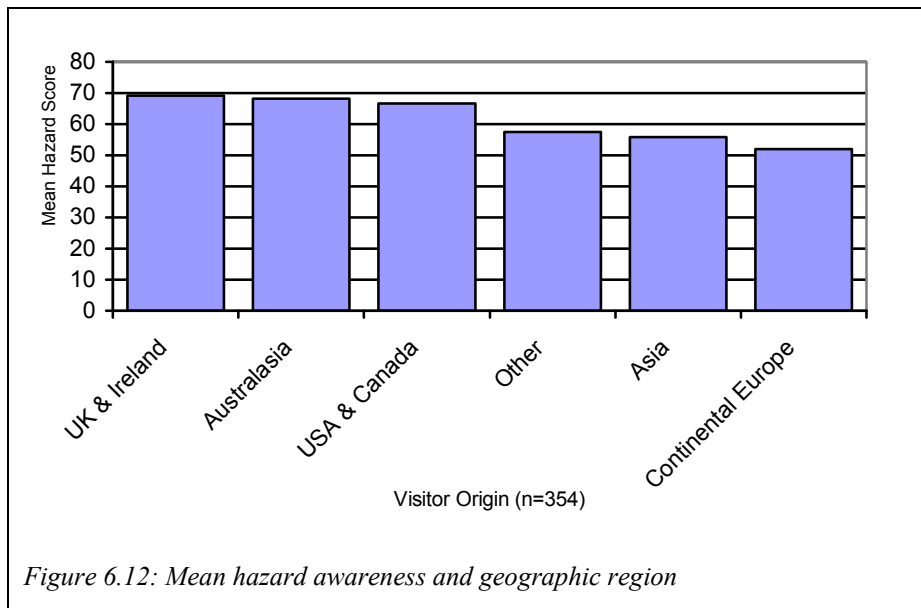


Figure 6.11 represents a summary of the key comparative findings relating to hazard awareness scores. Those with highest hazard awareness include visitors to Fox Glacier, visitors from New Zealand, women, visitors aged under 40 years, and those originating from places where the first language is English. Statistically significant differences were found for visitor origin ($t= 3.03$, $df=119.5$, 2-tailed $p<0.01$), age ($t= 2.48$, $df= 348$, 2-tailed $p<0.01$), and for language ($t=5.93$, $df=352$, 2-tailed $p<0.001$).

²⁰ All multiple item scores in this study have been standardised by dividing the raw score by the maximum possible score and multiplying by 100.

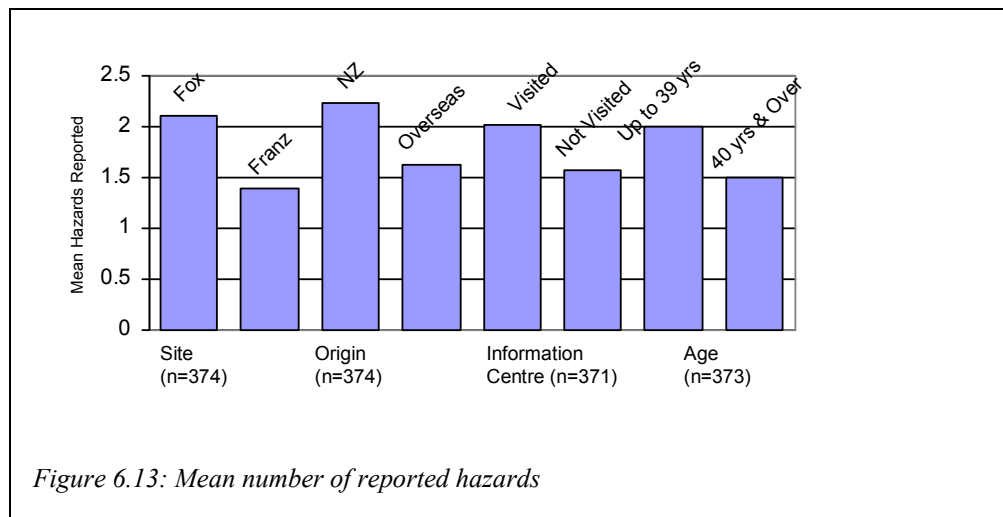
²¹ See Appendix J for information relating to the classification of 'low', 'moderate', and 'high' for all scale scores.

Further analysis of visitor origin also showed statistically significant differences ($F_{5, 348} = 7.51, p < 0.001$). For instance, visitors from the UK and Ireland had a higher hazard awareness (69.2) than Continental European (52.0) or Asian (55.8) visitors. Figure 6.12 illustrates the mean hazard awareness scores for visitors from Australasia, Continental Europe, Asia, the USA and Canada, the UK and Ireland, and Other. A *post-hoc* comparison (Scheffe, 1953) revealed that, in terms of hazard awareness, Continental Europeans differed significantly from visitors from Australasia, the USA and Canada, and the UK and Ireland.



6.3.2.3 Total hazards identified

The final measure of hazard awareness was the total number of hazards identified by respondents. While one in five (19.3%) visitors did not identify a single hazard, approximately one quarter (27%) identified three or more hazards. The mean number of hazards reported by visitors was 1.8.



When examined, these results demonstrate significant differences in site, origin, information centre use, and age (Figure 6.13). For instance, visitors to Fox Glacier had a higher mean number of reported hazards (2.1) than their Franz Josef counterparts (1.4) ($t=4.78$, $df=372$, 2-tailed $p<0.001$). Visitors from New Zealand also identified a greater number of hazards than those visitors from overseas, with means of 2.24 and 1.62 respectively ($t=3.7$, $df=372$, 2-tailed $p<0.001$). Interestingly, those visitors who had visited the information centre prior to their arrival at the glacier reported a higher number of hazards than those who had not visited the information centre. This result was also found to be statistically significant ($t=3.09$, $df=369$, 2-tailed $p=0.002$). Finally, those aged under 40 years of age reported a significantly higher mean number of hazards than those 40 years and over ($t=3.04$, $df=371$, 2-tailed $p=0.003$). The mean number of hazards identified correlates positively with the previous hazard awareness measure ($r=.3738$, $n=351$, $p<0.001$). Those visitors who were unable to identify any hazards also generated the lowest HAS scores (mean = 49.3), compared with visitors who identified four or five hazards whose scores were 78.3 and 77.6 respectively.

6.3.2.4 Summary

Following an assessment of specific hazard identification, hazard awareness scores, and the total number of hazards reported, it is concluded that hazard awareness among visitors to the glaciers is only modest, and in some cases it is poor. The majority of respondents were unable to identify any natural hazards at the sites other than rockfall. Respondents with the lowest levels of awareness include visitors to New Zealand, and visitors aged 40 years and over. Visitors to Franz Josef Glacier, and those who did not visit the information centre prior to their arrival at the site, were also less aware of hazards on their walks. One explanation for these differences is related to visitors' familiarity with surroundings and level of information available. Visitors to New Zealand are less likely to recognise the hazards in environments such as those found at Fox and Franz Josef Glacier. Awareness of hazards at Franz Josef may be lower than at its southern counterpart owing to the broader, less imposing valley in which the visitor access track is located (see Chapter 1). Fox Glacier may appear more 'wild', distant, and forbidding.

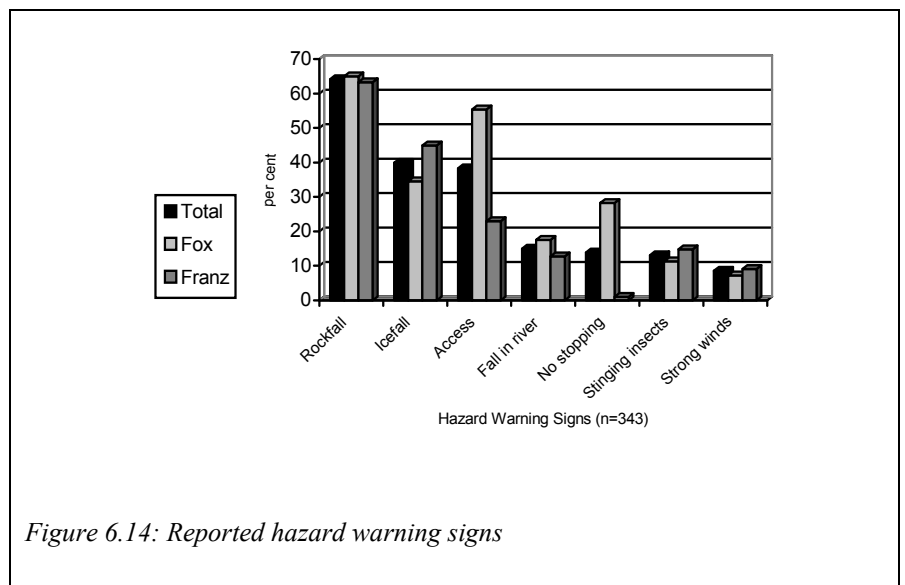
That age should influence hazard awareness to a significant extent is perplexing. Factors associated with age, such as life stage and experience may be influential. Although age was

found to be related to visitor group (see Figure 6.5), no significant differences between group and hazard awareness were identified. Other explanations for limited hazard awareness among visitors, such as those associated with communication, attitudes towards risk responsibility, and the leisure context in which most people visit, are discussed in Section 6.6.

6.3.3 Awareness and effect of hazard signs

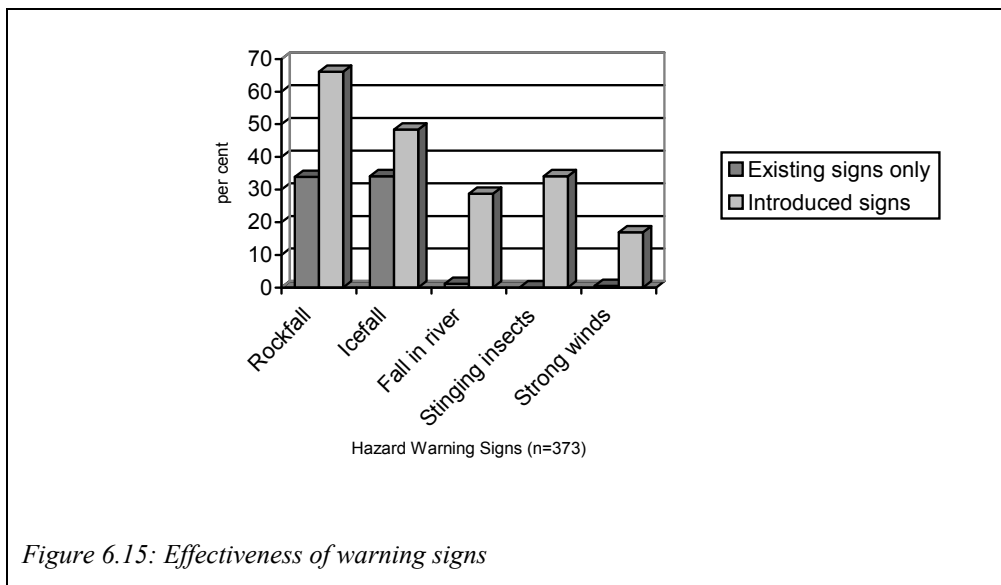
An important objective of this study was to ascertain the effectiveness of warning signs in alerting visitors to the presence of hazards. In order to assess the influence of signs, pictorial hazard warnings were introduced to the glacier sites, and placed at credible locations along the two walkways. Visitor awareness of hazards was assessed in both the absence and presence of the introduced signs (for a more detailed description and illustrations, see Chapter 5).

Visitors were asked if they were aware of any hazard warning signs on the access tracks. Most respondents (91.4%) reported that they *were* aware of hazard signs at the sites. The signs reported are presented in Figure 6.14.



The awareness of hazard signs followed a similar pattern to the awareness of hazards (shown in Figure 6.10), with rockfall (64.1%) and icefall (39.9%) the signs most commonly reported. Signs or structures restricting access (38.3%) and a ‘no stopping for 200 meters’ sign (13.9%) were also noted by visitors, especially those visiting Fox Glacier. Despite the variety of hazard signs identified, with the exception of rockfall, more than six in ten visitors were unaware of important hazard messages, such as those warning of icefall, restricted access, and falling in the river. The pattern of signs identified also suggests a continuum of recognition, from the most spectacular hazards to the least spectacular. This implies the notions of cognitive and affective salience, and some degree of processing to work out the salience of each.

In order to gain some impression of the effectiveness of hazard signs, it was important to compare visitor responses both at times when the introduced signs were present and when they were absent. The analysis found no significant difference between sign conditions with respect to visitor hazard awareness. In contrast, differences were apparent in the extent to which visitors reported awareness of the hazard signs themselves. Figure 6.15 reviews the effectiveness of five signs used at both glacier sites. In all cases, the differences in visitor sign identification are statistically significant (stinging insects ($x^2= 89.7$, $df=1$, $p<0.001$); rockfall ($x^2= 4.32$, $df=1$, $p<0.05$); icefall ($x^2= 7.67$, $df=1$, $p<0.01$); fall in river ($x^2=55.8$, $df=1$, $p<0.001$); strong winds ($x^2=32.01$, $df=1$, $p<0.001$)). For instance, rockfall hazard signs were reported by 33.9 per cent of visitors when only the DOC signs were present. With the introduced signs also in place, the proportion of visitors reporting rockfall increased to 66.1 per cent. Although less dramatic, the effect is similar for the icefall hazard warning. The other three hazard signs examined all returned results as expected. For instance, the strong winds hazard was not reported prior to the introduction of the sign simply because there is no existing sign (or anything similar to it). The introduced signs show that at least some visitors were aware of the specific warning signs at the sites; they were not simply using their own intuition or experience to determine what hazards were present.



In summary, while the introduced signs were effective in raising the level of hazard sign reporting, no effect on reporting of actual hazards was evident. This is not altogether surprising and suggests that visitors were able to differentiate between those hazards they had

been warned about (via signs) and those hazards of which they were personally aware at the sites. If visitor management agencies are interested in increasing individual responsibility for safety at natural attractions, and ensuring visitors have adequate information about the risks in these environments, more explicit signs may have a role to play.

6.3.4 Perceptions of safety

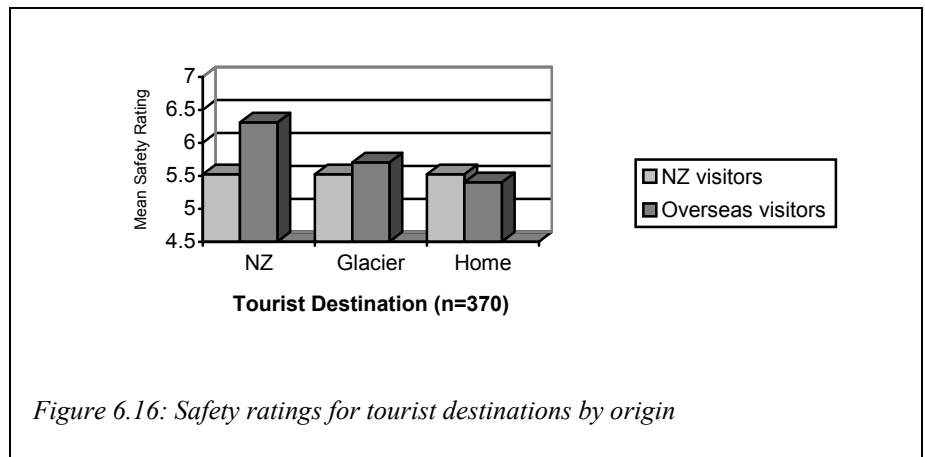
Another objective in this study was to determine the extent to which visitors to the glaciers felt safe in the immediate surroundings. Visitors' perceptions of safety were examined using Likert scales, the items of which contributed to an overall safety score out of 100. A high score on the scale is indicative of a strong feeling of safety.

Overall, visitors appeared to have a high perception of safety at both glacier sites, with a mean safety score of 78.6. This pattern appeared to be consistent across virtually all visitor groups, with only small variations between site, gender, and origin. Statistically significant differences are apparent when visitors are compared on the basis of age ($t = -4.26$, $df = 349.2$, 2-tailed $p < 0.001$) and visitor group ($F_{5,345} = 3.13$, $p = 0.009$). Those aged 40 years and over perceived themselves to be considerably safer at the glacier (mean = 83.2) than those under the age of 40 years (mean = 74.5). This is an unexpected finding considering that younger people are often portrayed as less risk averse (Bromiley & Curley, 1992; Deery, 1999; Tobin & Montz, 1997), although Fischhoff (1992) has argued that this claim is often unsubstantiated. This is, however, consistent with the earlier finding that this same younger age group had a greater awareness of hazards in the area. The result also concurs with the findings of Pinhey and Iverson (1994) who found that older visitors to Guam reported feeling safer than did the younger visitors. The findings may reflect differences in the activity preferences of visitors, with members of the younger age group more likely to engage in risky behaviour such as touching the glacier and exploring beyond the marked safety zones.

Travelling companions may also exert an influence on the extent to which visitors feel safe in their surroundings. For instance, those travelling with partners reported feeling significantly safer than did those travelling in other groups. The greatest difference was between those travelling alone (mean safety score = 71.6) and those travelling with their partners (mean safety score = 83.1). Further analysis suggested that some of the variance in group composition may be explained by age. For instance, 63.5 per cent of those travelling with

partners were aged 40 years or more. Similarly, 71.4 per cent of those travelling alone were under 40 years of age ($\chi^2= 38.9$, $df=5$, $p<0.001$).

In another part of the survey, respondents were asked to score three different locations on a safety scale. Visitors rated (i) New Zealand; (ii) their own country (if other than NZ); and (iii) the glacier site they were



currently visiting. Consistent with other measures of visitor safety perception in the study, respondents generally rated all three places high in terms of safety²², although there were significant differences between age groups ($t=-3.81$, $df=364.7$, 2-tailed $p<0.001$) and visitor origin ($t=-4.91$, $df=93.16$, 2-tailed $p<0.001$). Overseas visitors scored New Zealand ‘as a tourist destination’ considerably higher in safety terms than did New Zealanders (Figure 6.16). Similarly, visitors from overseas rated their own countries as less safe than either New Zealand, or the specific glacier site. The glaciers were also rated as safer by overseas visitors than by their New Zealand counterparts. In other analysis (not illustrated), a strong perception of safety among those aged 40 years and over is evident. When asked to evaluate the glacier attraction in terms of safety to visitors, older respondents rated it higher than did younger visitors.

That perception of safety was higher among overseas visitors is likely to be related to a lack of knowledge or awareness about New Zealand. The news and tourism promotion media are likely to influence risk perceptions (Elms, 1998b; Kottak & Costa, 1993; Pearce, 1988; Singer & Endreny, 1993; Wildavsky, 1993) through control over information about natural hazards, levels of crime, road safety, and so on. The images of New Zealand to which potential visitors are generally exposed is likely to reinforce stereotypes of a clean, green and safe destination (Cloke & Perkins, 1998; Dilley, 1986; NZTB, 1997). A recent promotional campaign designed to attract additional visitors, described New Zealand as ‘100% pure’

²² The results of this scale have been re-coded so that a high score represents a high level of perceived safety.

(Tourism New Zealand, 2000). The slogan aimed to invoke an unblemished, innocent, and fresh image which, no doubt, was intended to contrast, in the visitor's mind, with the urban, complicated, tarnished, and unsafe settings found in other parts of the world.

Knowledge of a site or an activity is likely to affect visitor perceptions and may explain the different safety assessments made by New Zealand and overseas visitors. Levine and Gorman (1994) found that skiers' ratings of danger in their sport increased when knowledge of previous accidents was high. Overseas visitors are unlikely to be familiar with the local history of New Zealand's natural attractions, or the activities undertaken within them. As a consequence, they are likely to rely heavily on the stereotypical images found in promotional materials in making their safety assessments.

A related explanation for strong feelings of safety among visitors to the glaciers is that people do not expect to find unsafe conditions when they travel in the developed world. This is especially true for international tourists, who may believe that their experiences are somehow controlled or managed for personal safety. This possibility is raised by the Ministry of Commerce (1996) in a report on adventure tourism operator standards. The authors note that, internationally, New Zealand is viewed as:

A developed country with an advanced economic, legal, political and social infrastructure. For this reason alone, travellers may assume that regulatory structures for the New Zealand tourism industry are similar to those in other developed countries and that operators are obliged to meet reasonable standards of training and competency when operating in potentially dangerous environments (Ministry of Commerce, 1996, p. 1).

In reality, the adventure tourism industry rarely requires new operators to undergo peer safety reviews, safety audits, certification, or training (Adventure Tourism Council, no date; Bentley & Page, 2001; Ministry of Commerce, 1996), and has no explicit organisation responsible for monitoring safety and accidents (Bentley et al., 2001; Page, 1997; Page & Meyer, 1997).

The highly regulated societies from which the majority of visitors to the glaciers originate, may condition visitors to assume someone else has made the experience a safe one. As one female visitor from the United Kingdom commented: "they wouldn't let us come here if it wasn't safe, would they?". This remark suggests an assumed social contract between visitors and site managers; an implicit belief or trust in 'the system' is evident. Compared with their domestic counterparts, overseas visitors may differentiate less between locations, seeing them all as 'New Zealand managed'. In an era of privatisation and the contracting out of services,

however, no such consistency exists. What is less certain is the extent to which visitors appreciate that many of the natural hazards at the glaciers cannot be controlled by management.

A male visitor from the Netherlands expressed a similar trusting attitude, and implied that other New Zealand experiences have an influence on how people perceive safety and its management at the glaciers:

I think that if it was really dangerous, then they would close it up. Just like when we went to Milford Sound, and we were just in time because the road closed at five o'clock, because they keep an eye on it all the time, and if it gets dangerous they just close the road, and you have to stay at Milford Sound. We were going back at about 3.30, and the boat captain warned us that if we were planning to leave Milford we should beware because the road will close at 5 pm. I think they don't take any risks. They say 'it's heavy rain coming, and we'll close the road as a precaution'.

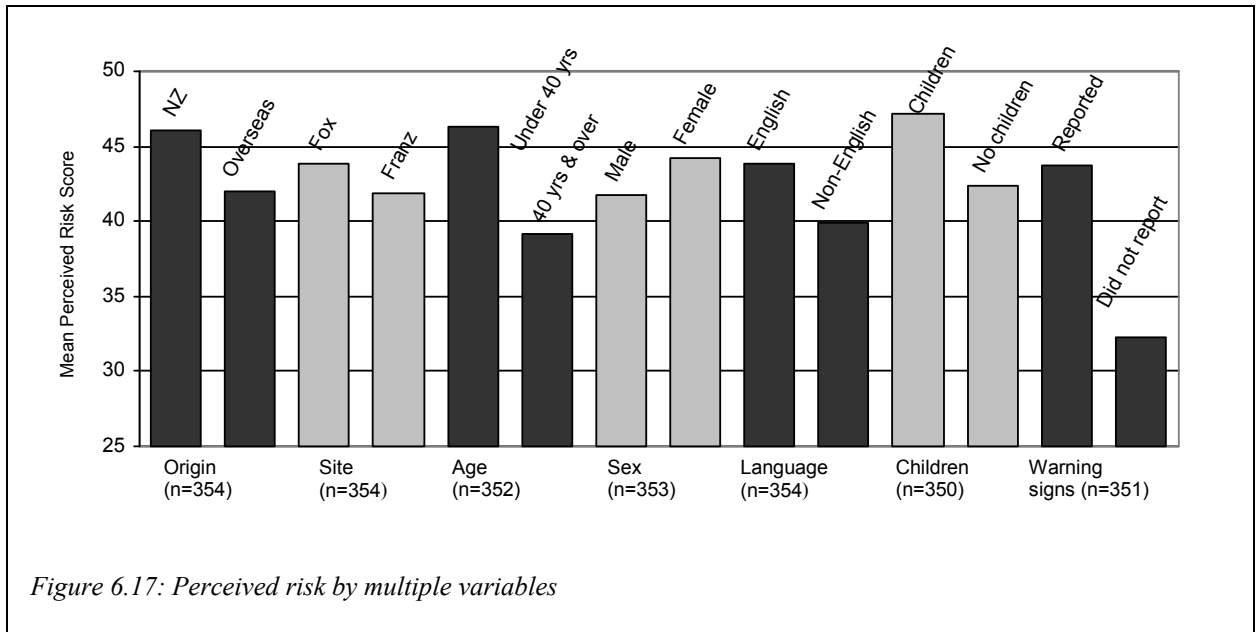
New Zealand visitors also expressed a strong feeling of safety at the glacier attractions, but may do so for different reasons. Some overseas visitors have combined trust and ignorance, the result of which is not to question the safety of their experience. New Zealanders, however, may express a belief in the safety of their experience because of strong feelings of propriety over the sites. This includes the belief that they can make their own minds up about the conditions and whether a site is safe or not. This is especially evident in the New Zealand visitor attitudes to individual responsibility discussed in Section 6.4.

6.3.5 Perceptions of risk

As discussed above, an important aim of this study was to ascertain the level of perceived risk among visitors to the glacier attractions. In order to approximate this, the data from the previous two sections (hazard awareness and safety perception scores) have been combined to generate a perceived risk score (PRS) for each visitor or visitor group. This summary score has involved several simple arithmetic stages, each of which is outlined below. The combination of the two scales is based on the assumption that perceived risk is related to both awareness of hazards and feelings of safety. For instance, a visitor who has a high awareness of hazards and a low feeling of safety will demonstrate high perceived risk.

First, it was necessary to establish a relationship between the scales assessing hazard awareness (HAS) and perception of safety (SPS). A modest negative correlation ($r = -.3314$,

n=345, p<0.001) indicated that high scores on one scale correlated with low scores on the other. Second, in order to reflect this negative relationship in terms of a score out of 100, the safety scores were inverted (ie., a low score equated to a high perception of safety) and added to the hazard awareness scores. So that the scores could be standardised, the total was then halved. Hence, $HAS + (100-SPS) / 2 = PRS$.



The PRS is not intended to represent an assessment of visitor traits. Rather, the score is a convenient way in which to evaluate the extent to which visitors perceive risk at the glacier sites. When examined, the perceived risk scores confirm the findings reported in earlier sections. Differences in perceived risk are evident in each of the variables presented in Figure 6.17. Statistically significant findings appear in heavier shading. The greatest differences in perceived risk are found in origin ($t= 2.03$, $df=352$, 2-tailed $p=0.043$), age ($t= 4.55$, $df= 350$, 2-tailed $p<0.001$), language ($t= 2.34$, $df= 181.5$, 2-tailed $p=0.021$), and awareness of warning signs ($t= 3.89$, $df=349$, 2-tailed $p< 0.001$). The highest perceived risk scores were generated by New Zealanders, those aged under 40 years of age, and visitors originating from places where the first language is English. Those who claimed to be unaware of hazard warning signs at the sites had the lowest perceived risk scores.

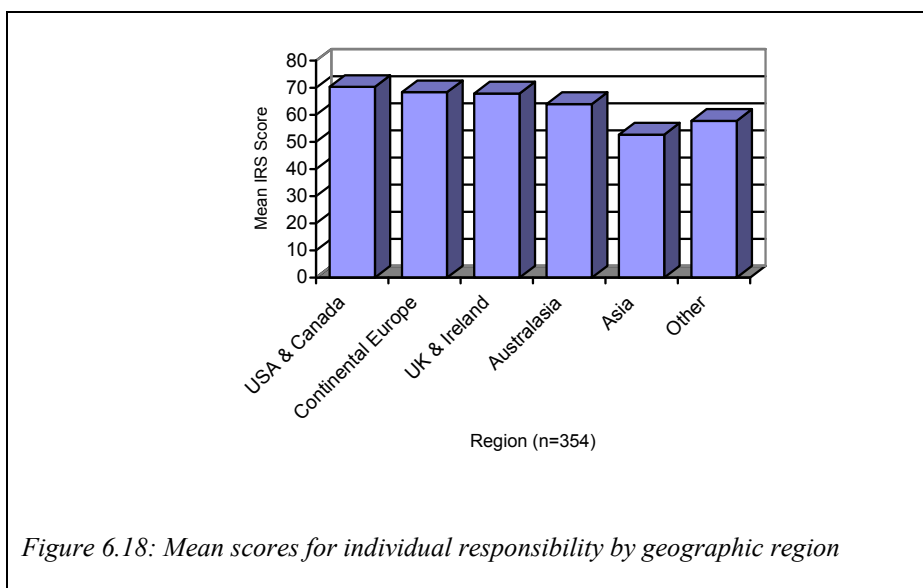
6.4 Attitudes toward individual responsibility

If you trip on a rock and break your leg, then it's not the rock's fault is it?

(New Zealand visitor to Franz Josef Glacier)

Visitors to the glaciers were assessed on the extent to which they held attitudes linked to feelings of individual responsibility for safety. An appreciation of these attitudes is important in terms of understanding the expectations of visitors, and will influence the nature and extent of signs and other hazard management tools employed.

Respondents' attitudes were explored using Likert scales. The individual responsibility for safety scale (IRS) used eleven items that combined to generate a standardised score out of 100. A high score on the scale represented a strong feeling of individual responsibility for safety. The mean score on the IRS scale was 65.9, representing a moderately high acceptance of individual responsibility among total visitors.



When visitor groups were compared on the IRS, there was generally a high level of consistency between them. The exception to this general trend was visitor origin. As expected, visitors from different parts of the world varied in the extent to which they accepted responsibility for their own safety while at the sites. Figure 6.18 illustrates the mean scores by geographic region, between which there are statistically significant differences ($F_{5,327} = 4.8$,

$p < 0.001$). A Scheffe test revealed that the greatest difference was between visitors from Asia, and those from Continental Europe, USA and Canada.

The findings here lend some support to other studies implying differences between tourists on the basis of nationality. In their review of studies examining tourist behaviour and nationality, Pizam and Sussmann (1995) claimed there was evidence to suggest that nationality influences tourist behaviour. In their own research, the authors confirm this general finding, observing that Japanese tourists are most distinct, with greater tendencies towards passivity and lack of adventure. In their discussion, Pizam and Sussmann (1995, p. 915) speculated that the Japanese learnt through cultural conditioning to be “timid and reserved in new social situations”.

It is interesting to note that, despite the reported ‘liability crisis’ in the United States (Gold, 1991; Hanna, 1991; Rankin, 1989, 1990; Spengler & Hronek, 1995), visitors from this region scored highest on the IRS scale (mean = 70.3). This is surprising given that a strong culture of liability and blame might be assumed to contribute to higher safety management expectations among this visitor group. For example, one woman, visiting from the United States claimed to be impressed by the walks she had been on in New Zealand (including the Franz Josef access track), but was surprised that they were open to the public:

Many walks like this would not be allowed in the US for fear of litigation. I was very pleased that access was not closed here, but I was amazed!

A further difference in individual responsibility scores was found when comparing those respondents who had visited the information centre prior to their glacier visit (IRS = 64.3) with those who had not (IRS = 66.9). Visitors who had not been to the information centre had significantly higher scores on the IRS scale ($t=1.7$, $df=327$, one-tailed $p < 0.05$). While visiting the information centre may suggest a higher awareness of hazards (and consequently less confidence in accepting individual responsibility), there is no evidence of a correlation between hazard awareness and acceptance of individual responsibility for safety in the data ($r = -.012$). This suggests that hazard awareness is not influencing the degree to which people accept responsibility for their own safety.

It is also useful to note a small positive correlation between individual responsibility and perception of safety scores ($r = .234$, $n=333$, $p < 0.001$). Higher safety scores appear to be

related to higher scores for individual responsibility. Either, visitors were prepared to accept individual responsibility because they felt that the glacier attraction was safe, or they felt safe because they accepted responsibility for themselves. The former explanation seems more plausible and is partially supported by visitor comments such as: “they wouldn’t let us in here if it wasn’t safe” – an implicit reference to a responsible authority, and representing an assumption that one side of the ‘social contract’ had been met. High scores on the SPS may also help explain reasonably high IRS scores.

Further analysis suggested that individual responsibility for safety was influenced by differences in visitor group ($F_{5,324} = 2.32, p = 0.044$). Those visitors accompanied by family and friends had highest scores (IRS = 71.2), while those travelling on organised tours scored lowest (mean IRS = 60.3). This finding is not entirely unexpected given the likely feelings of control associated with being a member of an independent group of family or friends. Conversely, those on organised tours may have felt reliant on others to ensure their safety at the glacier sites. Expectations of those on organised tours are likely to be higher than those who travel independently, with respect to safety management.

While the visitor interviews also revealed strong thematic trends within countries of origin, these cannot necessarily be grouped in order as in Figure 6.18. In all interviews, visitor attitudes to individual responsibility were similar, but some expressed these more strongly than others. Among visitors, those from New Zealand and Australia appeared to hold the strongest views.

For instance, a male visitor from Australia, who was visiting Fox Glacier at the time, was very clear about where responsibility for safety lies:

I don’t think it’s anyone else’s responsibility. I’m totally opposed to this idea of, you know, you go somewhere, and you fall over and break your arm, and you try to sue somebody – I’m totally opposed to that. I think that when a person walks past here, it is one hundred per cent their own responsibility.

Similarly, a New Zealand visitor emphasised the need to accept personal responsibility in the outdoors:

As individuals we are responsible. I don't really agree with this OSH²³ business that you can sue the environment, so to speak, just because you fall over and twist your ankle! When that happens, it's a bit sad I think, because in the long run a lot of people suffer because the areas get closed off.

This visitor went on to comment on the extent of restriction at the glacier, questioning its necessity, although recognising management's likely rationale:

When you come to see the outdoors and what have you, it is sometimes a bit of a shame when you come across these fences and signs saying what to do and where to do it. I think it's a bit of an overkill, but there are people out there that, possibly they need that. I guess if they go over there and fall off you can say: 'it's your fault, you went over the fence', then you've covered yourself a little bit haven't you?

Another New Zealand respondent also felt that the number of warnings about safety were excessive:

The government goes over the top with trying to warn people about hazards. They have to realise people have to take more responsibility for their own safety. They can't be led by the hand all the time. You can't stop people going where it is dangerous - it's part of the attraction.

Here the speaker is clearly of the mind that people need to look after themselves more actively in natural environments. Like other comments, these are based on the assumption that all visitors have an equal level of knowledge about the conditions and hazards inherent at the sites.

One final remark helps characterise the New Zealand respondents' attitudes to responsibility in the outdoors:

There's no need for managers to inform visitors about every hazard here. One sign would be enough. Too many signs will spoil the place. As far as risk is concerned, I reckon a thumping great sign here [gesturing toward the beginning of the track], that a blind man can read, saying: 'you're welcome to come in here and look at the glacier – there it is up there – but past this point, you do so at your own risk, and no compensation is payable'. If you step on a bridge and it falls apart, that's your problem – you didn't have to do it!

²³ OSH refers to the Occupational Safety and Health Unit of New Zealand's Department of Labour.

This last comment implies the importance of voluntariness in risk acceptance (Leiss & Chociolko, 1994; Slovic et al., 1982). The visitor appears to believe that if he uses the recreation site, he does so of his own free will, and at his own risk. How these attitudes might play out in the event of an accident is unknown.

Other visitor comments illustrate an anti-litigious stance that was almost universal among those interviewed. So too is the New Zealand ‘do it yourself’, ‘she’ll be right’, and ‘you’re on your own’ cum ‘pioneer spirit’ that many enjoy in their outdoor recreation (Watson, 1993). The negative attitude to warnings and ‘over-management’ also implies a degree of psychological reactance (Brehm & Brehm, 1981; Manfredi & Bright, 1991). New Zealand visitors may object to being told what to do in places they perceive as ‘their own’, and react negatively to any perceived loss of freedom or control in these environments.

While supportive of individual responsibility, visitors from the United States and the United Kingdom were more conservative in their views. For instance, a young couple from Colorado used their experiences in the USA as a context for their attitudes:

In the US, the fence [the rope barrier restricting access to the glacier face] would be way back there [gesturing back down the valley, away from the glacier], just because there is so much liability with all the suing and so forth. If something happened to us here, like if a block of ice fell on us now, I think my father would ask a lot of questions and say that more should have been done to protect us – just because of the legal situation we are used to over there. But for us [the couple], we wouldn’t because we know what the risks are ahead of time, especially when you’re warned like that, you know it’s completely your fault if you’re up there [in the restricted area].

Another visitor to Franz Josef Glacier, a woman in her 50s from the United Kingdom, complained that the access to the riverbed through the bush was “too slippery”. She maintained that:

Management has a responsibility to provide a safe path through the bush. I have a right to expect this.

Similarly, other visitors insisted that the responsibility was a shared one between those who visit and those who manage the site. A male visitor from the Netherlands commented:

We always think of it this way: If we are on the road, we are responsible for our own lives, not other people; but it is good when other people who know the area and who put up the signs there, then it is a help for us of course – it’s a guide.

This view was shared by other overseas visitors, including a woman from Australia who said:

I think they [the management] should tell us the dangers, and point them out to us like they have done, and warn us, and then it's up to us whether we take that risk.

In summary, both the quantitative findings, and the individual comments of visitors, demonstrate a moderately strong sense of individual responsibility at the glacier sites. It is difficult to assess, however, the extent to which this might translate into practice in the event of an accident – especially for those visitors from beyond Australasia²⁴. Also evident in the comments of New Zealand, Australian and some American visitors is an anti-litigious stance. Some visitors believed that New Zealand could learn from the American situation regarding the right to sue. Such legal arrangements, they believe, have the potential to destroy the outdoor recreation and nature-based tourism experience should they ever be reintroduced.

Part of the strong New Zealand feeling about individual responsibility is a reaction to the signs and restrictions erected at both Fox and Franz Josef Glacier. This response may be linked to a sense of propriety among domestic visitors. New Zealanders may not appreciate being told what to do in their own place. Overseas visitors, however, appear happy that advice is given to guide them in an unfamiliar environment.

²⁴ Unfortunately, it was not possible to gain useful comments from visitors who were not fluent in English.

Table 6.1: Summary of mean scale scores

	Origin		Age		Sex		Information Centre		Language		Site		All
	NZ	Overseas	Under 40 years	40 years and over	Male	Female	Visited	Not visited	English first	Non-English first	Fox	Franz	
Hazard Awareness	70.6 MOD	62.7 MOD	67.1 MOD	61.6 MOD	62.6 MOD	66.6 MOD	64.8 MOD	64.3 MOD	68.0 MOD	53.4 MOD	66.1 MOD	62.5 MOD	64.2 MOD
Total Hazards Identified	2.2	1.6	2.0	1.5	1.7	1.9	2.0	1.6	1.9	1.4	2.1	1.5	1.8
Perceptions of Safety	78.5 HIGH	78.7 HIGH	74.5 HIGH	83.2 HIGH	79.2 HIGH	78.1 HIGH	77.7 HIGH	79.4 HIGH	80.4 HIGH	73.6 HIGH	78.4 HIGH	78.8 HIGH	78.6 HIGH
Individual Responsibility for Safety	66.9 MOD	65.6 MOD	66.4 MOD	65.6 MOD	65.8 MOD	66.2 MOD	64.2 MOD	66.9 MOD	66.1 MOD	64.9 MOD	65.7 MOD	66.0 MOD	65.9 MOD
Perceived Risk	46.1 MOD	42.0 LOW	46.3 MOD	39.2 LOW	41.7 LOW	44.2 MOD	43.6 MOD	42.4 LOW	43.8 MOD	39.9 LOW	43.8 MOD	42.0 LOW	42.85 MOD

*Statistically significant differences ($p < 0.05$) appear in shaded cells

LOW = Low range 0 - 42.8
 MOD = Moderate range 42.9 – 71.3
 HIGH = High range 71.4 – 100

Table 6.1 provides a summary of the various hazard awareness, safety, and individual responsibility scores. The combination of the first two scales has led to the conclusion that perceived risk among visitors to the glacier attractions is relatively low. The most consistent findings are those related to the influence of visitor origin and age. No significant relationship between these two variables was found, suggesting that the influence of each is independent of the other.

6.5 Visitor behaviour

From Section 6.3, it is evident that, among some visitors, awareness of hazards and the degree to which risk is perceived at the glacier sites is low. It is possible that a sense of complacency among these visitors is a factor contributing to the unsafe behaviour previously reported at the sites by management. An attempt to increase visitor awareness of hazards at the sites was undertaken using the introduced signs (described in Section 6.3.3, and more fully in Chapter 5). The effects of the signs on visitor compliance with warning messages were monitored.

This final results section examines the behavioural dimension of the glacier visitor study. This component was used in addition to the questionnaire in recognition of the fact that there are potential differences between what respondents say, and what they do (Fishbein & Manfredo, 1992). While it is not possible to validate one method against another (and determine precisely any differences), it is useful to present the additional data to complement the other findings. The behavioural data have been divided into those that were *reported* (ie., obtained via the questionnaire), and those that were *observed* (ie., obtained via a series of scheduled observations made by the researcher and/or his assistants).

6.5.1 Reported behaviour

Visitors were asked about their actions while at the glacier site. For instance, one question sought to determine what proportion of visitors had walked as far as the track terminus. Of the total sample, 69.5 per cent reported walking at least to the present closure immediately before the terminal face²⁵. Of these visitors, nearly one in four (23.8%)²⁶ claimed to get *close enough to touch* the ice face. To touch the ice at the time of the study visitors needed to go beyond the roped closure. This level of self-reported non-compliance is identical to that found by Corbett (2001) in his study of visitors to Franz Josef Glacier. Corbett (2001) found that 81 per cent of visitors walked as far as the track terminus, 24 per cent of whom proceeded beyond the rope barrier restricting access to the glacier.

²⁵This figure refers to visitors who ventured beyond the car parks and immediate surrounds. No visitors were interviewed in the car park or its close proximity. Refer to Chapter 5 for a description of the interviewing locations.

²⁶ This represents 16.6% of the total visitor sample.

It is possible that the present study's findings under-represent the true extent of transgressions. For example, it is plausible that respondents avoided admitting to something that they perceived as rule breaking or socially undesirable. It is partly for this reason that an observation component was included in the study design (see Section 6.5.2 below).

It is clear that touching or getting close to the glacier is very important to many visitors. The majority (69.6%) of all visitors expressed a desire to 'get closer to' the glacier than was possible at the time of their visit. This was especially true for visitors to Fox Glacier, where nearly three in every four visitors expressed a desire to get closer to the ice face. This perceived benefit effect has been identified as an important influence on degree of compliance with messages (McCarthy et al., 1995; Wogalter & Laughery, 1996). Similarly, the perceived cost of compliance with the message will affect the compliance rate. At the glaciers, some visitors are likely to have perceived the cost (loss of the benefits) of remaining within the safety zone as too great. This analysis assumes, of course, that visitors are aware that the roped closures are intended to restrict non-guided access to the glaciers.

The importance of getting close to the glacier is also evident in the data obtained through visitor interviews. Many visitors expressed discontent at not realising this ambition. One New Zealand visitor to Fox Glacier expressed his disappointment in the following way:

I reckon it's a pity you can't get any closer to the glacier than this [the roped closure]. My key thing is that it's bloody pathetic that at the start it says 'here's the walk to the glacier', and at the end you don't actually get there. It's not actually the walk to the glacier and it shouldn't say that!

Another visitor, a woman also from New Zealand, expressed a similar sentiment:

Everyone was really brassed off, because it [the glacier] was all roped off. It said 'danger rock falls', and yet they were taking guided groups up there, so you had to wonder how dangerous it really was! We felt that restrictions at the glacier, which limited access to guided groups, was only for paying people and not really the danger.

The perception among some visitors was that if you were prepared to pay, entry to restricted areas was possible. To a certain extent this is accurate, as commercial guiding companies will operate at times when, and in areas where, the Department of Conservation has deemed conditions unsuitable or unsafe for the general public. The fact that guided groups are able to get very close to the glacier face is a source of resentment for some visitors – especially domestic visitors who feel that they should not have to pay to experience attractions in their own country. In addition, the 'pay to access' situation has the potential to undermine the credibility of warning messages issued by the Department of Conservation.

Visitors from overseas were also disappointed that they could not get closer to the glacier.

A female visitor from India commented:

There should be a safe access for visitors to go and touch the ice and maybe access into the cave. We've come from far away only to be disappointed that we couldn't get into the cave.

Similarly, a woman from Hong Kong said:

Keeping behind the ropes meant that the experience did not reach my expectation. I really would have liked to have physically touched the glacier and it's very disappointing not to have done so.

These remarks suggest that some visitor expectations are not fully realised. Promotional materials for the West Coast glaciers often include close-up images of the ice cave, and even photographs of people standing within the cave mouth. The Department of Conservation has been advised to remove items in its visitor centre displays which contradict its on-site safety messages (Espiner, 1998). The mixed messages, however, are also a consequence of the promotional literature distributed by the tourism industry, an influence that is difficult to moderate. The potential for promotional material to create unrealistic impressions has also been noted by other authors. Pearce (1988, p. 154), for instance, claimed that "the truthfulness or honesty of the message in tourism advertising is not always paramount and overly positive, unbalanced messages are frequently presented". Messages from tourism promoters can provide a false sense of security about tourist destinations, with an emphasis on scenery, excitement, and fun that is rarely balanced with hazard warnings and safety messages (Parks Canada, 1997).

6.5.2 Observed behaviour

Visitors to the glaciers were observed at the terminal face for short periods of time on each suitable day of the study. These observations were undertaken in a covert fashion, and notes made detailing the number of visitors arriving at the track terminus, and the number and behaviour of those who elected to proceed beyond the ropes and signs which were designed to restrict access. In order to estimate the effect of introduced pictorial hazard signs, this procedure was carried out in both existing and introduced sign conditions.

Figure 6.19 provides a comparative illustration of visitor behaviour at the terminal faces of Fox and Franz Josef Glacier. For the total sample²⁷, approximately 60 per cent of the visitors who walked as far as the track terminus complied with the existing hazard signs. Conversely, four in every ten visitors chose to ignore the access restrictions, and ventured beyond the rope closure. The compliance rate was lowest at Fox

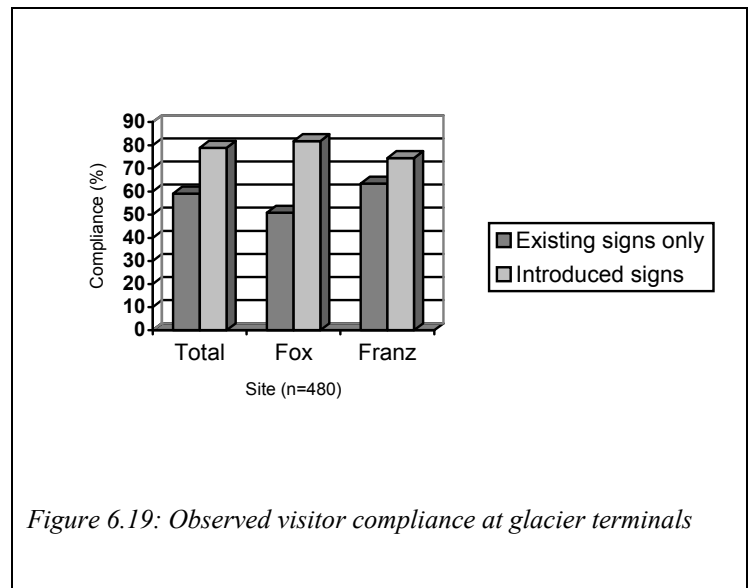


Figure 6.19: Observed visitor compliance at glacier terminals

Glacier (50.8%), where only half of the visitors remained within the recommended safety zone. Interestingly, compliance appeared to rise dramatically when the introduced signs were employed²⁸. Total compliance increased from 59.1 per cent to 78.9 per cent, while at Fox Glacier the increase was from 50.8 per cent to 81.8 per cent.

These dramatic results suggest that the introduced hazard signs influenced visitor behaviour at the terminal face of both glaciers. It is possible that existing signs were of insufficient impact or contained ambiguous meanings, resulting in high levels of non-compliance. The introduced signs may have conveyed a clearer message regarding appropriate visitor behaviour, providing an explanation for restricted access via the pictorial nature of the messages.

The literature reviewed in relation to warning compliance suggested that the salience of the message has an important effect on attention given to the presence and content of a message (Braun & Silver, 1995; Glover & Wogalter, 1997;

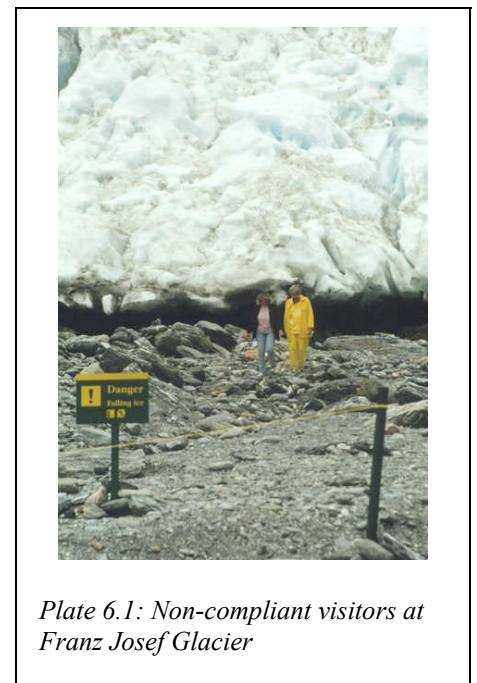


Plate 6.1: Non-compliant visitors at Franz Josef Glacier

²⁷ This sample is completely independent of the sample used in the survey questionnaire.

²⁸ Logistical factors, such as available space and hazard credibility meant that a maximum of three introduced signs was used at any one time. Introduced pictorial signs used at the terminal face included those warning of icefall, rockfall, and river hazard (near the ice cave).

Wogalter & Laughery, 1996). Furthermore, the novel shape and pictorial features of the signs used in the introduced sign condition may have increased the attention of visitors in a way that the traditional text-only signs did not (Hathaway & Dingus, 1992; Wogalter & Young, 1994).

It is not possible, however, to state categorically that improved compliance was directly attributable to the effect of the introduced signs. It is conceivable that the difference was caused by the cumulative effect of increased signage, although this is not likely given that no relationship between the number of introduced signs and visitor awareness of hazards was found. The sensitive nature of hazard and safety management on public lands at the time the fieldwork was undertaken did not allow for extensive manipulation of signs and, therefore, remains one of the limiting features concerning the hazard communication aspect of this study.

It is also important to emphasise that the results presented in Figure 6.19 represent average compliance rates, determined from observation sessions covering multiple days at each site. Naturally, there was considerable variation between observations, demonstrating the situational effects related to the weather, general access conditions, and the presence of other visitors. For instance, during some observation periods, very few visitors were non-compliant. At other times, virtually all visitors who arrived at the track terminus continued beyond the rope closure. The likelihood that the presence and actions of other visitors influenced visitor behaviour suggests that situational factors were important. The notion of 'social facilitation', for instance, may be valuable in understanding visitor behaviour at the glaciers.

Social facilitation is described as a type of social modelling behaviour, and occurs when the behaviour of one (or more) person(s) facilitates a second person's doing the same thing (Baldwin & Baldwin, 1986). Popular examples of social facilitation include joining a crowd of on-lookers, and mass donations to publicised causes. People are drawn to things that they observe other people doing. During observations at the glacier attractions, visitors appeared more likely to move beyond the restricted access zones if other visitors were clearly already in the restricted area. The effect of social facilitation, in some ways, minimises the role of hazard signs in attempting to modify visitor behaviour, and shifts the emphasis to the effects of visitors on each other.

A similar effect is reported by Harrell (1991), albeit in a very different physical setting. In a study of urban pedestrian behaviour, Harrell found that the presence of large numbers of pedestrians on the opposite side of the street served to reduce cautiousness among the people he observed. The author concluded that a “diffusion of responsibility effect may have occurred in which the subject delegated the task of checking to other pedestrians” (Harrell, 1991, p. 371). When fewer people were available to act as lookouts, the pedestrians appeared to assume the responsibility for themselves. At the glaciers, the presence of visitors within restricted areas may have legitimised non-compliant behaviour, and contributed to the perception that, because other people were already beyond the rope barrier, the area must be safe.

The high rate of non-compliance at the glaciers is a complex phenomenon, unlikely to be the result of a single variable such as inadequate warning signs. The results presented in this section suggest that the contributing factors include the importance to visitors of getting close to the glaciers, unrealistic expectations of proximity (perhaps linked to tourism promotion materials), ambiguous hazard warning messages (and some mixed messages), and the effects of other visitors. These ideas, and the influence of the tourism context on visitor behaviour, are discussed in more detail in Section 6.6.5.

6.5.3 Tourists as risk takers

The observations recorded in this study indicate that many tourists expose themselves to risks as a consequence of their behaviour at the glaciers. At least two scenarios can be imagined. First, tourists act in risky ways because they are unfamiliar with local environmental and social cues, and therefore unwittingly expose themselves to dangers. Second, tourists may behave in ways that promote risk simply because they feel free from the constraints of their ordinary lives. Chances may be taken as symbols of this freedom to choose, or in a deliberate act of defying local rules which are rationalised as not applicable to them. Dann (1997, p. 244) supports this latter contention with his observation that tourists are partially motivated by a desire to escape temporally from “a world of proscription and prescription”, one consequence of which is that much of the tourist’s behaviour is uninhibited.

Further, when people are away from their home environments they are exposed (both deliberately and non-deliberately) to risks they would not normally face (Carter, 1998; Page & Meyer, 1997; Tarlow & Muehsam, 1996; Ryan & Kinder, 1996; Ryan & Robertson, 1997; Wickens, 1997). The visitor observations and interviews in the present study provide some evidence to support this claim. For instance, in the context of her recent visit to Nepal, a young American visitor admitted taking “a few more risks than I needed to”. She explained:

You have to take risks if you want to trek there. There were avalanches and landslides, but if you wanted to do the trekking, you had to do it in areas which might be dangerous. It's kind of the same thing here [at the glacier], I think. If you want to ice climb, or go up on the glacier, there will always be risks, but if you don't take them, what do you see?

A ‘now or never’ attitude to touring is also evident in the remarks of an older woman visiting from Belgium:

We wanted to fly in a helicopter, and you could say that was risky. In our home country, if the weather was not so good, we could say ‘let's do it next month, or so’, but when you're here [at the glacier] you have to take risks sometimes to see something you might not see again.

Here the visitor is implying that, even if the conditions are perceived as slightly unsafe, she is prepared to take a risk in order to gain the experience desired. Some of the visitors who fail to comply with the access restrictions at the terminal faces of the glaciers are likely to hold these views. For instance a male visitor from the UK, having walked to a point directly below the Franz Josef Glacier so that he could lick it with his tongue, commented:

It was very important for us that we got to touch the glacier face. I felt a bit naughty about ignoring the barrier, but I'd do it again, even though I now know more about the danger of ice falling. I'll probably never get another chance!

Naturally, not all visitors felt this way about compliance with signs. Several of those interviewed were appalled that others would simply disregard the safety warnings and restrictions. Some explained their decisions to remain within the ‘safe’ zone through references to their cultures, such as: “We are from Germany; we will do as the signs say!”. Another visitor from the Netherlands said that, although many Dutch people would *not* obey signs, she did so because: “I want to go back to my Holland again – all in one piece!”. An Australian man with his young family also reflected a cautious stance typical of those (few) visitors with children:

We're pretty conservative actually – we don't go jet boating or anything like that. You know, with kids you want to play it safe. Like there'd be no way that we'd

follow the track up there [pointing to the glacier] and then jump on the glacier up top and say 'hey hey we're here, cop this'!

An additional explanation for visitor non-compliance at the glacier sites is related to the meanings conveyed in the hazard warning messages. In Chapter 3, potential differences in message interpretation are discussed with reference to cultural identity. A simple text only sign warning of the danger of rockfall may be sufficient to deter visitors with one set of experiences, yet not explicit enough for others. The issue of message interpretation is illustrated well in the comments of an Australian visitor who was on a self-drive tour of New Zealand:

In New Zealand you've done very well in numbering your corners on the roads as 65km/h and so on. The problem is, we found that we could do the 65s at 85 km/h, and the 85s at 100km/h, so when you come to this place [the glacier], what does "danger" mean? So what do your signs mean when they say "danger – falling ice"? We take these signs with a pinch of salt.

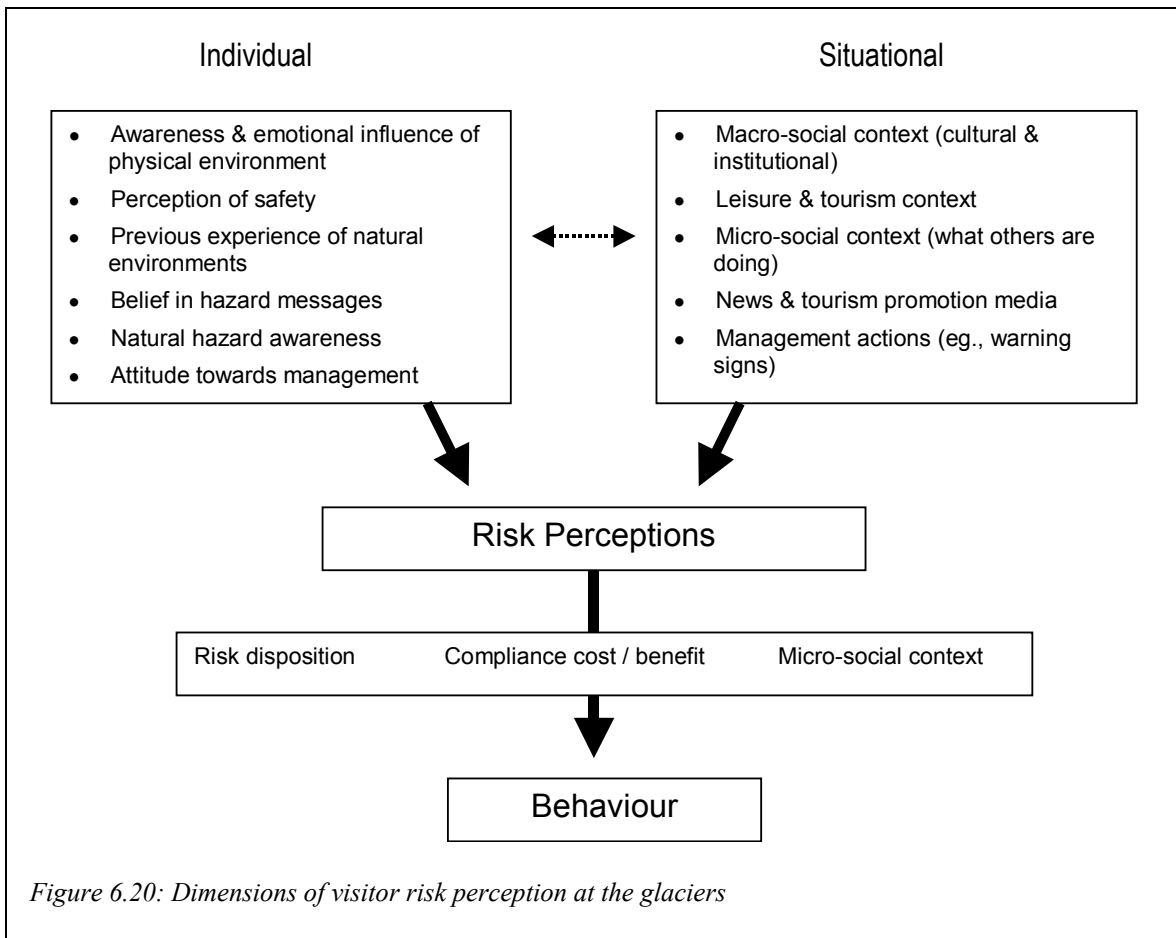
Here the visitor is 'reading between the lines'. He has made an assessment that, in other parts of New Zealand life, regulative statements may be conservative. He then questions the credibility of warning signs at the glacier on the basis of his other New Zealand experiences.

Self-reported and observed behaviour at the glaciers indicates that compliance with warning messages is a significant management issue. The degree of compliance is likely to relate to both individual and situational factors, only some of which are within the potential control of managers. The situational effects of being a tourist, for instance, may be especially important in the context of risk perception and exposure. The interrelationships between perception, behaviour, communication, and context are discussed in Section 6.6, and represented diagrammatically in Figure 6.20.

6.6 Chapter summary and conclusions

Visitors to the glaciers form perceptions about risk, and respond to hazard messages on the basis of their own intuitive assessments of the physical and social conditions, and the credibility of the warnings they see. Their perceptions and behaviour are also a function of their previous experiences, knowledge, expectations, and attitudes toward risk, and the institutional context in which risk is presented to them, as well as the cultural context from which they originate. The complexity of risk perception and visitor behaviour at the glaciers

is simplified in Figure 6.20, where the various elements are posed diagrammatically. The central themes of the current chapter are reviewed below.



The factors contributing to visitor risk perception and behaviour at the glaciers are multiple. For convenience, these factors have been represented as comprising two primary dimensions in Figure 6.20. These dimensions refer, broadly, to the individual and society. Each dimension contributes a variety of features which influence risk perceptions at the glaciers. For instance, the visitor's home country, the tourism promotional material read, the people who visit the glacier at the same time, and the 'holiday' context of the trip, will all influence risk perceptions, which ultimately affect behaviour. Similarly, individual factors such as awareness of physical features, attitude towards risk acceptance, belief in management's hazard messages, and need for excitement, will determine the extent to which any threat to safety is perceived. While perceptions *per se* may not lead directly to behaviour, the former will influence the latter. Once risk perceptions are formed, the decision to act (or not to act) is likely to be especially dependent on the three factors of risk disposition (personality), compliance cost or benefit (what the experience is 'worth' to the individual), and the micro-

social context (what other visitors are doing at the site). For instance, the risk perception of one visitor may be low, yet he or she may not transgress the hazard warning because of social pressure implicit in the behaviour of other visitors who are complying with the warnings and access restrictions. Another visitor may perceive the risk to be high, yet may choose to ignore the warning messages because the associated benefits of touching the glacier (such as satisfying curiosity, or social status) outweigh the likelihood of perceived costs (such as injury, or retribution). Additional aspects of the model are discussed in the following subsections.

The main objectives of this part of the research were to explore visitor awareness of natural hazards, and to determine the extent to which visitors felt safe during their experiences, and responsible for their own safety. These assessments were then combined in order to evaluate how different visitor groups perceived risk at the two sites. At the same time, the influences of both the existing and an introduced pictorial warning signs were estimated in terms of their effect on visitor awareness and behaviour.

6.6.1 Visitor awareness of hazards

The hazard awareness of some visitors can be described as moderate, and among some visitors it is low. In particular, visitors to Franz Josef, and overseas visitors to both sites, appeared to have the poorest hazard awareness. With the exception of rockfall, less than one third of all visitors identified any other hazard at either site. Furthermore, while over ninety per cent reported an awareness of hazard signs, six visitors in every ten were unaware of any specific hazard sign, other than rockfall. Visitor awareness of hazard signs did, however, increase significantly when the introduced signs were in position at the glacier sites. This latter finding suggested that either the introduced signs were less ambiguous than the existing Department of Conservation signs, and/or that the increased hazard awareness was a function of the cumulative effect of the two sign forms.

While no previous research on natural hazard awareness among tourists was found, the poor general awareness of hazards and risk among visitors to the glaciers is consistent with the small number of studies on the subject of tourist safety (Clift & Page, 1996; Page & Meyer, 1997; Wilks & Atherton, 1994), where it is argued that often tourists have a limited understanding of potential dangers in the places they visit.

6.6.2 Visitor perceptions of safety

Visitors' perceptions of safety were high at both glacier sites. Visitors did not perceive either glacier as an especially dangerous place to visit, relative to New Zealand in general, or their home localities as tourist destinations more specifically. While it may gratify management, from a visitor satisfaction perspective, that the sites were not seen as unsafe, an issue remains in that perceptions of safety and security among visitors can lead to over-confidence and inappropriate actions. In perceiving the sites as 'safe', it is also possible that visitors pay less attention to hazard warning messages. Wogalter and Laughery (1996) found that where consumer products were perceived as safe, warning messages were less likely to be read.

6.6.3 Visitor perceptions of risk

Reflecting both moderately low awareness of hazards and a moderately high feelings of safety among visitors, the perceived risk scores of many visitors was identified as low. This is in partial contrast to the findings of some previous studies which imply that risk perceptions in environments novel to the individual are likely to be high (Carter, 1998; Westover, 1985). Perception of risk is thought to decrease with uneventful exposure (de Turk & Goldhaber, 1989; Lee, 1981; Margolis, 1996; Oskamp, 1982; Sitkin & Pablo, 1992; Slovic et al., 1981). While it has not been possible to show this effect at the glaciers, it is likely that the availability heuristic has influenced risk perceptions, and contributed to the feeling of safety among visitors. Combined with the possible belief that their experiences are well-managed, visitors may view themselves as personally immune to hazards, in the same way that members of the public generally rate their personal risk of accident as low (Greening & Chandler, 1987; Slovic, et al., 1982, 2000c). When accidents are observed, they appear to happen to 'other' people (Jungermann & Slovic, 1993; Leiss & Chociolko, 1994). Low risk perception and a belief in immunity have obvious implications for risk communication. Those who (incorrectly) perceive themselves to be less at risk than others may be less receptive to information campaigns or hazard warning messages.

Among the current findings on risk perceptions, visitor origin is an important factor. International visitors had lower risk perceptions, perhaps reflecting a lack of familiarity with both the natural environments and the ways in which hazard and risk are communicated in the

New Zealand park context. Differences in perceptions of how risk is managed and communicated have important implications for tourism in natural resource areas, and for the visitor experience.

6.6.4 Individual responsibility for safety

Managing visitors at natural attractions requires the level of intervention to be appropriate. Part of determining this appropriateness is understanding the extent to which visitors are prepared to assume responsibility for their own experiences (including safety). At Fox and Franz Josef glaciers, there appeared to be a relatively high level of individual responsibility for safety among visitors. The exception to this finding were certain overseas visitors, who clearly assumed lower levels of responsibility for individual safety compared with New Zealand visitors. These findings, however, need to be interpreted within the context of the other results. For instance, visitor awareness of natural hazards at the sites was low or moderate, and perception of safety was high. These perceptions are likely to influence the degree to which risk responsibility is accepted by the individual.

In general, visitors reported that they were prepared to assume responsibility for their own safety within certain limits. Visitors expressed a reliance on managers to inform them of potential dangers, and to provide modest facilities to allow their access to the attractions. For other visitors, there was strong reaction against over-management of the areas. The prevailing attitude among such respondents was: "If you ignore the warnings and advice of managers, then you have only yourself to blame". The acceptability of risk is likely to depend upon the extent to which exposure to it is voluntary (Gough, 1998b; Leiss & Chociolko, 1994; Singer & Endreny, 1993), which, in turn, is reliant on knowledge of the features that create the risk. Many visitors to the glaciers appear unaware of natural hazards, a finding which raises questions about the capacity of visitors to accept responsibility for risk. Several authors have observed that the greatest social condemnation occurs in situations where the perceived risk is low among those exposed, yet known to be high among those seen as responsible for the conditions creating the risk (Davidson, 1996). Risk acceptance is likely to be greater when the product or situation is known to be dangerous (Laughery et al., 1995; Slovic, et al., 1982).

According to Martin (2000), in New Zealand there is an historic assumption that people who visit natural areas assume the risks that they find there. This may be attributed to several

things, including a cultural identity as pioneers (Watson, 1993; Devlin, 1995), and for ‘doing it yourself - getting on with the job’, and low-key, ‘she’ll be right’ attitudes. In addition, New Zealand’s accident compensation legislation has protected agencies from court action, and compensated individuals for accidents and injuries.

6.6.5 Visitor behaviour and communication effectiveness

The majority of those surveyed reported walking at least as far as the existing closures. Of these, nearly one quarter reported getting close enough to touch the ice. Proximity to the ice was very important to visitors. In terms of visitor compliance with the hazard signs, observations suggested that six in every ten visitors complied with the current recommendations. When the introduced signs were employed, the rate of observed compliance increased to eight in every ten visitors, although there were differences between sites. This finding suggests that the current DOC signs are inadequate in expressing the message to visitors. It is important to acknowledge, however, that hazard signs are not the sole influence on visitor behaviour.

When a direct attempt to warn individuals is unsuccessful, several explanations are possible. One explanation is that the intended recipient of the message remained oblivious to the presence of the message. Some research suggests that increasing the salience of warnings can improve awareness of hazards (Glover & Wogalter, 1997; Wogalter et al., 1997; Wogalter & Young, 1994). Another reason for warning message ineffectiveness is related to the visitor perception that the risk is low. This may be influenced by factors such as visitor comprehension, and the availability heuristic (Slovic et al., 1981; Tversky & Kahneman, 1982). Inability to comprehend the meaning of existing hazard messages, however, is likely to apply to only a small proportion of all visitors to the glaciers, and affect non-English speaking visitors more than others. Existing Department of Conservation signs are more likely to produce this consequence because of their text only nature, and the fact that the signs do not differentiate between general information and hazard warning messages.

Those visitors who do understand the warning signs, yet ignore the message contained in them, may lack faith in the credibility of the messages, or the agency delivering the message. It is evident that some visitors, and New Zealand visitors in particular, believe that the signs and barriers are unnecessary and over-cautious in their content. Considerable media attention

on the issue of safety on New Zealand's conservation estate, and, in particular, the removal of Department of Conservation structures deemed to be unsafe, has contributed to a modest backlash of public opinion. New Zealand visitors may now interpret closures and warning signs with an 'insider's knowledge' of what the sign really means. When message credibility is low, persuasion is less likely to occur (Manfredo & Bright, 1991; McCool & Braithwaite, 1992; Moscardo, 1999; Pearce, 1988; Pettigrew, 1996; Petty & Cacioppo, 1986). In addition, the third person effect (Davison, 1983) may explain why some visitors perceive themselves to be immune to the hazard warnings. Warning messages may be viewed as not applicable to some individuals, but considered highly relevant to others who are perceived to lack experience or skill in that environment.

A further reason for the lack of response to warnings is that the perceived benefits of non-compliance outweigh the individual's assessment of potential negative consequences, such as having fun, social image, or conforming with a group (McCarthy et al., 1995; Wogalter & Laughery, 1996). For instance, the cost / benefit evaluation is likely to be affected by visitors' strength of desire to get close to the glacier, particularly apparent among visitors from overseas. Even visitors who appeared to comprehend the messages, and the existence of hazards, were often prepared to take the risk. For overseas visitors, this may also be explained by features of the tourist situation, such as their transient nature, the uniqueness of the opportunity, and a sense of invincibility. For New Zealand visitors, a sense of propriety, and a degree of psychological reactance (Brehm & Brehm, 1981), is more likely to be the motivating force for non-compliance.

Visitors feel safe at the glacier sites, perceiving few risks. They also appear to accept a moderate degree of personal responsibility for their safety while at such sites. These visitor attitudes and perceptions, to a certain extent, contradict those of some managers and natural hazard specialists, an issue that will be explored in the next chapter. The fact that visitors to the glaciers continue to ignore the requests of site managers to act in accordance with their safety recommendations, suggests that visitors either cannot comprehend the warning messages, do not believe the messages, or are prepared to take a chance in order to realise their expectations. Any one of these scenarios has the potential to result in a serious

accident²⁹ involving visitors to the glacier attractions, an event that may have wide-ranging moral, legal, and promotional consequences. The extent to which managers and policy makers choose to adopt additional strategies to mitigate this outcome, will depend on their knowledge and interpretation of health and safety legislation, their perspectives on risk management, and their beliefs about where responsibility for their visitors lies.

The next chapter explores the concept of risk in natural attractions from the perspective of agency managers, policy makers, and natural hazard management specialists.

²⁹ During the writing of the current work, an Asian visitor to Fox Glacier was severely injured when she was crushed by a 500kg block of ice. According to a newspaper report (Ross, 2000), the tourist had ignored DOC warning signs and safety barriers in order to touch the ice and to take a photograph.

Chapter 7 Managers' perceptions of risk

7.1 Introduction

The aim of this chapter is to examine the perceptions, attitudes, and beliefs of Department of Conservation staff with regard to their roles as risk managers, both at the glaciers, and in New Zealand more generally. Part of this aim involves identifying the ways in which DOC presents risk and safety messages, and investigating the perceived legal and moral obligations that underlie the hazard management strategies used. Management perceptions are important to investigate because they illustrate the relationships between the wider social context and managers of a parks agency, and between visitors to and managers of nature-based tourism sites. The links between the individual visitor, the management agency, and the macro-social context are an important theme in this study. Thus, an appreciation of the nature and significance of risk in resource-based recreation and tourism settings is not complete without this dimension.

The hazard and risk mitigation strategies employed by recreation managers are determined by several factors, including their own perceptions of the degree of visitor risk, the extent to which they feel accountable for this, and the socio-political expectations that comprise the context for the area's management. This chapter explores how risk is perceived and presented by the agency responsible for visitor management at the glaciers of Westland National Park. Following an outline of the risk management setting and details of managers' perceptions, four key factors affecting managers' perceptions of risk are identified and discussed. The final component of this chapter is devoted to an examination of the risk and hazard communication strategies used, and the factors influencing these. The chapter's themes are drawn from data collected through document analysis and 22 key informant interviews undertaken between 1997 and 1999 (see Chapter 5 and Appendix G). The names and precise job descriptions of informants have been changed to protect their true identities.

7.2 The context for risk and hazard management at the glaciers

The Fox and Franz Josef glaciers are key tourism attractions on the West Coast of New Zealand's South Island (see Chapter 1). Visitors travel to these sites in order to witness two of the most visible and easily accessible glaciers in the southern hemisphere. The glaciers are located within Westland National Park, which, like New Zealand's other national parks, is

managed and administered by the Department of Conservation. As per its statutory obligations, DOC provides for visitors' recreational access and enjoyment at the glaciers, including the development and maintenance of walking tracks which lead from the road-end car parks, to the terminal face of each glacier.

Table 7.1: Department of Conservation visitor group classification

SST	Short Stop Travellers	Users of natural areas along main access routes. Visits of 1 hour or less.	Seeking "instant immersion" in nature, high scenic or historic value. Low risk expectation.
DV	Day Visitors	Users of sites on the edges of the back-country. Visit duration range from 1 hour to full day.	Seeking experience in natural setting, with a sense of space or freedom. Low risk expectation with safe facilities.
ON	Overnighters	Users of campsites or accommodation at back-country drive-in sites.	Seeking overnight experience in natural setting. Low risk expectation.
BCC	Backcountry Comfort Seekers	Users of walk-in natural settings with some facilities provided. Visits mostly 2 – 5 days.	Seeking a comfortable, low risk experience within a natural setting.
BCA	Backcountry Adventurers	Users of walk-in natural or remote settings with basic facilities. Visits mostly 2 – 7 days.	Seeking experience that has challenge and freedom. Accept a degree of risk and discomfort.
RS	Remote Seekers	Users of walk-in remote or wilderness settings with few or no facilities. Visits mostly 3 – 7 days.	Seeking challenge and complete freedom. Users accept higher levels of risk associated with the area.
TS	Thrill Seekers	Users of highly accessible sites with natural, often spectacular backdrop. Visits up to 1 day in duration.	Seeking controlled risk activities as part of exciting experience.

DOC (1996)

To address the management issues arising from increasing visitor numbers, fiscal constraints, and diverse visitor requirements, DOC has adopted a nation-wide market segmentation approach to visitor management. This approach recognises that there is a spectrum in visitor skill, need, and resources, and that this diverse range can be closely aligned with the existing range of natural resource recreation opportunities administered by DOC. In its *Visitor Strategy*, the Department outlines seven visitor classes, each of which helps determine the extent of visitor facilities and services provided in recreation areas (Table 7.1). On this basis, each recreation site is defined and managed in accordance with its predominant user group. For instance, sites which are difficult and time-consuming to access, and where a high degree of personal reliance is required, are identified and managed as 'remote seeker' sites. Accordingly, facilities are minimised, and visitors are expected to accept a high degree of responsibility for themselves. At the other end of the user spectrum, the majority of visitors to conservation lands are SSTs and DVs, who require a completely different set of facilities

and standard of care. A graduated standard of facilities is a fundamental premise of DOC's visitor management approach (DOC, 1998).

This brief overview is relevant to the discussion because it is within this administrative context that the current consideration of visitor safety management at the glaciers occurs. The majority of visitors to the Franz and Fox Glaciers are SSTs and DVs (DOC, 1997b, 1999b). As such, they are identified as inexperienced beginners who are “engaged in an activity at a basic skill level or engaged in an activity with a low level of risk. [Visitors within this group are] usually reliant on a leader or the department for safety measures” (DOC, 1996b, p. 54). To this extent, DOC has made a considerable commitment to provide facilities and information for visitors who cannot be expected to have the knowledge or experience necessary to visit the glacier attractions in an environmentally sensitive or safety conscious manner. One senior DOC officer interviewed for this study described SSTs in the following way:

As an SST, you can cruise out there in your stiletto heels and your gold braid handbag, and do one of the tracks, and you're going to be fine. But you're not going to walk up the Whataroa valley³⁰. And you accept that because you're just here for the short stop experience where you have a little look at nature but not get too involved.

This description of the short stop traveller clearly implies a perception of limited competency. Such perceptions are likely to have an influence on how visitors are managed at nature-based sites.

7.3 Management of hazard and risk

Essentially, the Department is managing two areas which are geologically very dynamic and large scale, visited by large numbers of people with little or no experience or understanding... of either the natural processes of a glacier valley, or of the hazards presented to the unwary (New Zealand Mountain Safety Council [NZMSC], 1996, p. 2).

The Department of Conservation has described the glacial valleys of Westland National Park as dynamic and sometimes dangerous (DOC, 1997b). Falling rock and ice, as well as unpredictable river levels and flows, make creating suitable walking access a continuous challenge. Yet there remains both a statutory requirement and a commercial imperative to

³⁰ The Whataroa valley track is located 20km north of Franz Josef, and is suitable for intermediate and experienced trampers who are prepared to spend several days in the mountains.

maintain visitor access. Management is, quite literally, caught “between the rock and the wet place”, a metaphoric remark made by one field level manager to illustrate the physical and philosophical conundrum with which the Department is faced at Fox Glacier. The intent of the legislation enables unrestricted access to national parks, yet the Department faces a legal and moral obligation to ensure that such access is safe (a dilemma previously introduced in Chapter 4). Managers’ perceptions of the risks to public safety, and their attempts to improve this at the glaciers, are described later in this chapter.

From the management’s perspective, the glacier sites contain several natural hazards that potentially threaten the safety of visitors to the area. In order to reduce the likelihood of injury or death, those responsible for the management of the glaciers have erected warning signs and (in recent years) some rope barriers to prevent people getting too close to the terminal ice face, or to areas where rockfall is considered possible. It is not certain when the policy of using signs to warn visitors formally of the dangers inherent in the area began, but the problem of visitors ignoring such notices was recorded as early as 1966:

Apparently some visitors to the Franz Josef glacier do not share the view that it is dangerous to stand too near the terminal face. Despite warning signs, tourists have been repeatedly seen standing on sites dangerous enough to cause their death if a huge chunk of ice was to fall away (“Danger exists”, 1966).

Similarly, in his report on the stability of a rock slope at Fox Glacier in 1980, Paterson (1980) noted a concern for the safety of tourists who visited the area. In particular, Paterson (1980, p. 1) observed that “there is also the possibility that warning signs erected by the National Park Board may be ignored, and that people may cross the slope at the foot of the bluff where the danger is greatest”.

Reports of unsafe visitor behaviour can be found in both management records and reports in various media stories throughout the 1970s and 1980s. In the 1960s, attempts to communicate risks to visitors were clearly being made through the use of signs. It is also evident, however, that the management felt its role was limited in terms of ensuring visitor safety. Following the deaths of a father and son under a rockfall at Fox Glacier in 1980, a newspaper reported the comments of the chief ranger of Westland National Park at the time:

He [the chief ranger] said there was always a danger of rock falls in this type of country, but Friday’s fall of about 800 tonnes happened beneath a solid rock face where no problems had been expected. “Anybody going into the mountains must accept the fact that there is some danger from rock falls” (“Death spot avoided”, 1980).

These excerpts serve to demonstrate that the glacier valleys can be unpredictable and dangerous, and that management's concern about visitor behaviour is not just a recent one. What does appear to have changed is management's perception of the extent and seriousness of the problem, the degree of responsibility taken, and the strategies used to address it. It is assumed here that the natural hazards at the glaciers have remained relatively constant over the last 40 – 50 years at least. Therefore, hazard and risk management can be seen to have as much to do with political and social variables as they do with any more quantifiable criteria. In this chapter it is contended that hazard and risk management approaches are strongly influenced by social and political factors, the identification of which follow the description of hazard management at the glaciers.

7.3.1 Identification and management of hazards at the glaciers

The policies and strategies for the management of visitor safety in Westland National Park in general are set out in its management plan. For instance, the plan states the intention of managers to:

Inform park visitors and concessionaires of potential natural hazards in the park [and] to create an awareness and understanding of natural hazards while recognising that visitors will be primarily responsible for their own safety (DOC, 1999b, p. 74).

More specifically, the process governing the management of natural hazards at the glaciers is documented in the *Hazard Identification and Management Plan* originally written in 1997, and updated annually. These plans outline the operating procedures through which safety “for all staff and visitors in this often unstable and highly changeable environment” can be sought (DOC, 1997a, p. 3). A ‘Glacier Access Planner’, in conjunction with a ‘Visitor Facilities Programme Manager’, has the responsibility for the creation and maintenance of the plan. Ultimate responsibility for the hazard management plan, however, is that of the Area Manager.

The plans require a strict set of operating procedures to be followed. Hazards in each valley are identified and strategies developed for their mitigation or control. An excerpt from the plan itself best illustrates the level of detail and technical specification:

A hazard assessment of the glacier access road and track will be completed and radioed to the Franz Base by 0900 each day. This information is to be recorded

and distributed on the Glacier Access Update Form.... When rockfall activity is present, or rainfall begins to exceed a rate of 100mm in 24 hours, or 20mm/hr for longer than 30 mins (defined as significant rainfall), further monitoring may be required. A breach of rain thresholds will be relayed to Reception during the daily hazard assessment. Reception will advise the Glacier Access Planner who will implement additional monitoring as required to ensure that visitor safety standards are maintained (DOC, 1997a, p. 8).

The plan documents identified risks to the safety of visitors at each of the glacier attractions. Each hazard is specified in terms of its location, risk to visitors, frequency, and mitigation. Seven primary hazards have been identified at Franz Josef, which serve to illustrate the nature of the environment, and management’s perception of it (Table 7.2). Many of the hazards identified are more likely to occur during or after periods of heavy rain, rapid glacial advance, frosts, warm temperatures, or flooding.

Table 7.2: Hazards and risks identified at Franz Josef Glacier

In order to reduce the risk to visitors at the glaciers, a number of strategies are employed. Current management practices include the daily hazard assessments of the track and glacier conditions, signs warning of specific hazards, instalment of ropes and barriers restricting access to areas thought to be hazardous, and the option of closing the walking track facility. These strategies, documented in the hazard management plan for each area, demonstrate a commitment to

Hazard	Risk
Rocks falling from moraine walls	Rock fall injuring people.
Water crossings	Sudden rise in water levels can restrict return & debris flow; or water, may sweep people off their feet.
Rock or ice falling from terminal face	Ice collapse or perch rocks fall onto people below.
Glacial lake outburst caused by collapse in ice dam	Dam burst causes sudden rise in water level, restricting visitor return or washing them downstream.
River outflow at terminal face	River surge caused by cave roof collapse can change course of river, restricting return of visitors or washing them downstream.
River banks unstable	Collapse of river bank may cause visitor to fall into river causing injury or swept downstream.
Changing river channels	River channels can change rapidly and without warning, trapping or sweeping visitors away.

(DOC, 1997a)

reducing risk not previously observed in New Zealand. This new commitment to risk management will be discussed in Section 7.5.3.

7.4 Perceptions of hazard and risk among managers and experts

DOC has an obligation to provide for the safe access and enjoyment of the public on the conservation estate. In the case of the glaciers, ‘the public’ includes visitors from overseas, who may have little experience of similar natural environments. Defending the decision to

close the access to Fox Glacier temporarily, by erecting a barrier across the walking track, Keith, a field level manager³¹, described the situation in the following way:

In this environment, I'm comfortable with closing the track, because it's a front-country environment, it's a high interest, high use site – but it's also extremely dangerous, to the point where, at times, I'm extremely uncomfortable about being up there, or having any of our staff working up there. So it's a bloody dangerous environment. We could say: "we suggest you don't go there", which we can easily do in the back-country, and experienced people will take that advice or ignore it based on their level of experience. But here [at the glaciers], we're not dealing with experienced people, and that's the difference we've got. So up here I'm quite happy to close it off, and we *will* close it.

Further illustration of managers' perception of the dangers at the glaciers is apparent in the comments of Neil, a recreation planner at Franz Josef:

One of our guys was up the glacier a couple of weeks ago, when [the access track] was still closed, and he said there were people up there, right under the cave! A little bit of ice fell down, so they moved away a little bit, and the next minute there was a massive [ice] collapse. And if they hadn't moved away, when that first wee bit of ice fell, they would have been killed. Just like that. So, I mean, [some people have] just no idea!

The extent of management's belief in visitor ignorance, and the problem this presents for DOC, is evident in the comments of Jock, one of the Department's senior representatives in the Westland area:

If we were completely honest, we would say that the glacier valley is a hazardous environment, and we would put a fence around it and keep people out. But we are charged, under the National Parks Act, with preserving the environment, and encouraging public use where appropriate. And then we obviously have a mandate for public safety. So the management dilemma is how do you control for use of a site and still have it safe?

The glacier valleys are interesting in that they *are* a hazardous environment, but they're also hugely popular. You've got a huge number of people that are uncontrolled – that is, they are not with a commercial operator, they are just free agents – entering a hazardous environment which they don't see as being hazardous. I've also worked at Taranaki, where you can get out of your car at 5000 feet and walk 200m off the edge of the car park and be in a hostile alpine environment. But it's perceived as being hostile, and people understand fairly quickly - as their feet start getting cold and their noses start freezing - that this is not a city any more. At Franz Josef, you can walk up into the hazardous environment in your high heels if you're determined enough. There's just no perception of a hazard there.

³¹ In this context 'field level' refers to managers who, as part of their normal employment, are stationed at the DOC office at either Fox Glacier or Franz Josef Glacier, rather than those managers who work at the Head Office in Wellington, or at the Regional Offices in Hamilton, Wellington, and Christchurch.

The combination of the dynamic environment and inappropriate visitor behaviour appears to add to management's perception of risk to visitor safety. Expressing some surprise at the small number of recorded fatalities in the glacier valleys, Keith commented:

I think it's bloody good luck. I really honestly think so, it's good luck. With what I see happens up in these valleys, hell! We had a rockfall during that last decent flood a couple of weeks ago, with six days of rain. The '60s' rockfall, was dropping rocks nearly the size of this room. And look how much the [river] fan has built up, it's quite incredible – three or four metres in about six months! So it's amazing, you know; it just shows you how volatile the thing is.

Similarly, Mike, a more senior manager, commented on visitors entering the glacier ice cave at Franz Josef, access to which DOC attempts to restrict:

I'm buggered if I know how we've avoided injuries in there. I mean, I don't like going in there, and I'm pretty good at assessing risk. I look up there and think: "where's that crack going, and where's that shaft going" and I don't like it. There's no way I'd go into it at the moment – it's so volatile. But you see photos of parties of people, whole coach parties, posing in there. So, it's good luck *and* good management. I'd like to think now that we've swung away from the luck and more to the management.

The perceived risk among field level managers appears to be high. Despite very few reported accidents, and only two accident-related fatalities in the previous twenty years, these managers hold strong views about the extent of the dangers in easily accessible parts of the Fox and Franz Josef valleys. There is a range of possible reasons for this which include managers' previous experiences in the outdoors, access to information regarding natural hazard events, a sense of obligation to visitors, and the influence of events such as the accident at Cave Creek in 1995 (see Section 7.5). Such beliefs also support the need for a detailed hazard management system, which itself may help to deflect any challenge that management is complacent, should an accident occur. Managers claim that the absence of hazard management would see injuries dramatically increase, despite history suggesting otherwise. Having such a system is crucial in terms of demonstrating to themselves, and to the community more generally, that something is being done to impose a degree of control on the situation. Ironically, such a comprehensive system may work against DOC's ultimate aim of increased individual responsibility. Through a highly paternalistic approach, people may come to assume that the risks have been removed from the environment, yet this is not the case. Visitors may also assume (incorrectly) that the absence of signs and barriers at other sites signifies the absence of hazards or risks to their safety.

Tour guides and operators also perceived the risks in the glacier valleys to be high under certain conditions. The personal experiences of Stan, the director of a glacier guiding business, illustrated his surprise at the low number of fatalities at both Fox and Franz Josef:

I have actually seen massive rockslides and ice and mud and river surges in a path which missed us by minutes, really. Either we were going there, or we'd just been there. So, I think that's just absolute timing, and it's not because it was planned, it was just because it was luck. So, it could happen any time, I'm well aware of that. Even from the rope barrier, if a huge piece of ice blocked the cave, it would create a hell of a surge - you'd be in big trouble. Which way do you run? You just don't know which way it's gonna go. So that really *is* luck. I've been on the glacier with a group of people, looking downstream, and at one point saw no river at all, it'd completely dried up because there was a massive icefall inside [the cave], and then just moments later, a huge surge of water goes tearing down the valley. It would have been a metre and a half high I suppose - cruising down the valley. And it leaves ice everywhere. And it can go any way. It can go into the overflow channels and head down the true left of the valley, blocking people's paths. Or it could go in their paths. I think it's just luck that it hasn't happened.

The existence of natural hazards at the glaciers is supported by New Zealand experts in the field. Mick, a specialist in alpine hydrology and geomorphology, described the potential hazard issues at the glacier sites:

I'm always horrified when I see people going up this incredibly steep ice face at Franz, and the walking access - some of the routes taken to get there, and the potential things that will drop. At one stage, when the road was out, they [DOC] put a walking track across an horrendous major rockfall site, where most of the time you couldn't have seen the tops where rocks were falling from because of the cloud. The other major problem is people getting caught out in the river bed going up to the Franz Josef, when one of the glacier bursts occurs – a blockage of the river and sudden surge out. You can get huge floods that will cover the entire riverbed. Another real hazard in both Franz and Fox is to the people walking up the valleys when the alpine fault moves. They might be lucky, but the likely scenario is no one comes out. And, depending on the time of year, that could be two or three thousand people.

Like the DOC managers, Mick is surprised at the low frequency of accidents and deaths at the glaciers:

The thing that's impressed me about the suite of hazards at the glaciers is that, for all the horrendous hazards there are, when you look at the number of tourists that have been killed, the few that have been killed have been on hazards that none of us would have recognised. We don't know about the near misses. I presume there are reasonable numbers of near misses.

Todd, another glacier expert, was also concerned about the potential risks to people visiting the glacier valleys. He described the danger associated with the Waiho River (adjacent to the Franz Josef Glacier access track – see Figure 5.2) during heavy rainfall:

In the December '95 flood, something like a quarter to a half a million cubic metres of sediment was deposited overnight, and that deposit reached almost as far as where the kiosk used to be [a distance of approximately 1.5km from the ice cave at the terminal face of the glacier]. There's a great big lozenge-shaped deposit of sediment, up to about five metres thick, plopped down in the middle of the valley. And that must have taken place very quickly, probably in something like half an hour. And you can imagine, if you've got people anywhere in the valley when that starts to happen there're going to be problems. It's going to be pouring down with rain, the visibility is going to be very poor, there's going to be a lot of noise around. It's likely that they won't know it's happening until they find that there is water at their feet starting to rise very quickly, and if they're lucky, they can scramble up the moraine wall, or up onto Champness Rock or something, but heck, I wouldn't like to be up there when that happens.

Further, Todd emphasised the character of New Zealand's natural attractions relative to those of other countries, suggesting that overseas visitors are completely unprepared for the conditions:

I think a lot of visitors have probably been to the mountains in Germany and France and Britain and they've got their own appreciation of the way mountains behave, which is a lot less dangerous than the way our mountains behave. We've got one of the most active tectonic plate boundaries in the world down there, in the roaring forties, in one of the highest rainfall areas in the world. It is one of the worst situations in the world I think, and it's compounded by the fact that New Zealand's a relatively advanced country, with the facilities and technology to actually get paying visitors to these places. So you've got a lot of people able to be harmed in what is potentially a very active weather and geomorphic situation. So it could be a fairly subtle trap.

While there appears to be agreement among managers and natural hazard experts on the existence of hazards and risk at the glaciers, there are contrasting explanations given for why accidents are relatively infrequent. The geomorphologists assume that the low accident rate implies either luck or that the hazards are less significant than estimated. Mick's comments illustrated this view:

Given the volume of people that go up there, and the very minimal number of fatalities, it would appear that we're making up this problem. It must look worse than it really is, or we wouldn't have accidents waiting to happen, we'd see them happening.

Mick is also highly sceptical about managers' influence over the safety record:

Perhaps the present management is acceptable, but clearly there isn't just one form of management that would be relatively successful. You could change it and things would be the same, you wouldn't notice the difference. The present management is successful and that can only be because the hazards are not as bad as what we think they are. It can't have anything to do with management; it must be totally independent of it. I think what's probably happened over the last

five years or so, is that they've made the safe areas safer, but areas where there is real risk to visitor safety have remained much the same.

In contrast, some managers imply that the high safety record is related to the actions of the managing agency. For instance, Keith, a manager at the glaciers, made the following comment in response to the suggestion of a reduced management presence:

In my opinion it would be a nightmare. We'd have people bowled over left right and centre on a regular basis. I think the level of hazard management that we're providing is essential for the safety of visitors, because they just don't know.

Similarly, Jock, a senior manager at Franz Josef, indicated a solid belief in the approach to natural hazard management in the area:

I probably wouldn't sleep as well as I do if we didn't have a really active management plan in place for dealing with those hazards and dealing with that risk. If we just had no controls in there whatsoever – no ropes, no fences, no checks, no balances, and it was a free for all, then, yes, you'd be worried – you'd be thinking that any day now, someone's going to get squashed by a big lump of ice, or caught up there in a rain storm.

Not all DOC managers view the glaciers as especially hazardous places. Peter, a senior manager based outside the Westland region, viewed the glaciers as similar to several other high use attractions in New Zealand, such as the Huka Falls, Dolomite Point (Punakaiki), and the thermal areas of Rotorua. He believed the management approach to visitor safety at these places should be consistent:

The visitor groups are very similar, the consequences are potentially similar and the actual occurrences are probably about the same. So I think we've got to approach it in a consistent way.

This informant's perception of the problem at the glaciers is conceived in the ways in which it affects him. That is, from a policy implementation point of view, Peter is looking for management consistency across a number of sites. Visitor accidents at the glaciers are unlikely to lead to scrutiny of his actions, whereas the action (or inaction) of staff based at Fox and Franz Josef may attract criticism. In addition, the respondent in this case is concerned with risk management in a much wider context than those in field management roles at the glaciers. Peter is quite frank about how DOC considers its visitor risk:

Over Easter three years ago, 14 people were killed [at Cave Creek]. But two years after that we only killed 3, and we felt really good about it. We're only going to kill that many at Mt Cook over the summer, and we're not going to kill even that many at the glaciers.

Loss of some lives is to be expected given the nature of the places people are intent on visiting. Peter is stating that DOC accepts this, but does not accept responsibility for it. Rather, he is keen to work on strategies that increase public awareness of shared responsibility in the outdoors. Peter's attitude here is similar to the way in which businesses or investors view risk. There is an acknowledgement that losses will occur, but the general principle is to ride out the bad times and hopefully effect an overall gain.

7.4.1 Interim summary

This section has outlined the perceptions of experts and managers with regard to natural hazards at the glaciers. The belief that the glacier region is a highly volatile area, in which luck has played an important role in visitor management, is very consistent among respondents. Most informants believe that it is a matter of *when*, not *if* an accident will happen. Two main themes are evident: i) both managers and experts perceive the glacier attractions to be dynamic and dangerous places; and ii) both managers and experts express a degree of surprise that more visitors have not been injured or killed in these environments. There is less agreement about the reasons for this outcome. The next section identifies four key factors that have influenced managers' perceptions of risk.

7.5 Factors influencing managers' perceptions of risk

Managers' perception of hazards and risk at the glaciers is high, especially among those with employment responsibilities at the sites themselves. The risk perceived is not limited to the physical risk to which visitors may be exposed, but includes the social, financial, and political risk to the management agency and management staff. In order to gain a more comprehensive view of risk, and to appreciate its significance to managers, the discussion now turns to an examination of factors that affect managers' risk perceptions. The analysis of the data generated through interviews with key informants identified four primary factors that contribute to the current level of risk perception among managers: perceived legal and moral obligation, the accident at Cave Creek, a transformed organisational culture, and perceived changes in social expectations. Although the themes are presented individually, this is not intended to imply that they are unconnected.

7.5.1 Perceived legal and moral obligations

A common theme among the respondents was reference to legal and moral obligations associated with managing visitors at the glaciers. This was true for managers and staff at the field level, as well as management based in other areas. Clearly, DOC has a legislative mandate under the Conservation Act (1987) to provide recreation opportunities to the public (see Chapter 4). In addition to this, the Department, in providing facilities and recreation opportunities to the public, must adhere to several other acts of parliament which, in effect, provide for the health and safety of visitors to the conservation estate.

7.5.1.1 Perceived legal obligations

As discussed in Chapter 4, DOC is subject to numerous legal requirements in the course of its work. Two acts in particular (the Occupiers Liability Act [OLA], (1962) and the Health and Safety in Employment Act (1992)), have generated concern among DOC managers, apparent in the discussions with informants in this study.

One of the issues among DOC staff and managers working at the glaciers was ambiguity surrounding the specific nature of their legal liability. Laws can be vague to the layperson and are open to interpretation, and with few precedents to guide them, some managers appeared uncertain about what their legal obligations were concerning visitor safety. At times, the result of this has been a cautious approach to hazard management which has drawn criticism from some members of the public and, in particular, from outdoor recreation groups who view DOC's safety practices as over zealous and as an imposition on free access and quality visitor experiences (see Section 7.5.4.4).

Martin (2000, p. 3) has argued that the law as it currently stands "leaves conservation managers uncertain about the scope of their potential liability for natural hazards". According to Martin, this ambiguity has led to uncertainty and inefficiency in decision making. Martin contended that the uncertainty can be principally traced to an historical emphasis on preventing harm to others, ambiguities in the HSE Act, and frequent repositioning of judicial reasonableness. Brown (1999) and Batt (1996), both reporting on risk management issues in Australian park settings, also observed a mounting paranoia among land managers concerning what is reasonable in the protection of visitors.

The OLA and HSE Act appear to have been instrumental in the adoption of new practices within DOC and other agencies associated with outdoor recreation in New Zealand. In particular, the HSE Act had an immediate effect on the perceived responsibilities of those in the outdoor recreation and adventure tourism industry, including school recreation programmes. According to Gabites, executive director of New Zealand's Adventure Tourism Council, some tourism operators are "running scared" of the HSE Act, with misinformation and fear of the unknown the most common problems (Major, 1995, p. 21). Similarly, one respondent, a director of a recreation organisation in New Zealand, suggested that the new legislation had created some nervousness and encouraged some businesses to re-evaluate their services. He made these observations:

In the late '80s and early '90s there was a massive growth in adventure tourism where you had people demanding wild and exciting times - down the river or whatever. Safety was not talked about too much. Then the HSE came along and some people in the business quite rightly got very nervous. Some people got much more nervous than they needed to, while others didn't get as nervous as they should have done.

Davidson (1996) has been sceptical about the positive effects of the new legislation on the safety of visitors to outdoor recreation settings. Reflecting on his own experiences as an outdoor educator and instructor, and on the impact of HSE Act requirements, Davidson (1996, pp. 200-201) argued that the "current risk management practices are a poor imitation of the complex judgement processes occurring in the brain of an experienced and seasoned instructor".

DOC appears to place considerable emphasis on both the HSE Act and the OLA in relation to the safety of its visitors (DOC, 1996b, 1997b). Interpreting the OLA in 1995, a Department solicitor outlined its significance to DOC:

An occupier has a common duty of care to ensure... that a visitor will be reasonably safe in using the land for the purposes for which s/he has been invited or is permitted by the occupier to be there. The fact that the permission is a statutory one does not alter the situation.... Even if a visitor has been warned of a danger by the occupier, the warning will not absolve the occupier from liability unless in all circumstances it was enough to enable the visitor to be reasonably safe (NZMSC, 1996, p. 4).

Further evidence of the Department's concern over legal liability is evident in hazard management documents prepared for the glacier region:

The HSE Act imposes penalties for failure to comply with that Act, while the Occupiers Liability Act is more powerful, allowing people who suffer injury or

damages on a landowners [sic] property, land or premises to sue and recover damages where a duty of care which is owed to visitors is not met (DOC, 1997b, p. 9).

This statement is only partially accurate, given that the right to sue for personal damages was removed in the accident compensation legislation of 1972. Furthermore, it assumes that DOC is legally the occupier of the lands it administers. Statements made in documents like this one are important to acknowledge as they help shape management perceptions and actions on the issue of visitor safety.

The Department's concern with the OLA rests on the assumption that DOC, or its Minister, can be considered the occupier of the land. However, legal opinion provided to the NZMSC in 1996, casts some doubt over the extent to which DOC can be considered as 'occupier' of the lands it administers. This is a fundamental issue that will influence the Department's legal liability in the event that injury to visitors occurs. According to the NZMSC report:

DOC would be unlikely to be held to be an occupier in terms of the Act.... In most areas DOC is unable to prevent members of the public entering National Parks etc, the so-called DOC estate, and the Courts will be very reluctant to impose any liability where there is no legal ability to control (NZMSC, 1996, p. 5).

This view is, however, contrary to Martin (2000) who indicated that DOC *can* be considered 'the occupier' of the land it administers, although this may not extend to responsibility for natural hazards. Similarly, Fullagar (1996, p. 98), discussing outdoor recreation and law, claimed that the occupier "attracts its duty of care by providing facilities which encourage the public to use the premises". Under the Conservation Act (1987), DOC is mandated to perform this latter function.

Given the contradictory interpretations of the two statutes that impose a duty of care on the Department, it is not altogether surprising that some recreation managers are uncertain about the level of legal liability. Martin (2000, p. 10) argued that the current lack of legislative guidance results in over cautious approaches to hazard management and, ultimately, will lead to "increasing intervention for the purposes of securing public safety".

The degree to which the HSE Act actually has a bearing on DOC's obligation to visitors is also open to interpretation. Sam, a senior advisor from the Occupational Safety and Health Unit outlined some of the difficulties:

One of the issues we've had [with the HSE Act] is that because of people's uncertainty about what the legislation means, sometimes they overreact and become over cautious in relation to their perceived legal liability. One instance of this is farmers refusing to allow members of the public access onto their farms because, for some reason, they perceived the risk of being prosecuted by OSH as far greater than the risk that anyone will actually be injured.

It is also instructive to consider the reasons for OSH prosecutions, which suggest that DOC may be overreacting to the HSE legislation, or using it to justify an emphasis on visitor safety management. According to Wren (1997), the Occupational Health and Safety Unit is likely to prosecute for two main reasons: i) as a final measure to gain compliance from an employer, or to send a message to others in similar situations; and ii) where an employer has been negligent with regard to safety, OSH may elect to prosecute in order to punish the employer. These factors, coupled with the OSH admission that outdoor recreation workplaces are a low priority for them (R. Moir, personal communication, July 7, 1999), suggests that concerns among some DOC staff about the HSE Act may be unwarranted.

As discussed in Chapter 4, the relevance of the HSE Act to visitor management on the conservation estate is also critically dependent on whether or not the site can be defined as a 'place of work'. Martin (2000, p. 26) argued that, "since the parts of the public conservation land where natural hazards are likely to arise are unlikely to be a 'place of work', the HSE Act has limited bearing on natural hazard management in such areas". Martin (2000, p. 26) acknowledged, however, that there are "very real political and public relations reasons for taking all practicable steps to address natural hazards". This is further recognition of the perceived need within DOC to appear proactive in risk management.

7.5.1.2 Perceived moral obligations

At another level, some DOC staff suggested that, ideally, the emphasis should be the moral obligation to visitors rather than simply meeting legal requirements. Tim, a senior manager based in Wellington, acknowledged DOC's various obligations:

I think, having invited people onto the conservation estate, we have both a legal *and* a moral obligation to provide them with information. Perhaps not necessarily on site – perhaps before they get to the site – but, having said that, every visitor also has a personal responsibility to ensure that they inform themselves about where they're going, and that they take the necessary precautions prior to getting there. Now, in high volume visitor sites where you can actually drive to the location [such as the glaciers], there is probably more of an obligation on the Department to inform people at the point of arrival, rather than prior to arrival.

But at low volume visitor sites, I think it's on the visitor themselves to make sure they are well informed or experienced and equipped to cope with the situation.

Here Tim is differentiating the Department's obligations to visitors on the basis of the dominant visitor group. This is the approach clearly evident in the Department's strategic plan (DOC, 1996b), yet, in part, its effectiveness is reliant on visitors being aware of their responsibilities as SSTs or DVs.

Tim is also keen to emphasise that the Department is more concerned about visitor safety than it is about ensuring its own safety from liability:

We are driven by the features of the HSE and OLA, but I think, more than that though, we're driven morally to ensure that we provide either a safe environment, or enough information that would enable people to visit safely. So, you'd go through the Occupiers Liability Act and you'd tick off all those things that we must do, and you'd say: "Having done all those things, does that ensure that the visitor is safe?". If it doesn't ensure that the visitor is safe – and we've decided they must be safe to go there, then we would look to do what is required to ensure that they are. It's exactly the same with the Health and Safety in Employment Act. I think the Department would want to say: "We want to ensure visitors are safe. These are the actions that we've taken. We thought those were reasonable at the time; we will continue to improve wherever we can, and when we can afford it".

Other management respondents articulated a strong moral obligation to visitors attracted to their areas. Keith, for instance, a manager at the glaciers commented:

I suppose it sounds a bit idealistic, but morally I believe we have an obligation. Say, for example, you take away the Occupiers Liability Act, so that the health and safety legislation wasn't there. I still think we have a moral obligation to meet. That's me, personally, that's regardless of the legislation. That's our role. If our role is to provide opportunities for visitors to experience conservation land, then we should be able to let them experience it safely. And you can take away all that legislation and I believe that we've still got that obligation.

These comments clearly reflect a belief that the safety of people visiting the glaciers overrides any legislative requirement affecting DOC. Ensuring that the safety of visitors to many natural areas is absolute is almost impossible, and certainly not practicable. It is accepted that a key element of management's contribution to visitor safety is to warn people of the specific dangers and the likelihood of their occurrence. That warnings are an important part of management's limited opportunities to affect visitor safety and awareness is acknowledged by DOC staff at the glaciers, and policy makers at regional and national level. There is, however, less agreement on the level, mode, and effectiveness of warnings currently issued by DOC at Fox and Franz Josef glacier, a point that is expanded in Section 7.6.

7.5.1.3 Summary

The legal circumstances that give rise to DOC's responsibilities are ambiguous and may be misunderstood by its managers in field situations such as the glaciers. Obligations are evident under the HSE Act, although its application emphasises the safety of work and workers rather than visitors to outdoor recreation settings. The OLA also imposes a duty of care on the occupier to protect the safety of visitors, but lacks real legal power, especially since the introduction of the Accident Compensation Act (1972), which removed the right to seek personal damages through the courts. It is also worth noting that the OLA and HSE Act were never designed with recreation and tourism in mind (R. Moir, personal communication, July 7, 1999), yet they have played a part in raising the health and safety consciousness of DOC, and others working in outdoor recreation and tourism provision roles (Davidson, 1996).

The discussion in this section has reflected on the primary legislative context for the management of visitor safety at the glaciers, and explained part of the rationale for management interest in visitor safety. Two reasons are most apparent: i) there is a perceived moral responsibility to protect people; and ii) there is a legal obligation to ensure safety. While the former rationale is evident, it is the latter that appears to preoccupy the attention of managers, a point that is further illustrated in the sections following. This is partially attributable to the lack of clarity in the legislation but, more importantly, managers' perceptions reflect the social value currently placed on safety, applicable even in settings where absolute safety is impossible to ensure. This contention is the subject of further discussion in Section 7.5.5.

7.5.2 The influence of Cave Creek

One incident in New Zealand's recent history stands out for its influence on attitudes to visitor safety and risk management. The deaths of 14 people, and the resulting public furore, redirected the future of visitor management in tourism and recreation, and altered attitudes to health and safety throughout the country. Now an established part of the New Zealand vernacular, 'Cave Creek' is often cited when justifying the imposition of safety regulations in situations as diverse as school playgrounds, back-country recreation facilities, and public staircases in civic centres. This section will review the events that occurred at Cave Creek, and discuss its relevance and symbolism with regard to the current examination of management perceptions and practices at the glaciers of Westland National Park.

7.5.2.1 Tragedy at Cave Creek

Cave Creek is a Department of Conservation recreation site, situated a short distance north east of Punakaiki within Paparoa National Park on the South Island's West Coast. The area has been described as an impressive limestone landscape of sculpted rock and underground cave streams (Potton, 1998). In part, it was these scenic qualities that contributed to DOC's decision to develop and upgrade recreation facilities in the area, including the construction of a viewing platform above a spectacular gorge in 1993/94.

On the morning of Friday April 28, 1995, twenty outdoor recreation students, on a field excursion from their polytechnic in nearby Greymouth, were on an interpretative walk to Cave Creek. Also on the walk were the local Department of Conservation field centre manager, and a polytechnic tutor. At approximately 11.30am, eighteen people – seventeen students and the manager – were standing on a platform that overlooked a gorge. The recently built platform collapsed, falling thirty metres, killing fourteen (including the DOC manager), and injuring four others (Dewar, 1997). The weather was reported as calm and sunny. There was no hint of danger, and no suggestion that the students contributed to their own fate through foolish or careless behaviour (Hunt, 1996).

Recognising the social and political importance of the Cave Creek event, the government's response to the accident was prompt. Ten days after the tragedy, a Commission of Inquiry was established to investigate the causes for the platform's collapse. The Commission determined that the primary cause was the failure of the structure to support the weight of the people on it. In fact, some engineers expressed astonishment that the platform had not collapsed sooner – under its own weight (Department of Internal Affairs, 1995). The inquiry found that the structure was not built in accordance with accepted building practice, the plans for the platform were deficient and not available on site during the construction, no building consent had been granted, the platform was never inspected or approved, and was not issued with a loading limit. Neither the platform designer, nor any of those who constructed the platform was appropriately qualified. Judge Noble, presiding over the inquiry, concluded that the platform was:

Not designed or constructed to appropriate standards, was completely unsuitable for the use for which it was designed and constructed and was unsafe for any use (Department of Internal Affairs, 1995, p. 77).

In his final analysis, Noble declared that it was not appropriate to point the finger of blame at any one individual and, rather, described the processes leading to the accident as “uniquely an institutional failure” (Department of Internal Affairs, 1995, p. 86). The Department acted unlawfully, but as an agent of the Crown could not be prosecuted under the Building Act (1991) or the HSE Act (1992).

Some commentators have been highly critical of the Commission of Inquiry and its findings. Hunt (1996, p. 28), for instance, argued that DOC was “as guilty as sin for the death of 14 young people yet as free as a bird”. In his book, *Scandal at Cave Creek*, a scathing attack on New Zealand’s public sector, Hunt (1996, p. 2) described the outcome of events as “a shocking failure in public accountability”. Although less abrasive in his criticism, Hughes-Johnson (1996) also called for greater agency accountability, codes of practice among operators, and increased communication about the risks inherent in outdoor recreation and tourism.

Dewar (1997) adopted a different analysis of the Cave Creek event, suggesting that the accident resulted from years of budget cuts and neglected staff training requirements. Dewar (1997) also contested the public sector’s adoption of free market principles, and claimed that “one of the major problems was the existing system of management, which was basically an [sic] zealous application of business practices that may not have been suitable for such a public organisation” (Dewar, 1997, p. 59). It is interesting that Dewar interpreted the Cave Creek tragedy in terms of the ideology that led to the accident. He claimed that the root cause of Cave Creek was the emergence of managerialism. Certainly, these ‘symptoms’ are evident in the management and restructuring of the Department of Conservation in the late 1980s and early 1990s. Other commentators have implied that it was the lack of sound business practice in the public Department that led to sloppy systems and inevitably a major accident (Hunt, 1996). In particular, Hunt advocated a more direct set of accountabilities in the public sector, and bemoaned the fact that no single person was ever held responsible for the deaths at Cave Creek.

At the field level, the accident at Cave Creek can be interpreted as having several important effects, not least of which was its influence on staff perceptions of their obligation to visitors.

Jock, a senior conservation manager on the West Coast admitted that he had a difficult job attempting to reassure his staff that they could trust themselves to make good decisions:

They're frightened. That's the legacy of Cave Creek. And I see that now, even after trying for two and a half years to beat that out of people – a reluctance to make a decision because that might imply some responsibility or accountability. People [DOC staff] have lost the ability to correctly manage hazards because they are frightened of their capabilities – they're frightened to take responsibility for it. And they've been frightened by Cave Creek and the witch hunt after that – even though no one was dealt to in the end.

The same manager, who was outside New Zealand at the time of the Cave Creek accident, and only returned a year after the event, illustrated the changes in safety management he witnessed on his arrival back in New Zealand.

When I came back to New Zealand, they'd had this big catastrophe and there'd been a knee-jerk reaction. There was a bit of a witch-hunt going on and the inquiries were just coming out. But the pendulum had swung right out to one side where people were wanting to get every single hazard – no matter how small – identified, inventoried, assessed, labelled, and either minimised or eradicated. The pendulum is starting to swing back now to a more common sensical environment where hazards are always inventoried, always assessed, but the threshold at which they are described as being hazardous is a lot lower. I mean, I've seen a hazard report for a small bridge that's about as long as this table [approximately 1200mm x 600mm], and it's over a big puddle outside the Butler Junction Hut. You have to walk for eight hours through the most miserable tiger country to get to that hazard, including scaling a 300-foot cliff using roots alone! So there's no point in worrying about this hazard because, for anyone who's got to this point, it's probably the best part of the track they've seen all day! So you have to put the hazard into the context of the environment, and I don't think that was being done after Cave Creek.

This informant's comments help illustrate the reaction of some staff within DOC to the events surrounding the Cave Creek accident. A fear of allowing themselves to be held accountable, and an over zealous approach to the identification and management of hazards typify this reaction according to this manager.

Mike, another of DOC's senior representatives in the West Coast region, also emphasised the influence of Cave Creek on the Department's management practice, although he identified some positive outcomes:

Cave Creek was an appalling tragedy, but good will come out of it. Those deaths weren't in vain. It's just a shame it took fourteen people to die to force the change. In saying that, if someone had fallen off the platform and broken their elbow, it would it have been: "oh gosh, lucky it wasn't serious – carry on". There might have been a reprimand because, you know, the platform fell to bits, but it

might not have been enough of a quantum push to effect that level of change. It's an appalling price, but it certainly hasn't been a waste.

The influence of Cave Creek goes beyond the management of visitors and facilities in protected natural areas. Management practice in businesses, schools, and local authorities have come under scrutiny since the accident in 1995. Peter, a regional level DOC manager, expressed his experience of the widespread empathy for DOC at the time:

I really expected that other government departments, and some of our like-minded colleagues in local government and district councils would be saying: "bloody DOC – hopeless bastards. No wonder it happened to them". And not one person said that. Every district council manager that I've talked to has said: "thank god it was you, because it could have been us". Suddenly they realised: "gosh – how comfortable am I that my crew are actually out there doing the right thing?"

Out of Cave Creek and its aftermath, emerged a public land management agency very different in organisational culture and management practice from that observed between 1987 and 1995. The accident at Cave Creek made a significant contribution to the perception of moral and legal obligation held by DOC managers towards the visiting public. It was also a major impetus behind the creation of a new management structure, and a plethora of safety systems that now govern the Department's work in field settings. Importantly, the Cave Creek event provided a rationale for a focus on asset management, and the rationalisation of some facilities and services. Dave, a senior health and safety advisor within DOC, summed up his perception of Cave Creek's influence in this way:

We can't understate the impact of Cave Creek; it was an all-encompassing event. When you get an event on that scale - a tragedy of that consequence, it does focus the mind in a major way. It transformed the views and the perceptions of this organisation and without it I don't imagine a lot of the initiatives would have been taken.

7.5.2.2 Summary

The nature of New Zealand society is such that we have not always been overly concerned with exacting standards nor definitive areas of responsibility and liability.... Our functional society has existed well with baseline philosophies of 'get on with the job' and 'she'll be right' (Allan, 1984; cited in Bamford, 1987, p. 3).

Cave Creek had two major impacts on DOC managers: i) it created an atmosphere of legal and moral concern for visitor safety on the conservation estate, and increased the perceptions of risk among management and other staff; and ii) it led to an overhaul of the Department of

Conservation's organisational structure and an attempt to impose a new culture of risk consciousness. Furthermore, Cave Creek contributed to the adoption of more business-like practices, and ultimately justified the development of an asset management approach.

In addition to the conclusions of the Commission of Inquiry (Department of Internal Affairs, 1995), the accident at Cave Creek can be viewed as a consequence of multiple factors including the significant restructuring of the Department of Conservation (down-sizing and budget cuts), increasing public expectations of the agency, and a contrasting field level ethos of 'do it yourself' and 'she'll be right'. If there was previously a casual attitude towards visitor management within DOC, this has now been replaced with a strong emphasis on risk management at multiple levels of the Department. From the State Services Commission through to the national and regional offices, and at the field sites themselves, a new ideology has emerged, one of risk control, mitigation, and management, driven by perceived moral and legal obligation and the memory of Cave Creek.

7.5.3 Emergence of a new organisational structure and culture

For much of the 20th century, conservation lands, and recreational areas within these, were administered by the New Zealand Forest Service and the Department of Lands and Survey. In 1987, a single organisation was formed which inherited many of the responsibilities from pre-existing conservation agencies (see Chapter 1). DOC became responsible for thousands of visitor facilities, many of which were never originally intended for recreational use (DOC, 1998). Furthermore, there was no national inventory of facilities, no standards for operation or maintenance, and little agreement over their sustainability (DOC, 1998).

Since its inception, the Department has undergone several periods of restructuring (DOC, 1995; State Services Commission, 1995), the overall outcomes of which have been fewer fulltime staff, fewer financial resources, an emphasis on cost recovery, and increased emphasis on generating income through concessions. There has also been a steady progression within the Department towards a 'user pays' orientation, consistent with the neo-liberal political climate of New Zealand in the 1990s (Le Heron & Pawson, 1996). Services and facilities not seen as 'core business' have been deleted or offered to the private sector as concession operations.

According to Dewar (1997), the government restructuring that occurred in the 1980s contributed to the loss of important institutional knowledge and systems, one of the consequences of which was the accident at Cave Creek. This claim was supported by the comments of a DOC senior policy analyst (Bob), who suggested that there was little in the way of direct transfer of ideas from pre-existing agencies in the 1980s:

The first Director General of DOC [in 1987] took a blank sheet approach and said: "I accept that all this stuff has happened in the past, but we are a new organisation and we need to develop our own systems". Rather than saying: "okay there are five parent agencies; we're looking for a visitor safety system, it seems to me that the one the Forest Service has looks to be the best", and migrating that across and adapting it. There was a kind of hiatus where there was no continuity from the parent agencies to the present. We were operating without some of the systems that had been around previously. There were lots of systems and processes in place [prior to DOC] but a lot of these visitor safety things just didn't track through. So you have this kind of history, or knowledge, that kind of got lost between 1987 and 1995.

These comments emphasise the pre-Cave Creek problems associated with restructuring the public sector, the reduction of staff, and other attempts to create efficiencies. With reference to visitor safety on the West Coast in particular, it is also salient to note that a comprehensive visitor facility and safety system had been developed for this region in 1984 under the auspices of the New Zealand Forest Service (Adams, 1984; Groome & Davies, 1985). Known as the Recreation Operations Planning System (ROPS), it is unclear how widely implemented the scheme was prior to the disestablishment of the Forest Service.

The most recent restructure of the Department has resulted in a strong line management framework, and the addition of a regional dimension to its operations. The aim was to make responsibilities and accountabilities clearer for managers, and to reflect DOC's commitment to a 'Total Quality Management' approach (see Section 7.5.4.1). The adoption of a business model for the management of conservation in New Zealand is often justified by reference to Cave Creek, and, according to some informants, is a structure toward which the Department may have evolved over time irrespective.

Various aspects of DOC's management since 1995 imply that a change in organisational culture was in process. The commitment to a quality management framework, the creation of additional systems and procedures for operation, and the emphasis on professionalism and health and safety, are examples of this. At the level above these systems, there is a clear commitment to a risk management ethos which appears to be driving many of these other

developments. For instance, the State Services Commission has specific expectations regarding risk management within the public sector, and requires each department's chief executive officer to produce a statement on risk management relevant to both strategic and operational contexts (DOC, 1999a). Risk management is also expected to become incorporated into regular communication with staff, creating an organisational culture which promotes risk management. This includes:

Raising staff awareness, knowledge and skills and encouraging their participation in risk management, and not merely compliance with policies and procedures – developing a sense of commitment in staff to managing risks (DOC, 1999a, p. 17).

Probably the most clear cut evidence that safety and risk management were a low priority within DOC until the Cave Creek accident, can be gained from analysis of the development of the Department's visitor strategy, the guiding document for DOC's management of visitors and facilities. The comments of Bob, a senior policy analyst who helped create the strategy, illustrated this point well.

The visitor strategy was in process for about two years before Cave Creek, and I think that it's fair to say that, the whole issue of risk management and visitor safety was something that no one really picked up on. At the genesis [of the strategy] there were several rounds of public consultation and the main debate was on tourism development versus traditional users, and the debate waged backwards and forwards around that. We had something like 350 submissions in one round, and about 90 in another and no one mentioned visitor risk or visitor safety as an issue. So, the visitor strategy came to a bit of a grinding halt at the time of Cave Creek, and the focus then really went on putting in place systems to deal with those kinds of issues. After about six months, the strategy was picked up again and moved towards final publication. As a result of the things that we learned from Cave Creek, a section dealing with visitor safety and risk management was added.

Bob's comments clearly imply that, had it not been for the accident at Cave Creek, the Department's guiding document on managing visitors on the conservation lands would have included few strategies concerning safety or risk management. This is revealing in terms of DOC's organisational culture prior to the defining event at Cave Creek.

Further examples of the culture in DOC prior to the Cave Creek accident were provided by John, a senior manager in Head Office with responsibilities for the implementation of the new systems and processes for managing risk on the conservation estate.

Most of them [the field staff] were 'jack of all trades', and they thought that, with a little bit of help from where they could get it, they could build whatever they needed. And they were fiercely independent and proud of what they could do.

So that was the sort of mentality we had to deal with. And when we started building the processes and standards and putting these things in place, the staff sort of said: “this is too difficult”. It takes away all the old, ‘number eight fencing wire’ thing where people would say “well I’ve got a few sticks of timber in the store, we’ll go and build a bridge over this gully”. It’s not done any more.

The “mentality” noted by John is also a feature of Bob’s interpretation of events leading up to the accident at Cave Creek:

I think Cave Creek was underpinned by the ‘good keen man’, ‘she’ll be right’ attitude. You know, it was weekend building – a few mates or volunteers, and a few beers at the end of it.

The rhetoric used in the two previous excerpts serves to emphasise the incompetence of the previous style of operation, and implies that it was only a matter of time before an accident of the magnitude of Cave Creek occurred. At the same time, the comments emphasise the perceived value of the ‘new’ organisational structure and systems, and the positive effects these have on visitor safety on the conservation estate. It is interesting to note, however, that up until Cave Creek, DOC had operated its facilities and structures for nearly ten years without reported mishap. Furthermore, John later disclosed that, following a major inventory and review of all DOC facility structures, nothing of the Cave Creek magnitude was identified.

Senior DOC staff, in particular, appear to have made a strong commitment to risk management. The Department recently appointed a manager to a position that encompasses a wide range of risk management perspectives, including financial, political, legal, and operational risks. A key responsibility of this position is to create an integrated risk management framework that meets the expectations of the State Services Commission and Minister of Conservation, as well as being applicable at the field management level. Part of this is the identification of risks to the Department, and the insurance thereof. In particular, DOC is insured against property loss or damage (to boats and huts, for example) and professional indemnity for some of its staff. In terms of insuring against claims for compensation resulting from visitor injuries on the DOC estate, the Department is taking a cautious approach, as Kirk, a risk manager pointed out:

Injury compensation is certainly an exposed area for us, which is another reason why we are heavily into benchmarking because it seems to us that it’s a creeping tide. Ultimately it will get to here. It’s gotten into Australia and it’ll get into New Zealand. We’ve already paid out some compensation to people who’ve been injured on the estate. We’ve got some internal struggles over some of that. There

are some people who don't believe we should be paying out and I'm one of those. Others think we should, and argue that it's easier to pay the money and forget about it. There's been some injuries on the West Coast we paid out for. A woman slipped and dislocated her back or something and we paid some money for that. But generally our policy is not to. The issue is that we don't have a particularly good framework for staff to operate to and procedures for them to follow to avoid that situation. And that's certainly an area where we're doing a lot of work. We don't want to get into that compensation scene.

These comments need to be considered within the context of the current accident compensation laws in New Zealand. The existing legislation has, since 1972, effectively removed the right to sue for personal injury (see Chapter 4). Subtle changes to this legislation, or developments in common law, could alter the situation and create a significant potential for compensation claims against DOC. It is clearly in the Department's interests to avoid such a scenario, and the strategic elements within DOC are evidently considering ways to reduce this possibility and minimise potential liability.

In this sense, DOC is pursuing mechanisms through which it can discharge its duty to the public on the conservation estate, as Kirk explained:

DOC makes reasonable efforts to give people the right information about what they're up against in the outdoors. I think that's probably our first position. We [DOC] tell you about the hazards that we know about where we can. Generally the philosophy in New Zealand is, if you go out in the back-country it's your business. And we're still operating from there. But we really want to be in a position of saying: "We've discharged our general duty of care to visitors on our land, these are what we perceive to be reasonable duties that we've discharged, and we've benchmarked them against what other people are doing".

This comment illustrates the concern senior managers have for legal liability, a concern that at times appears to take priority over the prevention of visitor injuries in the first place. This attitude is also evident in the comments of Kyle, another senior manager who acknowledged the need to act strategically:

I think individual accountability is driving a move towards demanding compensation. In the past the Forest Service weren't too concerned about it, because of ACC which was a good safety net for people to fall into. If you got injured, your employer tended to look after you and if that didn't work too well, then you normally had a lot of sick leave and the compensation system to fall back on. So I think life was a little bit easier. But as people have moved towards individual accountability, organisations like ours have had to get more geared up for that because people are looking at how they can keep their income streams coming, or how they can get something else to help them out. So an organisation like ours is thinking: "well, we better be a bit careful here because we might get stung for this". There's less of a safety net, so people are out there trying to look after themselves really, and they'll have a go at anyone they can. So I think our

first reaction is to say: “well, how can we avoid this? How can we avoid these people having a go at us?”

The comments of this informant evoke the notion discussed in Chapter 2 of a society in which individuals feel increasingly vulnerable and responsible for their own life outcomes.

Increasing individual responsibility creates a situation of uncertainty in which people may perceive greater risk. In this case, the organisation is implicated as a victim of the public’s potential demand for compensation.

In order to protect itself from the risks perceived by DOC’s senior managers, the organisation developed a number of important processes which reflect the new organisational culture. The following section examines several of these management systems to illustrate further DOC’s risk management approach, and to emphasise the degree of organisational change since the mid-1990s.

7.5.4 Systems of control: Quality Conservation Management and Visitor Asset Management

7.5.4.1 Quality Conservation Management

The Commission of Inquiry into Cave Creek established that ‘systemic failure’ was among the factors contributing to the accident (Department of Internal Affairs, 1995). In his recommendations to the Department, the Commissioner emphasised the need to develop a nation-wide project management system appropriate to each of DOC’s 14 conservancies and 66 field centres. In response to the Commission, DOC adapted existing ‘quality management’ models to create its own system entitled ‘Quality Conservation Management’ (QCM). QCM was based on an international safety rating system, and aimed to provide a process to evaluate systematically the safety of the organisation’s operations and identify actions required to prevent loss (DOC, 1996a).

In 1996, DOC established a specialist QCM unit as an internal consultancy, with the task of implementing the new system throughout the Department. Following the implementation period of three years, the responsibilities of the QCM Unit were devolved to the Department’s newly established regional offices. The QCM unit facilitated the development of standard operating procedures (SOPs) governing the Department’s work across its range of

responsibilities. These procedures and standards, for instance, now apply to the design, construction, inspection, maintenance and repair of all visitor facilities (DOC, 1996a).

The QCM system comprises four key elements which include setting objectives for managing risk, accepting accountability for actions, developing procedures for objectives and accountabilities, and identifying standards to ensure consistency (DOC, 1996a). Further, through QCM, the Department aims to:

Ensure that the work that is undertaken conforms as a minimum to the statutory requirements set out in legislation – and that over time, this work will be undertaken in accordance with the best practices known wherever practicable. This will ensure risks are sensibly managed and a quality service is offered to Government, taxpayers, and visitors within the resources available.... [The] adoption of the generic quality conservation management system ... will ensure quality is built into our operations and risks both politically and to life and property are controlled and managed (DOC, 1996a, p. 8-13).

The development of QCM represented a considerable addition to the Department's administrative systems and reflected a belief in, and commitment to, a systems approach to managing visitor safety and its own accountability to the public. The QCM principles can be interpreted as cornerstones of the post-Cave Creek culture which senior management is attempting to establish within the Department. This is evident in the comments of Bill Mansfield, the (then) Director General of Conservation, to his staff:

You must each make a commitment... to follow this philosophy of quality in everything we do – even to the extent that we do less of some things so that we can maintain a high level of quality in all the work we do undertake" (DOC, 1996a, p. 1).

QCM was seen as an important strategy to restore both sound management principles and public confidence in DOC.

Kirk, a senior DOC representative with a wide risk management portfolio, explained the rationale for the new risk conscious approach of which the QCM is part:

We're trying to see risk as just the same as any other management process. So it's just a management insurance process. We're trying to get into the situation where all our managers understand risk and can show how they are doing risk management in all their work. Basically, so it's not an add-on – it should be number one. And once we get past that, where it's not seen as an add-on, then it just becomes part of our normal management process. That's certainly where we're trying to get to.

The comments of other senior managers make it clear that their perception of the way forward for DOC is within a culture of quality management that adheres strictly to approved systems and reflects a strong image of professionalism. The focus of the new approach is on management processes that create satisfied customers. John, a senior representative of the QCM Unit explained:

Basically what senior staff are saying, is that continuous improvement is what we're about. We're going to continually improve our systems, we're going to have quality management, we're going to have quality systems and continually improve them, and the end product will be satisfied customers. A lot of companies do something similar. If we start off with good clear leadership from the general managers, and we have quality processes, which is our QCM process, we've got the policy and planning and we have the people - which we always say is our biggest resource - good information, a customer focus and then we get our performance. And that's our quality framework. So people started to see that this organisation was changing.

It is evident from these comments, and those of some other senior staff, that DOC is increasingly viewed as a business. John's language also illustrated this point with phrases such as 'products', 'customer focus', 'business', and 'performance'. Kirk, implied a similar business orientation:

[DOC is] certainly a customer focused business, and that's come about through a lot of our focus on quality work that we have introduced – which is focused on the customer and the end product that we're delivering to them.

Further evidence of DOC's new orientation is presented in Section 7.6, where the organisation's corporate identity is discussed in relation to communicating with the public.

7.5.4.2 Visitor Asset Management

The first application under the QCM framework was the Visitor Asset Management Programme (VAMP), an initiative that illustrated the organisational changes since 1995. The rationale behind the development of the VAMP was the perceived need to reconcile the Department's asset size, required maintenance, and replacement programmes with the Department's budget. According to DOC (1998), the VAMP allowed the Department to become a good asset manager through creating a system for recording current assets and their condition, improving decisions about assets, allowing for risk assessments to be made, justifying work programmes, and increasing accountability in the use of public resources.

One of the early priorities of VAMP was to oversee a comprehensive inventory and assessment of the Department's structures – a task that involved 80 temporary employees and 60 engineers over a two-year period (K. Lewis, personal communication, July 8, 1999). Collectively, these employees and consultants walked 12,000 kilometres of track, and recorded, inspected and assessed nearly 16,000 structures. The information on sites and structures, as well as each site's predominant user group, was entered into a database and formed the initial core data of the Department's Visitor Asset Management System (VAMS). The cost of this upgrade and development was \$30 million.

The inventory of structures on conservation lands was undertaken in order to establish baseline information on the existence, status, and condition of the facilities for which DOC is responsible. Each structure has now been logged into the VAMS, and its priority for maintenance, repair, or replacement recorded. Standardised processes have been established for the inspection of each structure, and life-cycles attributed to each structure type. For instance, huts have been given a life of 50 years, and platforms 25 years. Assets are managed, and their replacement costs calculated, on the basis of these estimated life expectancies (Ombler, 2001). The VAMS data allow for conservation and recreation sites to be ranked using criteria such as current and projected visitor use, educational value, and potential heritage importance. The site scores are used to help determine funding priorities.

The inventory of structures was unprecedented in New Zealand's conservation management history. The process revealed over 4000 bridges, 8000 boardwalks, nearly 1000 staircases, and 250 viewing platforms (DOC, 1998). Prior to the inventory, DOC was unaware of the extent, diversity, or replacement cost of these assets, and there was no knowledge of the cost of a maintenance regime. Many facilities used by visitors had been constructed for purposes other than recreation (Lawson, forthcoming), and no standards existed for visitor facilities (Ombler, 2001). The replacement value of DOC's 16,000 structures has been calculated at \$188 million (DOC, 1998).

Using the VAMS, the site scores, and by calculating the 'structure risk', DOC is able to justify how it prioritises its resources throughout conservation lands. For instance, where structure risk and site score are both high, DOC will prioritise remedial work (DOC, 1998). The majority of high priority sites are located in the front-country, high use areas close to road ends and service areas.

Through the implementation of the QCM principles to visitor structures, DOC has aimed to reduce risk, improve public safety and confidence, and justify the funding it receives. Kyle, a senior manager from the now disestablished QCM Unit explained:

What's happened is that we've built the operating systems, and the standards which the people on the ground need to use. And it's through the application of consistent procedures and standards and with clear accountabilities that we minimise the public risk. We know that wherever we go in the country we can expect to find structures that are safe and the people who are working on them are maintaining them to a set standard. It's the same standard everywhere, and they're using the same procedures. It works. And not only does it work, it actually reduces cost as well.

Although this manager emphasised the high utility of the new systems in achieving the aim of improved visitor safety, the systems can be seen as effective in other ways too. VAMP "works" because it allows DOC to balance its budget and be seen as doing something positive about potential risks to visitor safety. It is not clear, however, whether public safety was ever under threat from hazards arising out of DOC structures. The greater risks were financial and legal risks to the agency and its political leaders.

A political and financial risk dimension is evident in the comments of John, another DOC manager who implied that visitor safety and the creation of an asset management system had more to it than a concern for visitor safety:

The government gave us an extra 6 million dollars to keep our structures in good condition. We got that because the government realised it had a safety risk, and it had to manage that because the government itself was vulnerable if there was another accident. But [DOC also received the money] because of the Visitor Asset Management System, and all the information we've now got on structures, where they are and what condition they're in. All that information is what got us the extra money. Being able to go along and say: "this is what we have, this is its condition, this is how long its going to last, and this is the maintenance cost for whatever period". And that's what got us the money - having good solid information.

These comments imply that the way Treasury allocates financial resources to government departments has encouraged DOC to adopt an asset-based approach to the management of the conservation estate. Kyle explained:

What we're doing is we're looking at all of visitor facilities as assets. And as an asset it is created, then it's managed, it's replaced and we've been able to secure more dollars from government because we have all this information and we have a clear process. What we now understand is that we actually need to start thinking about all of our conservation assets in this way. So, we're starting to

move along that track with our conservation assets, as we're starting to call them - at least in Wellington we're starting to call them that. Because when you're talking to Treasury, trying to get money to do this sort of work, if you haven't got really good information, and if you can't put dollar costs against the work and show clearly what the outcome of spending that money is, then you're going to miss out.

As part of its new systems, Head Office has also developed a process through which field level staff can establish and use standard operating procedures (SOPs) for each and every work operation (from possum baiting to hazard management). Bob, a senior policy advisor, made the following remarks:

We decided that if we're wanted to systemise this organisation, we needed to have simple standard operating procedures for all work. So we built what we call the SOP tool kit, which is basically a document control system, so every document now has to be numbered and is centrally controlled for amendments.

The development of SOPs demonstrates the strength of commitment to a rigid operating system within DOC post-Cave Creek. The utility of the SOP method was also enhanced by the developments in technology that have allowed documents to be centrally located and modified. Staff working in field offices throughout New Zealand have the ability to access up-to-date SOPs relating to specific work areas. This reduces reliance on potentially out-of-date manuals and ensures consistency across the national network of DOC operations.

The comments of Kirk, a senior manager in DOC's Head Office, illustrated the intent of the QCM process and the SOPs more specifically, as well as the degree to which some managers thought it necessary to prescribe standards.

The question we considered [regarding SOPs] was: "Can we run the business essentially by numbers? Can we develop a series of quite prescriptive quality conservation management systems that would detail the procedures that our managers are required to follow when carrying out a particular piece of work?" That's the system. There's no departure from it. Our managers are expected to follow those systems. We simply developed a set of SOPs covering the work the Department does, and attention to health and safety issues is a sub-set of those systems.

With the expansion of systems management within DOC, there appears to be a growth in confidence that the systems will protect the Department from future accidents such as Cave Creek and, importantly, protect the Department from public vilification. This confidence is evident in various levels of the Department, including Head Office, senior field managers, and the field officers themselves. For instance, Kyle, a Head Office manager commented:

In four years we've gone from having inadequate policies and procedures to having a lot better policies and procedures, especially in our high-risk areas. The major risk areas for us are visitor facilities and use of toxins. We've improved our systems out of sight and everything's available on everyone's desktop. We've dealt with our two biggest risks which were killing people by falling off things and killing people by letting them get hold of toxins. Public safety, apart from people doing silly things, is basically guaranteed.

Although the necessity for improvements to public safety is less obvious, it is apparent that through the establishment of SOPs and other risk management strategies, DOC has reduced its own risk. Two other systems are useful to review in order to appreciate some of the effects of safety systems at the site-specific level.

7.5.4.3 Safety Watch and Hazard Reports

In addition to its comprehensive review of the structures on land it manages, DOC has developed safety management tools through which it monitors the safety of facilities. These include the 'Safety Watch' and 'Hazard Report' mechanisms, both of which enable members of the public (the former via toll-free telephone number) to report hazards they identify on the conservation estate. DOC has a detailed system in place for dealing with each report, including minimum response times and direct line accountabilities.

As several respondents have emphasised, DOC was very keen to appear safety conscious in the time immediately following the Cave Creek incident. Safety Watch is one example of DOC's response to the perceived need to be more vigilant about hazards. In part, the decision to provide the public with a channel through which to report safety issues, is an acknowledgement that Department staff are limited in their capacity to identify and assess hazards across the wide spectrum of sites for which they are responsible. Encouraging the public to work with DOC to help create safer conservation lands was one way the Department could be safety conscious and do so in a cost-effective fashion.

Despite the possible merits of the Safety Watch system, there are issues of efficacy and efficiency emerging. One problem for the Department is that, while the public has an opportunity to approach DOC formally with site-specific safety concerns, DOC is then committed to investigate, assess, prioritise, and (if necessary and appropriate) mitigate each of these. Managers assessing the reports must evaluate the hazards as 'low', 'medium' or 'high'

and ascribe a time-bound action, processes that absorb Departmental resources. Wayne, a recreation planner in Wellington, had mixed feelings about the utility of the process:

It's a good way of getting feedback about management issues in general, but we get a lot of reports which aren't really safety issues. I mean, they're annoyance issues. For example, 'slippery track', 'poor track marking', 'overgrown track and bees'. So we have to think: "are these safety issues or not?". Then you've got to go out and check the hazard - if that's the action you've prescribed.

Neil, a manager on the West Coast, also expressed some doubts about the value of the Safety Watch system, claiming that most of the reports received were inappropriate, either because DOC was not responsible for the site or facility in question, or the hazard was of a minor nature. He also gave some examples:

One [report] was that the plug was missing from the sink in Pioneer Hut, one was that there was a small slip across the highway just out of town here, and another was that someone had got a nasty splinter off the Okarito Wharf. None of these facilities are ours! Here's another: "spring-loaded door has got too much spring in it", and this person was bitten on the thigh by the metal toilet roll holder!

According to these informants, the Safety Watch and Hazard Reports are often used for rather general complaints about the condition of facilities on (and off) the DOC estate. The frustrating part for managers is that the process in place requires action to be taken on each reported case, as Jock, another West Coast manager pointed out:

I interviewed the woman who reported a tree across the state highway. I said: "why did you do that?". This is an horrendous process. Because these are individually numbered documents - they're a pain in the bum. I mean, they're good for ensuring accountability, but when you get it wrong, you still have to go through the process. This [hazard report] form has got to go to me - within 12 or 14 hours. It's also got to go immediately to the Conservator, and to the Recreation Planner, and then I've got to follow up, ascribe an action, and get somebody out there to look at it. Then it's got to go through more process and finally be signed off. I mean that involves five or six people and it takes a month.

This excerpt illustrates how systems can become unnecessary and wasteful. Safety Watch and Hazard Reports are examples of systems which reflect a safety conscious organisation, yet their utility is yet to be proven.

7.5.4.4 Resistance to the new way

The introduction of a new direction or philosophy for DOC was not necessarily embraced by all staff at the time, as Kyle, a senior manager acknowledged:

When QCM first came out, it didn't go down too well. A lot of people said: "oh rubbish; I mow lawns or whatever, that's of no interest to me". There's also been a ton of cynicism. But you don't change the culture of an organisation of 1500 people in 80 different places around the country overnight. It's taken two years, but we're starting to move into a culture of quality management where people are expecting to use established standards and procedures for their work. It all means that the Department is reducing its risk and going about its business in a very professional manner.

DOC's adoption of a strong risk management focus has also drawn public criticism, especially from recreation groups who feel that recreational facilities on conservation lands are under threat of removal (Barr, 1996; Buchanan, 2000; Round, 1999; Sinclair, 1998). With its newly acquired knowledge of the extent of its asset base, DOC's senior managers readily acknowledge that the current government funding will not sustain the assets (DOC, 1998). In order to maintain the safety standards to which the Department now aspires, some facilities and recreational opportunities are likely to be removed.

Jim, the director of a voluntary organisation closely aligned to DOC and the provision of recreation opportunities on conservation lands, linked his criticism to the influence of Cave Creek on the Department's management style and decisions:

Cave Creek and the talk of organisational failure impressed itself enormously on the managers [DOC staff]. All of a sudden there was this concept of organisational responsibility. The HSE Act wasn't very clear – all the indicators were talking about visitors to a place of work. But DOC got really hammered on the concept of responsibility, and they inevitably were looking very hard to see how they could clear themselves on this whole business [of responsibility for visitor safety]. Now, if you go anywhere in New Zealand and you come to a stream that is two meters wide, it's got a plank across it, it's got a number on each end and it says how many people the loading will be. I mean, it's insane if you think about it in terms of the traditional tramping thing. People either put foot on it or they didn't. They'd splash through the stream otherwise!

Another criticism is that DOC, in its attempt to ensure the safety of its facilities, has actually created a risk to the public through the removal of huts, shelters, and bridges that would otherwise afford protection to visitors in the event of harsh weather or floods ("Plan creates risk", 1999). Jim gave examples of this:

In one case, there was a bridge that crossed a gorge. The track deliberately led to the bridge of course – a little swing bridge. Because somebody thought it was unsafe, they chopped it. That means the track now goes to the wrong place, because that is not where you cross the river if there's not a bridge. So you're actually led into danger by the track!

And it bothers me even more with huts. Very rarely has a hut been put in for no reason. If you take the huts in the Tararuas, most of them were put in because something went wrong – someone had died there. They were put there because that was where people got into difficulties. Huts don't usually present a hazard to the public, even if they're derelict – it may still be a valuable shelter even though the door's fallen off.

Tim, a manager in DOC's Central Regional Office explained the Department's stance on safety, and defended its decision to remove some facilities:

There's no doubt about it, the Department had to be seen to be focussing on safety. So it did. Now that might have taken us too far, but I don't think that's necessarily a bad thing. Cave Creek made us have a good look at what we were providing, although we probably would have had to do that anyway. It would have come from the financial point of view, regardless of the safety issues. There's no way we could have sustained our asset base. There's no way we were keeping up the ongoing maintenance of those structures and assets and we were getting to the point where Treasury was forcing us to look at that anyway. So it would have come. We would have been removing structures from some sites. The safety aspect has certainly given us a justification for the rationalisation. There's no doubt about that. We certainly used it, and combined it with the financial issues. And we did use the inventory information that we had, that was one of our prime goals [for collecting the asset information] – to use the information we gained about our assets to run arguments back at Treasury, there's no doubt about that. We've been criticised by them for years for not really being able to mount a proper case for extra funding because we didn't know how many assets we had. And they were always able to avoid giving us extra funding. So when we were able to turn around and say: "well, actually we've got 16,750", they were in a very difficult position.

The comments of this senior representative imply that Cave Creek, and its consequential emphasis on visitor safety, provided a convenient rationale or justification for the further restructuring of DOC and the adoption of more business oriented practices. The remarks also indicate how imperative it is to quantify DOC's role and the outputs for which it is responsible. Assets are simple to count, whereas the value of visitor experiences are more difficult to calculate.

7.5.4.5 Summary

In its quality conservation management approach, customer focus, and the rhetoric of asset management, DOC has attempted to create a more transparent and accountable set of operations relating to risk management and visitor safety. Some of the impetus for change (in culture, style of operations, and specific methods for undertaking work) can be traced to the accident that occurred at Cave Creek in April 1995. The subsequent inquiries and internal reflection resulted in major reorganisation of DOC's priorities, structure, and management. The accident, in combination with the organisational changes for which it was a catalyst, have been important factors in the way managers and field staff at the glaciers perceive hazard management and their responsibilities to the visiting public. Another important factor motivating the new approach was the perceived need to adopt business principles and rationalise assets.

Two questions remain unanswered. First, was the time and money invested in significant development of systems actually required to identify and mitigate genuine hazards to the public, or were the initiatives a reaction to a perceived need to do something (or look like something was being done), and to 'play the accountants' game'? Second, has public safety been improved through the development of the new risk management systems?

These are difficult questions to answer definitively, although the evidence presented in the chapter to this point suggests that the primary motive for change within DOC included the need to reduce its own liability and help justify expenditure more convincingly. The new range of approaches also contributes to the agency's own financial, political, and legal risk management, while the effects on visitor safety (to the extent that this was ever an issue under DOC's control) will only be possible to estimate in retrospect. Cave Creek, and the 'new morality' of visitor safety, provided both the impetus and justification for the wholesale adoption of a new set of practices. The new organisational culture and approaches to visitor management allow DOC to justify the rationalisation of recreation facilities, secure additional government funding, and reduce risks to the agency itself. Visitor safety may have been enhanced, although the extent to which this was necessary remains speculative.

7.5.5 Perceptions of societal expectation

In Chapter 2, it was argued that, in some Western societies, there is a growing aversion to risk. Although many people have never been so physically healthy, or so protected from accident, these same communities appear to be increasingly concerned about safety and risk (Dwyer, 1991; Furedi, 1997; Hanna, 1991; Lübbe, 1993; Slovic, 1999; Wildavsky, 1988; Wren, 1997). It appears contradictory that, while many societies are increasingly individualistic, there is a decreasing tendency for people to accept the hazards and risks to which they are exposed. One consequence of this is that the responsibility of risk and safety becomes a specialisation levelled at governments or other organisations perceived as holding some power over life outcomes.

Allied to this social tendency is the development of a culture of blame, and an unwillingness to accept responsibility for accident or injury (Douglas, 1992; Dwyer, 1991; Hughes-Johnson, 1996). This development is also apparent in the recreation and tourism sector, as the comments of Jim, an outdoor recreation director implied:

People sometimes claim that they're responsible [for their own safety], but when you do get an event that occurs, they're pretty quick to shift the blame onto DOC or some other governing authority. Increasingly, we're wanting to find someone responsible for when things go wrong.

The same informant gave an example showing how he believed the public attitude to risk and safety in the outdoors was different in the past from what it is today.

I came to New Zealand and started a tramping club where I was teaching. Two years later, three of the guys who I had started tramping were in the Three Johns Hut when it went over the edge. I had to go down and identify the bodies. The hut was above the Mueller Glacier and it went down in a storm. They [the national park staff] heard nothing on the radio, and when they went up there to see what had happened and why people were not responding, there were four wires sticking up out of the ground and the hut was a thousand feet lower down, smashed to bits in the valley below. Well, luckily it wasn't the days of the HSE because there would have been some good questions asked. Essentially, none of the families were asking questions of the land managers. It was a huge storm and it took the hut out. The wires all snapped, the hut just disintegrated and went over the edge, and these guys, the three of them, were killed in the hut. But none of the families were saying: "we blame the person who built the hut". That wasn't their thinking.

The comments of this informant imply that under today's health and safety laws, this accident may well have attracted the attention of prosecutors – suggesting that the hut's design or location was suspect. The hut was never replaced. Jim's comments are used here to

emphasise that, even a few decades ago, such an incident was accepted as part of the set of possible outcomes associated with recreating in mountainous environments.

Davidson (1996) argued that New Zealand has entered a new age of recreation and tourism management where new rules and stricter accountabilities are in place. Expectations are higher and recreationists and tourists expect professional standards, a trend also observed in other parts of the world (Boerwinkel, 1995). According to Davidson (1996, p. 197), the new era represents a change from the recent past when enthusiastic amateurs would take others into the outdoors:

When things went wrong it was considered just one of those things that happens when you venture into the mountains or bush. People were seldom held accountable, the incident was quickly swept under the carpet and passed over as an unfortunate 'act of God'.

Wayne, a recreation planner with DOC, reiterated this view. Discussing DOC's inheritance of facilities such as huts and tracks, he emphasised that these were built at a time when society was not thinking so carefully about safety:

Historically, many tracks were put in to make an easier or more obvious route. Forty or sixty years ago people weren't thinking "we're putting in a track, we'd better put handrails on it". I think the awareness of safety has become more apparent as time has gone on.

Neil, a DOC manager working on the West Coast, also recognised that the safety emphasis within his agency is evident elsewhere in New Zealand. He attributed the observed changes in work practices to the HSE Act and the Cave Creek accident and aftermath.

It's not only in DOC. It's also through other forms of governments, local authorities, regional councils, and district councils. I mean, most New Zealanders will appreciate that in the last four to five years, hazard management for employees has improved dramatically. Even simple little things like driving down the road and seeing roadworks. Everyone's got coloured jackets on; there's vehicles with flashing lights for miles; there's signs out on the road – it's obvious there's a hazard, you know. Whereas before [the HSE] you'd quite often come around a corner and there was someone in the middle of the road, leaning on a shovel looking at a pothole.

These comments serve to highlight the role of recent legislation and the effect of Cave Creek on attitudes to safety. Acknowledgement is also made of the degree to which DOC initially went to manage natural hazards in the period immediately following the accident at Cave

Creek. Similar comments are made by other staff members with reference to the Department's new systems for hazard reporting (see Section 7.5.4.3 above).

Managing risks and hazards in a manner appropriate to the environment is a key strategy further identified by Keith, a manager at the glaciers:

You don't see people crying about avalanches. You know, you get taken out by an avalanche on the Central Divide: "Well, that's what mountain climbing is all about pal". If you get killed by an avalanche on a ski field, it's a different story. People say: "Well, heck, the ski patrol should have seen that, detected it and dealt with it – or closed off the field". So there's a difference. People expect a level of service, and when they don't get that, they get upset.

This notion of a risk acceptability spectrum is reflected in some previous research. Several authors have concluded that injuries and deaths in activities perceived as risky are more acceptable than if the accidents occur in common activities (Bean, 1989; Ewert & Boone, 1987; Haddock, 1995). Similarly, Page (1997) observed an apparent tolerance for internationally recognised activities that include an element of danger (such as mountain climbing). In contrast, "there appears to be a greater expectation of safety for commercialised action-packed tourist activities that have developed more recently" (Page, 1997, p. 4).

While there is likely to be little argument over the claim that management must be matched to the physical setting, it is equally important that the visitors to these sites recognise the standard of hazard management and nature and extent of hazards to which they may be exposed. In areas such as the glaciers, visitors from a wide range of backgrounds may interpret the degree of management responsibility and care very differently, making it more difficult to state with any certainty what the public's level of acceptable service is with respect to risk management.

An increased social concern for safety can be observed in the comments and actions of respondents and the agencies they represent. As noted elsewhere in this chapter, the perceived social concern for safety and risk management can act as a rationale for the reduction of services and facilities. Tim, a senior regional manager, expressed this view, although distanced the comment from the Department's official stance:

One of the logical consequences of this increasing need for safeness in society, and the idea that life should be risk free, is that everywhere the visitor goes becomes hugely more expensive to manage. I can't see - although the Department would defend publicly that this isn't the case - any logical outcome

other than pulling back. Fewer experiences done properly and more safely if you like. That's fine, but it is one of the consequences of [a high priority for safety].

Social attitudes and acceptance of risk are important for DOC to comprehend. If the organisation intends to share the burden of responsibility for safety with those who visit the attractions it manages, unambiguous understanding needs to be achieved. Dave, a senior manager at DOC's Head Office, believed that New Zealanders have traditionally expected a lot from their governments, and this attitude extends to the outdoors.

[The New Zealand public] certainly have very high expectations of a government agency to provide things to them, and I think that it's probably that 'cradle to the grave' mentality that New Zealanders are still growing up with. Hopefully, personal responsibility is becoming a more important part of people's lives, but, you know, we expect health care, we expect social welfare support, we expect free access to New Zealand's natural places, we expect clean water – those sorts of things. A lot of past government philosophy has been to take responsibility for every one of those things all of the time. Now, I don't think society – government in terms of representing society – can support it any longer.

These comments imply a belief that individuals should take greater responsibility for their own lives, rather than relying on governments or other organisations to provide for them. This position is consistent with a neo-liberal approach to governance, and helps justify the creation of policies that reduce government funding and support 'user-pays' philosophies. According to the respondent above, a highly paternalistic approach to visitor management is not sustainable. This suggests that DOC is keen to share the responsibility for safety with its visiting public at least as much for the recognition of what is possible with current resources as for some basic philosophy or moral stance. Any attempt to increase individual responsibility for risk, however, will necessitate effective communication strategies.

A fundamental component of effective risk communication is understanding visitors' perceptions of risk and their previous experience of natural environments. So too is the accurate alignment of risk management and social expectation. Discussing the challenge of risk communication, Tom, a Head Office manager, emphasised the changes he had observed in New Zealand society which contribute to the difficulty in getting the safety message across to visitors. His comments imply that few assumptions can be made regarding what visitors perceive in natural environments.

Your average Joe, a 19-year-old living in Howick, has no experience of natural places. Twenty years ago, when you and I were kids, you might have belonged to scouts or a tramping club or something like that. These days not many people go tramping. There are so many more recreation things to do that tramping, and

going into the back-country are no longer popular. You and I have a basic understanding of the outdoors, and we know what's kind of sensible. But somebody who's a couple of years off the boat from Taiwan who's living in Howick comes from a different planet, and they don't understand all the risks.

This implies a belief that the social environment has changed and that the norm transmission process, backgrounds, and experiences cannot be assumed. According to the informant, this is especially true for visitors originating from outside New Zealand.

A similar observation is made by Wayne, one of DOC's recreation planners, reinforcing the perception that many visitors to highly unmodified areas, New Zealanders included, have a poor understanding of the hazards they might encounter:

I think there's less awareness [among visitors] now than there was in the past. I don't think there are that many people who, as they grow up, are taken into the hills by their father or whatever, or who join a tramping club, or go out with scouts. I mean, those things still happen, but I think that the sort of city-based nature of society means that people aren't getting that familiarity, and if you don't get that familiarity, you don't know what you're getting yourself in for. We still get loonies who think that a two-day tramp in the Tararuas means throwing a sleeping bag and a loaf of bread in your pack, and they get lost and occasionally they get flown out in a body bag.

As noted earlier in the discussion, managers' perceptions of social change and visitor competency are likely to have important influences on how hazard and risk is managed at nature-based recreation sites.

Changes in hazard awareness, and the public's acceptance of risk, are key features affecting hazard management in New Zealand and overseas. Jane, a visiting regulatory specialist employed by Parks Canada, commented on changes to the management style in Canada, which illustrate this relationship between management perception and social context:

The measures taken with respect to public safety in parks over the past five or ten years in New Zealand are also happening within Parks Canada. And I would say we are responding to societal change and societal impacts on our parks. It's not that we just like safety measures and we want to put in as many as we can, it's the fact that society has evolved into a fairly urban type of user that seems to like to come to parks, and they have a very limited understanding of hazards and risks of the natural setting. They are heavily influenced by the media, and media perception of fun and challenge and group interaction and what the opportunity can provide them with.

The perception that social expectations of safety have increased over time, irrespective of its accuracy, has contributed to the risk perceptions of DOC managers. Their interpretation of

the community's demand for safety influences the risk management style adopted, may justify the application of strict safety standards, and, potentially, limits the provision of natural resource recreation opportunities.

7.5.6 Summary of factors affecting managers' risk perceptions

The risk perceptions of DOC managers at various levels of the organisation appear to differ in terms of the focus of their interests, such as personal liability for visitor injury, and financial or political risk to the agency. Critical to the risk perceptions at all levels of the organisation are the perceived legal responsibilities, the accident at Cave Creek, the development of a new organisational culture of risk management, and perceptions about social acceptance of risk. These historical, administrative, and social factors are important to identify as they influence the risk management tools and policies established by the agency, including the mechanisms through which the Department elects to communicate risk and hazard to its visitors. Communication of risk, and DOC managers' perceptions of its purpose, is the subject of the final section of this chapter.

7.6 Communication of hazard and risk

This section examines the ways in which risk and hazard are communicated to visitors at public conservation sites in New Zealand, with specific reference to the glaciers of Westland National Park. The risk management strategies adopted are discussed in the context of factors identified in Section 7.5, including perceived legal obligation, and the importance of business-oriented practices. In particular, the discussion emphasises managers' perceptions of the value and intention of risk communication. Through examining communication of hazard and risk, this section identifies a tension between DOC's moral and legal commitments, and its desire to present a corporate identity.

7.6.1 The value and purpose of warning signs

The rationale for communicating hazards to visitors at the glaciers, and at other recreation sites throughout New Zealand, is driven by both the legal and moral context in which DOC operates. As outlined in Chapter 4, various statutes combine to impose on DOC a significant responsibility for visitor access, experience, and safety. DOC's current interpretation and

practice under the HSE Act and OLA has created a strong acceptance of the duty of care owed to visitors on lands administered by the Department, which extends to an obligation to inform visitors of the dangers inherent at specific visitor sites. To the extent that the legislation invites and encourages people to visit conservation lands, a moral obligation is also present, to warn visitors that there is potential danger in natural environments. That the existence of natural hazards is sometimes not apparent at the glaciers (see Chapter 6) increases the perceived moral duty of the Department's staff to make risk more explicit at these sites.

For these perceived moral and legal reasons, DOC has elected to communicate the existence of hazards at the glaciers through installing warning signs and information panels both on-site and at the visitor centres in the nearby townships of Fox Glacier and Franz Josef. Despite the use of warning signs, visitors to the glacier sites frequently disregard the messages, compounding managers' fears of visitor injuries. This situation raises the questions of why DOC continues to use warning signs as its primary hazard communication strategy, and what purpose the current signs serve. Several possible reasons are discussed below, including the perception that the use of signs improves visitor information, discharges DOC's moral and legal obligation to visitors, and maintains the Department's corporate identity.

Signs are used extensively by DOC for visitor information, hazard warning, and regulatory purposes. In 1994 a national signs manual was written in which details of standardised styles and dimensions were specified. Prior to the establishment of a standard approach to signs, conservancies were independently responsible for signs. Roy, a member of DOC's national signs coordinating group, recalled the transition, and the justification used for the new approach:

In the past, everyone did their own thing – it's as simple as that. We'd come from parent organisations where there was a strong feeling that because we were managing important natural landscapes, we should develop sign systems that were appropriate to the local situation – the local landscape. Once we became encompassed under DOC, it was felt that the local approach was failing in many respects. One argument was that signs should blend into the landscape, but others of us said: "Hang on, we want people to find the sign! The reason we put a sign up, is to get a message across!". The other thing we wanted to achieve with the signs was to establish the Department as a single agency. The Department, even now, has quite a weak profile believe it or not. We still get confused with regional councils, Landcare, Ministry for the Environment – all sorts of different agencies. The 'signs standard' was one step to establish the Department in the public mind if you like. Now you can drive anywhere in the country and you see a sign and you know that it's all this one big family. Previously, as you moved from one area to another, you'd get quite distinct styles of presentation.

Roy's comments imply that the development of standards for signs placed limited emphasis on their effectiveness, and more on the establishment of the Department's efficiency and creating a corporate identity. Tom, a manager within DOC's External Relations Division, reinforced this conclusion with his comments on the importance of a standardised approach. Describing his arrival in the organisation, Tom alluded to the existing individualised approach to signs within DOC:

When I came in, we had a diverse and messy set of identities around the place. It was a horrible sight; a mix of Lands and Survey, you know, the old stuff, three or four parent agencies, and just a shambles from an identity point of view. Now we've got the sign standards, stationery, uniforms, and cars, and there's definitely a link between them. See the ranger, see the car, see the buildings, see the sign, see the publication, and there's elements across them - like the band, the corporate signature, and the typeface - all those things bring it together. DOC was slow to realise the generally accepted benefits of having a corporate identity that's together - the benefits of credibility and cost savings if you get it right. Basically there's big value in representing the organisation professionally - it's unquantifiable, but all corporates take it on board.

This exercise in image creation was a deliberate attempt within DOC to increase the external and internal perception of professionalism, and was not undertaken without resistance. While, according to Tom, the shift in emphasis had senior management support, others were less enthusiastic about changing the way DOC operated:

The organisation was, and to a lesser extent still is, full of individually minded people with recreation or wildlife management backgrounds. They don't have experience with this sort of thinking, so they don't understand the value. They regard spending any money on these things [corporate identity] as a waste - money that could save a species, or build another track. My argument, and the argument of senior management, is that by getting these things right, firstly you save some money by rationalising your printing costs [for instance], but also the more professional you appear, the more money is going to come your way. The better people think of you, the more credible you are, the better job you are seen to be doing, regardless of whether you're doing a good job or not, the more goodies are going to come your way, and the more tracks you can build, the more species you're going to save.

The adoption of a commercial model to this aspect of conservation management is interesting. While some DOC staff in the business of image creation clearly see the Department as delivering a product like any other organisation in the market place, it is debatable whether DOC needs to differentiate itself from others in the same sense that market competitors must. While credibility can make an important difference to communication effectiveness

(Manfredo & Bright, 1991), support for the agency's work is unlikely to be dependent on corporate image.

In addition to the contribution the standardised signs could make to enhancing the Department's profile and identity, it can also be argued that their deployment is a cost effective means to ensure that the perceived legal and moral obligations are met. This claim is implied in the comments of Roy, a manager with national responsibilities for signs:

Whenever we recognise a need to communicate something, we are supposed to canvass all the options. Signs are relatively cheap and simple and, I guess, more often than not they are going to be the most appropriate means, because you know that every person who visits a site is going to go past a sign. Now, I'm not completely convinced that this is what we *should* be doing to communicate to people. Quite often, what we are *really* doing when we put up one of these signs is meeting our legal requirement. We have complied with the letter of the law in the sense of "you have put up a sign". I say: "Okay, you've put up a sign, how has that altered the public's appreciation of the situation?"

Tim, a senior manager in DOC's Central Regional Office, strongly refutes the notion that DOC is using signs at hazardous sites to discharge its legal obligation to visitors:

I believe that the Department takes visitor safety very seriously in those high volume places. The way we've chosen to convey the message may not get the message through to as many people as we want – it may not get the message through to anyone. It doesn't mean that we don't take the responsibility very seriously. We have, either for practical or financial, or aesthetic reasons, chosen to put [the safety] messages within, or alongside other messages that we are trying to convey. From the Department's point of view, it probably has more to do with our technical ability and communication skills than with our desire to ensure that the Department isn't liable.

Hazard warning signs are the primary means of risk communication between DOC and the visiting public. In Chapter 6 it was suggested that warning signs at the glaciers were often ineffective, with visitors either ignoring the warning messages, failing to notice the signs, or failing to comprehend the message content. Furthermore, despite the fact that many visitors to the glaciers are from outside New Zealand, signs are without exception in English, and predominantly text-based. Considering the target audience, the messages contained in signs are reasonably complex in some cases, as this example demonstrates:

Warning: visitors to the Fox Glacier please note that the terminal face of the glacier is very unstable and dangerous. Visitors should not go beyond the rope barriers and warning signs unless accompanied by an experienced guide.

With reference to the use of language on some signs, and the absence of more simple graphic images depicting the potential hazards, Jock, a senior manager based in Westland, gave his interpretation of the situation:

The corporate signs were designed post-Cave Creek, and people [DOC management] were pretty keen to get the message across. It's more of a legal warning, you know: "This is your first legal warning that a hazard exists". We want visitors to actually enjoy the area, but at the same time, we want them to appreciate that there's a risk. In saying that, I don't think that five lines of text in green and gold is going to do that.

This respondent is acknowledging the limitations of text-based hazard communication signs in terms of improving visitor awareness of danger. It is implicit in his comments, however, that DOC has issued a formal notice of the hazard and thereby discharged some of its responsibility to the public.

This view is further illustrated by the comments of Wayne, a recreation planner working in Wellington:

We [DOC] tend to use signs whenever we get a problem – the thing we do is put up a sign. Often that's because it's the cheapest option. If you've got a problem, you put up a sign and say: "watch out for this", rather than dealing with it.

DOC managers are presented with a paradox in their attempts to communicate risk to visitors. On the one hand, there are sound aesthetic and individual freedom arguments for limiting the number, style, and content of signs in natural areas. On the other hand, there is a strong perception among managers of legal and moral obligations to the public, and a prevailing organisational doctrine of risk and safety management which implies the need to take effective communication seriously.

7.6.2 Summary

Risk is communicated to visitors at the glaciers through a variety of means, including hazard warning and information signs on site and at the two visitor centres, physical presence and advice of Department of Conservation staff, and (to a lesser extent) via tourist brochures and publications available to visitors at multiple points in their planning for, and enactment of, travel to the glaciers. Prior to 1994, individual conservancies designed signs and messages for their own unique situations. It is not known how successful the communication of hazard messages was at this time, at the glaciers or elsewhere. More recently, there has been a move

within DOC to create a corporate identity for the Department, one of the principles of which is consistency of signs throughout DOC administered land (DOC, 1994). This principle is defended on the basis of a commercial model aimed at strengthening public and financial support for the organisation. The incident at Cave Creek served to highlight the potential risk to visitors on DOC land, and increased the level of emphasis on safety issues, including the communication of hazards to visitors. Strategies for achieving this appear to have focused on the provision of additional signs, barriers, and temporary facility closures rather than an examination of the process of communication itself. To this extent, management beliefs about the intended value and purpose of warning signs at the glaciers reflect both a perceived legal obligation and a commitment to corporate identity.

7.7 Chapter summary and conclusions

It is argued in this chapter that attitudes towards the management of natural resource recreation and tourism strongly reflect wider social processes related to risk and safety consciousness. In particular, it is evident that managers' perceptions and attitudes toward risk are shaped by personal knowledge and experience of natural hazards, perceived legal liability, the events surrounding the accident at Cave Creek, a new organisational culture, and perceptions of social expectations regarding health and safety. Furthermore, how managers choose to communicate risk and hazards to visitors is influenced by their own perceptions of what is at risk, commitment to a corporate identity, and a focus on legal liability. In this regard, it is clear that hazard and risk management approaches are heavily influenced by social and political factors.

The aim of the chapter was to explore the management dimension of perceived risk. It is evident that managers at the different levels of the organisation perceive risk differently. For instance, at the field level, risk is expressed in terms of visitor safety, and some fears about the legal liability of individual staff. The rationale for hazard communication is to prevent visitors behaving in ways that may lead to injury, and consequently implicate the site managers. At a more senior level, and away from the glacier sites, risk assumes a slightly different significance, and relates less clearly to threats to visitor safety. The risks at this level are discussed in terms of the threats to the agency and its leaders (financial, legal, and political). For the senior managers, the prospect of visitor risk has contributed to the justification and adoption of a new organisational style, structure, and systems that ultimately

enhance the agency's corporate image, and improve the likelihood of successful funding bids. It is considered important by such managers that risk communication strategies comply with the corporate identity, a stance which emphasises the focus on agency risk.

The final chapter in this thesis presents an integrative discussion of risk in natural resource settings, incorporating the individual perceptions of visitors, the beliefs of agency managers, and the wider social context in which these both exist.

Chapter 8 Conclusions: Nature-based tourism and recreation in the risk society

8.1 Introduction

The intention of this research was to explore the complex interplay between how visitors to natural tourism settings perceive risks, and how managing agencies communicate risk to them. At one level, the research is a study of how individual visitors perceive hazards at natural resource recreation sites, and the factors that underpin these perceptions. At another level, the research explores the role of park managers and officials in interpreting their legal and moral obligations, in the context of macro societal conditions that place a strong emphasis on safety and the avoidance of risk. In this sense, the thesis has attempted to locate the individual tourist within society, and, in particular, the risk society identified by Beck (1992).

Following a brief review of the research objectives, this chapter presents a summary and examination of the key research themes, including an integrative model to help illustrate the relationships between the various components of the study. As some research findings have applied value, a section on implications and management recommendations is considered important. Also critical are the suggestions for future research. The current work adopted a broad scope, and in the process many 'stones were left unturned'. The potential for further risk research in tourism is discussed.

8.2 The research problem re-visited: An appraisal of the research objectives

The impetus for this study was the observation that at several popular nature-based tourism attractions in New Zealand, visitors were potentially exposed to a variety of natural hazards. At these sites, some visitors appeared to disregard warning signs and behave in ways that threatened their safety. These observations led to the formation of questions concerning the extent to which visitors were aware of the hazards and risks in such environments, the degree of willingness to accept responsibility for known risks, and whether any differences between visitors were related to country of origin. The visitor's physical experience at the sites also occurs within a management environment, which was presumed to have an influence over risk

and hazard awareness. To this extent, the perceptions and actions of managers at the recreation sites were also seen as important avenues of inquiry.

In order to examine visitor behaviour, and the concepts of hazard awareness and risk perception, the glaciers of Westland National Park were selected as a case study site. These two attractions provided the medium through which the multiple dimensions of risk were explored. The specific research objectives are reiterated below, after which an appraisal of these is presented.

8.2.1 Research aim and objectives

The fundamental aim of this study was:

- To examine the nature and significance of risk in the management of parks, recreation, and tourism in New Zealand.

More specifically, the research objectives were:

- To identify and evaluate visitor awareness and perception of natural hazard and risk at Fox and Franz Josef glaciers on the South Island's West Coast.
- To identify and evaluate visitor attitudes toward individual responsibility for safety at the glaciers.
- To assess the extent of behavioural compliance with warning signs among visitors to the glaciers, and to measure the relative effectiveness of introduced pictorial warning messages.
- To determine the perceptions, attitudes, and beliefs of DOC managers with regard to their roles as risk managers, both at the glacier sites, and within New Zealand more generally.
- To identify and assess how DOC presents and communicates risk and safety messages in natural resource recreation settings such as the glaciers, and to examine what perceived legal and moral obligations form the basis of these strategies.
- To explore the relevance of the theory of the 'risk society' (Beck, 1992) to understanding risk perceptions and risk management in the New Zealand tourism and recreation context.

In Section 8.3, the outcomes of the research objectives are addressed in relation to the main findings of the study.

8.3 Dimensions of the risk construct

The central aim of the study was to examine the significance of risk in the management of recreation and tourism settings. The various dimensions of the risk construct identified in this research are depicted in Figure 8.1. The essential features of the model are described before a discussion of the main dimensions is presented.

Figure 8.1: Dimensions of the risk construct in natural resource recreation and tourism settings

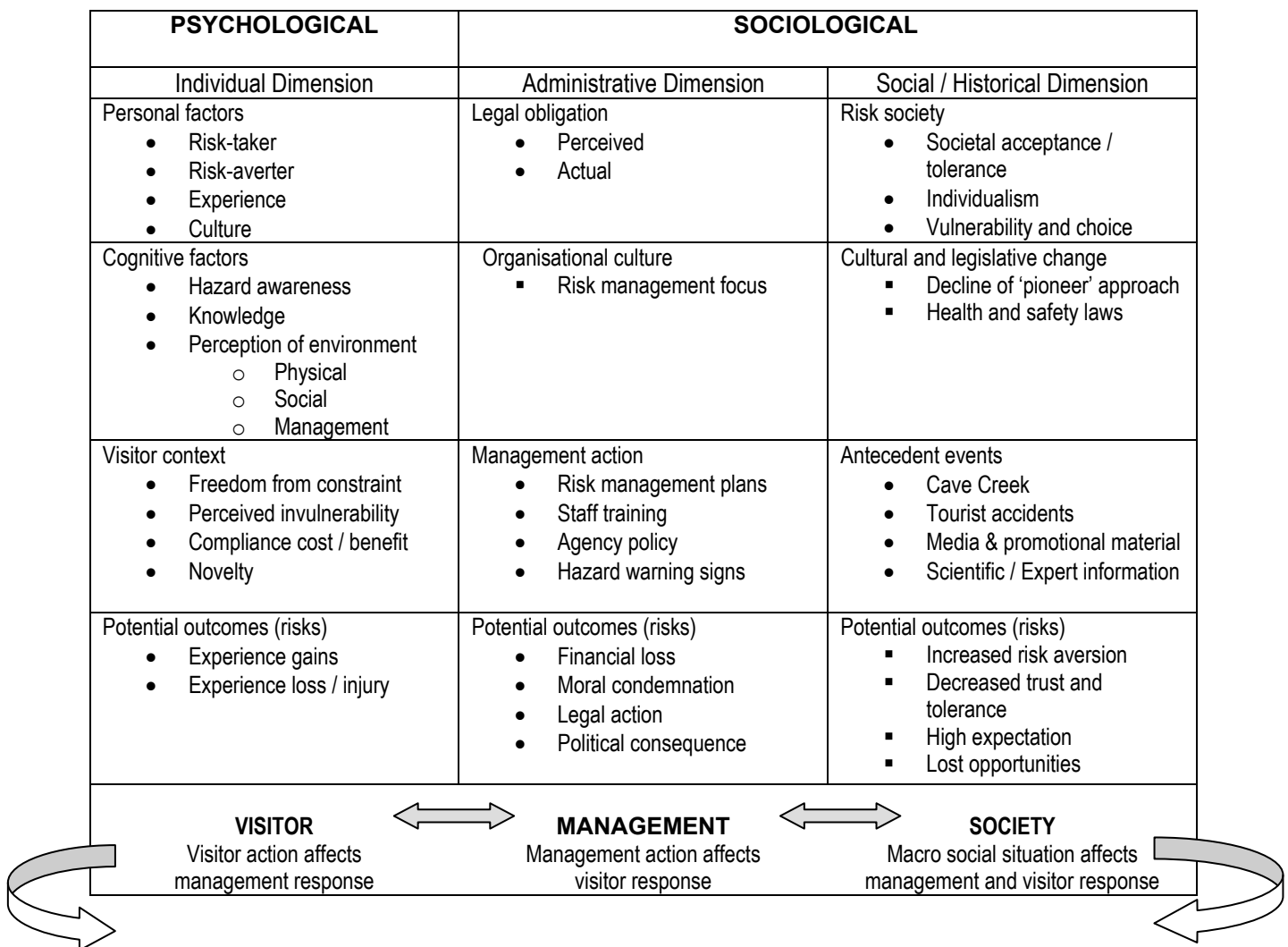


Figure 8.1 represents dimensions of the risk construct operating in the glacier case study. Some elements of the model have applicability elsewhere, especially in the New Zealand context. In essence, the model depicts factors influencing the perception and presentation of risk in natural resource recreation and tourism settings. The discussion in the current study

has relied largely on social psychological and sociological explanations in order to make sense of the individual, administrative, and socio-historical aspects of risk. The underlying assumption of the model is that risk in natural resource recreation and tourism settings is most accurately understood through an examination of the interrelationships between visitors, managers, and society as a whole. Visitors to the glaciers perceive risk on the basis of their own intuitive assessments of the physical conditions, drawing on personal knowledge and previous experiences to make this judgement, which is also influenced by personal risk propensity. But individual perceptions are also socially constructed, and involve influences from the social environment (such as the behaviour of other visitors) and management environment (such as risk communication attempts). Furthermore, the glaciers are visited in a leisure context, by tourists who seek novelty and fun, as well as temporary freedom from constraints associated with their home environments. These features make a collective contribution to risk as experienced by the individual visitor to the glaciers. Visitor perceptions of risk, and subsequent visitor behaviour, will also influence the risk communication strategies of management.

For DOC managers, risk is experienced through actual and perceived legal obligations, an emergent risk and safety culture within the organisation, and their own awareness and knowledge about natural hazards. The threats to managers (risk outcomes) include financial, legal, moral, and political losses, effects which are unevenly distributed throughout the management levels of the organisation.

The management of, and visits to, the glaciers occur within a broader social context which includes social, cultural, and historical features. These are especially evident in their influence on visitor management at the sites. The broad social context includes influences of the 'risk society' in which a diminished tolerance of risk is apparent, and where individuals perceive greater responsibility for life outcomes, and greater potential for loss. In New Zealand, the macro-social environment includes changes to health and safety laws, recent accidents involving tourists and recreationists, and the promotion of its attractions as natural, safe adventures. The potential outcomes of the risk society for parks, recreation, and tourism management in New Zealand are multiple. Increased risk aversion and community intolerance of risk may lead to a diminished sense of good will between providers and consumers of recreation and tourism experiences. Unrealistic expectations of safety standards may lead to the loss of some recreation opportunities.

Further discussion of the three broad dimensions of risk is presented within the summary and review of the research findings below.

8.3.1 Visitors and risk

The visitor is one dimension of the risk construct at the glaciers. This section reviews findings that are considered most important within the individual component of the model.

8.3.1.1 Visitor perceptions of, and attitudes to, risk and safety

Visitor awareness of hazards, perceptions of safety, and attitudes toward individual responsibility were assessed at the glaciers using a survey questionnaire and visitor interviews. The analysis showed that, for most visitors, hazard awareness was moderate or low, while perceived safety was high. These features were combined to create a risk perception estimate which indicated that risk perceptions were lowest among visitors from outside New Zealand and those aged 40 years and older. Consistent with the moderate to low risk perceptions of visitors, attitudes to individual responsibility for safety were mostly favourable. It is useful to emphasise, however, that in order for risks to be accepted, they first need to be recognised (Gough, 1998b; Wagenaar, 1992). To this extent, the willingness of glacier visitors to accept responsibility for their personal safety requires further investigation.

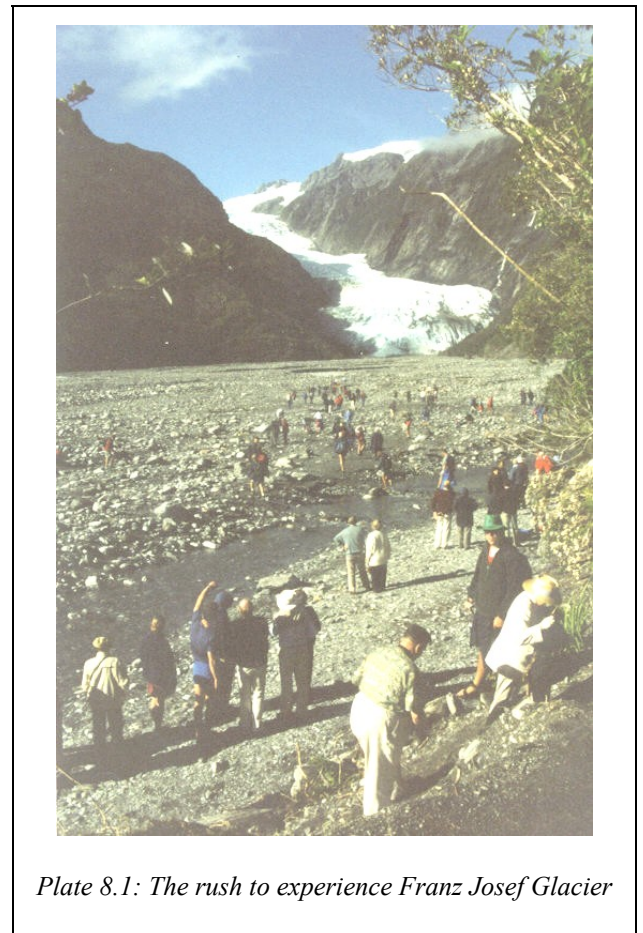


Plate 8.1: The rush to experience Franz Josef Glacier

The limited visitor perceptions of risk can be interpreted in several ways. For instance, the glacier environments are not within the common experiences of most visitors. While some

literature suggests that novel situations are likely to produce higher risk perceptions (eg., Carter, 1998; Margolis, 1996; Oskamp, 1982), it is possible that for visitors to the glaciers this is overridden by a perception that others are in control of the hazards at the site. Perceptions are also influenced by how other visitors are behaving, and the preconceptions of New Zealand as a safe destination. Promotional images of the glaciers also emphasise fine weather conditions and scenic vistas, and contain few safety messages.

8.3.1.2 Visitor behaviour and communication effectiveness

A high proportion of visitors at the glaciers failed to comply with the written appeals of managers to stay within the marked safety zones. There are multiple explanations for non-compliance, although these can be summarised as two main possibilities. First, tourists may not perceive any risk or recognise the managers' attempts to warn them of the hazards. This implies that the non-compliance issues are a consequence of ambiguous or incredible hazard communication. Second, tourists may acknowledge and accept risk in order to realise their ambitions, or as a consequence of evaluating compliance costs and benefits. This implies that non-compliance is a result of factors beyond the basic elements of effective communication. The findings of the current study suggest evidence of both possibilities. Further discussion of these explanations is presented below.

Visitor behaviour at the glaciers has concerned managers and hazard experts because it is sometimes perceived as unsafe. Several explanations for visitor behaviour are presented in this dissertation, informed by the literature review in Chapters 3 and 4. One explanation links perceptions with behaviour. If perceptions of risk associated with an activity are low, the individual is less likely to be dissuaded from the activity. Risk perceptions are influenced by multiple factors, including individual expectation, experience, attitude, and personality disposition (Leiss & Chociolko, 1994; Slovic et al., 2000c; Tobin & Montz, 1997). Perceptions are also influenced by situational factors such as the nature of the physical environment and the behaviour of other people. The situational context includes communication, and the current management agency uses text-based warning messages in its attempt to influence visitor behaviour.

At the glaciers, there is some evidence to suggest that the introduced pictorial signs were influential in increasing warning compliance. This is consistent with other studies where

increases in compliance have been associated with greater salience (Glover & Wogalter, 1997; Hathaway & Dingus, 1992; Wogalter & Young, 1994). Observations of visitors also suggested that the behaviour of other people was an important factor influencing compliant behaviour. When visitors were observed beyond the recommended 'safety' zone, this appeared to legitimise the behaviour of ignoring the access restriction. This social facilitation effect has been noted in many different contexts (Baldwin & Baldwin, 1986; Harrell, 1991).

In addition to the social-psychological dimensions of communication, it is also likely that behaviour at the glaciers is influenced by the cultural and institutional contexts to which individual visitors have been exposed. The literature in Chapter 4 suggested, for instance, that people travelling away from their home environments and communities, often act in ways that they would not while at home (Peillon, 1993; Ryan, 1993; Ryan & Kinder, 1996; Ryan & Robertson, 1994). Some authors have linked the risk behaviour of tourists to the absence of clear norms and social rules (Kruhse-MountBurton, 1995; Ryan & Hall, 2001; Ryan & Kinder, 1996; Weber, 2001; Wickens, 1997). Tourists may act in non-compliant ways because they are temporarily 'out of society'. Moreover, if Furedi's (1997) identification of a 'new moral consensus' of safety is accurate, tourists who deliberately disregard management's requests at the glaciers can be seen as transgressors of the new morality. In this sense, tourism and recreation represent opportunities to cast off 'sensible' constraints.

Freedom from the normative constraints of home societies, combined with a leisure context of relaxation and novelty, is also likely to prompt more risky behaviour (Wickens, 1997). For some tourists, responsibility for safety may be (subconsciously or otherwise) delegated to those perceived to be providing the experience (Dann, 1996), although there is little direct evidence for this in the present work.

8.3.2 Managers and risk

The second important aspect of the study was the investigation of managers and risk. An appreciation of managers' risk perceptions is an important dimension in understanding the significance of risk in natural resource recreation and tourism settings.

8.3.2.1 Managers' perceptions of risk

While not quantified in the present study, it is evident that the risk perceptions of managers differ from those of visitors to the glaciers. This is consistent with the pattern in other risk perception research where experts and the public have been found to differ (see Section 3.2.1). In general, glacier visitors perceive risk to be moderate or low, whereas managers (especially those working at the field level) perceive risk as high. Factors affecting managers' experiences of risk include perceived obligations, organisational culture, the legacy of Cave Creek, and beliefs about social intolerance of risk.

The Department of Conservation has two key interests in its management of risk at the glaciers, and at other recreation and tourism sites: i) loss incurred by visitors (injury and accident); and ii) loss incurred by the agency (legal, financial, and political). Although it is not possible to determine which of these takes overall priority, the evidence presented in Chapter 7 suggested that different interests exist at two distinct management levels. Managers who work in the glacier environment portray risk in terms of threats to visitor safety, and their own sense of vulnerability to legal liability. Managers in more senior roles emphasise the range of risks to the agency (financial, political, and legal), and can be seen to have used the accident at Cave Creek, and the 'new morality' of public safety, to justify the development of business-oriented systems, and to achieve improved funding outcomes for the agency.

8.3.2.2 Risk management and communication

At present, DOC appears focused on risk management, giving rise to a plethora of systems, checks, and balances for averting risk to visitors and the agency. As a result of this recent emphasis, DOC has amassed a great deal of information about the hazards faced by visitors and the risks to visitors and the agency. Little is known by DOC, however, about the visitors themselves.

Risk communication at the glaciers is undertaken for two main reasons. First, there is a perceived obligation to inform visitors of natural hazards, and to encourage appropriate behaviour. Second, risk communication can be interpreted as an attempt to transfer some of the responsibility for risk at the glaciers. Despite management attempts to present a message of risk, the evidence presented in Chapter 6 demonstrated that many visitors remain ignorant

and even dismissive of the extent of risk to their safety. Some explanations for this are given in Section 8.3.1 above. Further, in assuming responsibility for hazard management at the glaciers, DOC has reduced the likelihood that responsibility for visitor safety will be a shared one. What initially appears to be a comprehensive risk management strategy for improving the safety of visitors is deficient in the sense that it does not focus on visitor behaviour.

The communication of hazard and risk at the glaciers is difficult, not least because of the leisure context and transient nature of tourists, visitors' tendency to focus on the attraction (rather than messages peripheral to their experiences), language difficulties, and reluctance among tourism promoters to suggest to their clients that risk exists. Aesthetic considerations further complicate the communication challenge. Given the natural character of settings such as the glaciers, written communication is expected to remain appropriate to the sites. This limits the nature and scope of hazard warning signs in many natural recreation areas.

8.3.2.3 Legal and administrative context

The perceived legal and moral obligations of DOC managers were investigated in order to understand their influences on risk communication and hazard management. The findings in Chapter 7 suggested that managers at different levels of the organisation perceived strong legal responsibilities to insure against risk. How the risks were defined appeared dependent on the status of the manager. The perceptions and attitudes of managers can be interpreted within the context of wider social and historical influences such as changes to health and safety legislation, the demand for greater organisational accountability (ethically and financially), and the accident at Cave Creek. Several managers remained uncertain about their specific responsibilities to visitors, yet perceived a general social 'mood' of risk intolerance.

8.3.2.4 Balancing expectations of safety with demands for nature experiences

Ambiguous legal obligations, visitor interest in experiencing natural settings, and communication challenges, suggest an emerging dilemma for managers of protected natural areas in New Zealand. DOC managers perceive a high degree of social expectation for safety, as well as a strong demand for nature-based experiences. DOC's problem is compounded by an unusual set of circumstances such as unrestricted public access, physically dynamic

environments, active promotion of many natural sites, and the limited experience of visitors. While some visitors to the glaciers engage the services of professional guides, the vast majority are independent travellers who rely on their own judgement and available information to negotiate the sites. The dilemma for managers exists in their attempts to balance the rights of public access and visitor demand for exploring natural settings, while satisfying perceived legal and moral responsibilities for safety.

8.3.3 Society and risk

Several sociologists have claimed that Western societies are currently experiencing a rise in individualism and a related pre-occupation with risk (eg., Beck, 1992; Furedi, 1997; Giddens, 1994; Luhmann, 1993). Describing the ‘risk society’, Beck (1992) argued that individuals must now construct their own biographies, free from the constraints of social structures that previously made most aspects of life fixed and inevitable. An important consequence of this development is that many life outcomes are now the responsibility of individuals, thereby increasing levels of uncertainty, and perceptions of risk. Similarly, Furedi (1997) argued that the fragmentation of agreed social roles has contributed to an atmosphere of doubt and vulnerability, and an obsession with health, safety and security.

The risk society is the macro-context in which some tourists make their visits to natural resource settings, and in which managers attempt to provide opportunities for satisfying visitor experiences. The attitudes and risk perceptions of DOC managers are consistent with the notion of societal risk aversion claimed by Furedi (1997), Lash et al. (1996) and Lübbe (1994). The findings and analysis in Chapter 7 suggested that DOC managers are significantly influenced by legal and moral obligations, a risk management culture, and perceived social expectations of safety. In turn, these factors have an impact on how DOC approaches visitor management, including the communication of natural hazards.

Visitors to the glaciers, however, do not appear to be the ‘cautious’ and safety conscious individuals that may have been anticipated in a risk and safety obsessed society. While most visitors originated from societies where risk aversion is thought to be emphasised, many interviewees manifested the discourse of risk acceptance, rather than risk aversion. For instance, visitors (especially those from New Zealand) often rejected the idea that management should do more to protect visitors at the sites, and articulated a theme of

personal responsibility for safety. If Beck (1992) and Furedi (1997) are correct in their contention that people from these societies are more risk aware than ever before, it might have been expected that visitors to the glaciers would be more safety conscious, and less prepared to accept risk than they appeared to be. The findings on risk and responsibility, however, need to be interpreted in their full context. Visitors also appeared ignorant of many natural hazards and, therefore, their assumption of responsibility for safety remains uncertain.

Visitors and managers operate in different risk dimensions. For the visitor, hazards are not apparent, and the risks are small. They experience the glaciers in a leisure context, to explore, have fun, and see places they may never see again. To the visitor, the glaciers are like any other tourist attraction: well managed, consumable, and safe. For managers, risk is a major part of their experience of the glaciers. Risk may be magnified for managers through their own experiences of the natural hazards, observations of visitor behaviour, perceptions of legal obligations and consequences, and their belief in the social demand for safety (the ‘new moral consensus’). The implications of this, and those of other findings are discussed in Section 8.4 below.

8.4 Implications of the research findings

There are clear, indisputable physical risks to visitors at the glacier sites. The settings are dynamic places where the natural processes of rock, water, and ice represent hazards to visitors who are largely inexperienced and unprepared. Management records, the media, and other incident reports document that fatal accidents, injuries, and near misses have occurred at Fox and Franz Josef glaciers on a regular, although infrequent, basis.

The existence of risk at the glaciers is a simple function of the presence of people in areas where natural hazards inhere. Far more complicated are the decisions about how significant the risk actually is, and how it should be managed. This research has established that most visitors to the glaciers have a limited understanding of natural hazards, and perceive risk as low at the sites. That hazards are present but not recognised by visitors raises some important ethical and political issues about the extent to which it is necessary to inform visitors about the risks that natural areas may contain.

The findings of the present study make it clear that some managers interpret the glaciers as high risk environments. It is possible that these managers overestimate the risks to visitors as a consequence of their anticipated obligations. One outcome of managers' risk perceptions is an over-emphasis on physical risk that will undermine visitor satisfaction and experience. Similarly, a preoccupation with agency risk will threaten the experience opportunity altogether. This research has identified an element of confusion among some managers concerning where their responsibilities to protect visitors begin and end. In order to avoid unnecessary focus on hazard management, the Department's legal position needs to be clarified for managers. It is critical that risk management is balanced with management of other aspects of the visitor experience.

Key informant interviews in this study established that managers at the glaciers are concerned about some aspects of visitor behaviour, especially the low level of compliance with agency appeals for visitors to remain within identified safety zones. Observations of visitor behaviour confirmed the nature and extent of transgressions, and indicated that current DOC strategies were ineffective in ensuring compliance. Other findings implied that some increases in visitor hazard awareness, and increased compliance, were possible through manipulation of sign salience and use of pictorial messages. Observations and interviews suggested, however, that multiple factors contribute to the non-compliance situation, and that signs alone will not effect the level of behaviour change sought by DOC to ensure visitor safety at the glaciers.

Among the factors likely to influence visitor perceptions of risk and appropriate behaviour at the glaciers, are the expectations of visitors and social norms operating within and between groups. To the extent that managers of recreation and tourism settings wish to effect behavioural change, they also need to understand the salient outcomes for specified reference groups (Adams et al., 1998; Fishbein & Manfredo, 1992; Pearce 1988). The importance to tourists of particular experiences (such as touching the ice) need to be identified. It is also necessary for managers to recognise that a diverse visitor population will require a variety of communication approaches and programmes to achieve compliance with management requests. Tourists at the glaciers are not a uniform group, and represent cultures where natural settings, expectations of management, as well as the first language spoken, may well differ from those in New Zealand. Effective persuasion is more likely if messages can be tailored to particular audiences (McCool & Braithwaite, 1992). This reinforces the point that

natural resource recreation and tourism agencies must understand the visitors in order to manage hazards and risk effectively.

Risk aversion is an emergent characteristic of the social structure in many modern Western societies. There are multiple implications of this phenomenon for visitors to, and managers of, natural resource recreation and tourism areas. For managers, there may be a tendency to overestimate the hazards and risks to visitors, and pursue unsustainable and unnecessary mechanisms in order to reduce the natural hazards to visitors and risks to their agencies. For visitors to high-use, front-country sites, the implication is that experiences will be subject to increasing management, with additional signs and barriers to facilitate 'safe' experiences. In turn, this is likely to raise visitors' expectations of management, and the illusion of management's control over hazards and risk. An additional consequence of high safety expectations is agencies and operators reluctant to offer some recreation opportunities, unless their liability can be waived.

The extent to which managers are willing, obliged, or expected to become involved in managing risks inherent in the visitor's experience has important implications for freedom in natural recreation and tourism settings. Communication of risks and hazards to visitors exists on a continuum traversing information, advice, and explicit warning, and should be matched to the likely visitor group. The challenge for managers of natural resource settings in New Zealand is that often a diverse group of people visit these areas, differing in age, experience, and country of origin. Perceptions of risk and hazard among these visitors differ, as do responses to risk communication attempts by the management agency.

If management intends to enhance visitor awareness of risk at natural resource sites, further research and attention to hazard communication strategies is required. The redesign of warning signs is one aspect of this, especially given likely increases in visitors from travel markets such as China and Thailand, where language and cultural differences will present obvious communication challenges. Other strategies should include the development of a safety code, and improved co-ordination between the land management agency and the wider tourism industry. Creating more realistic visitor expectations and appropriate visitor behaviour is not solely the responsibility of DOC. The industry must play a role beyond the promotion of New Zealand as a safe, friendly, and fun-filled destination, and help to improve visitor appreciation of the hazards inherent in the dynamic landscapes they come to enjoy.

It is also important to acknowledge the importance of the economic context within which DOC operates, at both the site-specific and national level. The glaciers are at the heart of West Coast tourism, any interruption of the access to which, potentially threatens the economic and social viability of the region. In this regard, although the present study established that visitors to the glaciers perceived the sites as ‘safe’ places for tourists, it is clear from other research that tourism destinations are vulnerable to changes in consumer confidence and travellers’ perceptions of risk. Even isolated incidents have the potential to influence negatively the numbers of tourists to specific destinations.

8.5 Future research ideas: Natural hazard, risk, and tourism research in New Zealand

This research has suggested that risk is an important and multi-faceted phenomenon that has increasing relevance to recreation and tourism management. The study has also revealed additional questions, which may form the basis of future research projects. Some of these are identified below.

1. Further examination of message compliance in recreation and tourism field settings is required. This should include specific focus on the factors affecting compliance, with an emphasis on tracking and gaining qualitative information from visitors. In particular, information will be useful from visitors whose English language comprehension is limited.
2. A detailed study of how international visitors perceive the responsibilities of tourism and recreation managers is needed. Such a study would allow the concept of implicit social contracts to be explored, including the specific expectations of, and assumptions made by, visitors to natural resource and other tourism settings. This topic requires qualitative attention beyond the scope of the present study.
3. Research on hazard and risk awareness among visitors to other recreation and tourism sites in New Zealand is required. A range of sites would give useful comparative information.
4. Additional research on the effectiveness of communicating hazard (and other) messages using pictorial signs is needed, and should explore a range of texts and illustrations. Initial studies might consider formally recording visitor responses to

pictorials as these have the potential to be ambiguous, contentious, or interfere with the visitor experience.

5. A broad-based study of the risks tourists perceive in their visits to New Zealand is required. The media image of New Zealand as 'clean, green, friendly, and safe' is one that demands critical examination.
6. There is potential to study the role of guidebooks and other promotional material in contributing to the formation of hazard and risk perceptions of specific sites within New Zealand. Prospective visitors might be interviewed prior to their arrival at the sites (or even prior to their arrival in New Zealand) to determine their levels of comprehension concerning hazards present in their itineraries. They could then be interviewed on return.

8.6 Concluding remarks

Risk is a complex concept present in a diverse range of situations including the experience and management of recreation and tourism. Individuals, organisations, and societies differ in their assessments of what is at risk, how significant the risk is, and who is responsible for it. In protected natural areas, the 'true' risk to visitors or management agencies cannot be known, yet the perception of risk clearly influences how such places are used and managed. An understanding of risk in recreation and tourism settings is only possible when the linked dimensions of individual visitors, those responsible for park management, and the macro-social context are considered together.

Most tourists to natural attractions in New Zealand conduct their visits in relative autonomy, yet have little or no understanding of the settings they enter. The tourist industry itself is largely uncoordinated, and visitors are free to construct their own travel itineraries, and explore natural places independently. This freedom principle is embedded within the New Zealand natural resource recreation experience, a feature which represents significant challenges for managers, especially in the context of a risk-oriented society. The extent to which the risk phenomenon continues to influence tourist experience and visitor management, will depend upon the level of individual hazard awareness, and the social acceptance of hazards as inherent aspects of New Zealand's natural resource settings.

Together, the multiple dimensions of this study represent an interesting and complex situation, in which tourists to natural attractions seek to escape the limits and constraints of their everyday urban lives for a temporary experience of nature. Most tourists, however, originate from within the 'risk society', and, therefore, they carry part of this culture with them in their travels. To this extent, they are not completely free from the constraints of their home lives, and may even assume that a similar safety culture exists in New Zealand.

Yet tourists do not demonstrate an awareness of risks at the glaciers. Perhaps this is because they interpret the natural setting as free of the technological and environmental risks which surround the urban environment. The reaction of some visitors to attempts by DOC managers to restrict access at the glacier sites is also indicative of the freedom that tourists seek in their recreation, although it is open to speculation just how accepting of risk tourists would be in the event that the apparently benign natural conditions turned against them. Underlying the attitudes and behaviour of some visitors in this study, is a likely belief that the risks and hazards are well controlled by management, and that no access would be permitted if the sites were genuinely dangerous. In this sense, tourists are unlikely to accept the negative consequences of freedom, and will expect a degree of safety to underpin their experiences. These physical, individual, and social features create an especially complex problem for managers who must attempt to balance the visitor experience between a desire for freedom in nature, and an implicit expectation of safety. This may be the partial escape that tourists seek, a virtual freedom within the confines of the risk society.

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Appendices

Glacier Visitor Survey 1998

PLEASE HELP BY COMPLETING THIS SURVEY NOW!

We are interested in your views about hazards and safety in this area. We need to learn more about how you feel so that this natural area can be managed in the best way possible. This survey is part of a larger study being undertaken throughout 1998. **All answers are valued and strictly confidential.**

Most questions ask you to rate your opinion on a scale. You do this by choosing the number that most closely matches your view. Some statements may appear repetitive. **Please do your best to give an answer for each.**

Please give **your own** answers. Do not give the answers of other people, or answers which you think may be more acceptable. **We are interested in YOUR views. There are no correct or incorrect answers.**

***1 In your opinion, how safe is:**

(please circle one number only)

- New Zealand as a tourist destination very safe 1 2 3 4 5 6 7 very unsafe
- Your own country (if other than NZ) as a tourist destination .. very safe 1 2 3 4 5 6 7 very unsafe
- This glacier as a tourist destination very safe 1 2 3 4 5 6 7 very unsafe

***2 Please show how much you agree or disagree with the statements provided. On the scale, the number 1 = complete agreement with (or support for) the statement, while the number 7 = complete disagreement with (or no support for) the statement.**

	STATEMENT	CIRCLE THE NUMBER WHICH SHOWS YOUR VIEW
1	This natural area appears to be stable and predictable	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
2	This seems like a safe area to visit	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
3	I feel as though I'm taking a risk in visiting this glacier	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*4	Any hazards at this glacier appear to be well controlled by management	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
5	As a visitor to this area, I feel as though I am exposing myself to physical danger	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree

6	I would not be surprised to learn that this is a dangerous place to visit	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*7	The physical nature of this area makes me concerned for my personal safety	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
8	While here, I have often thought about hazards to which I might be exposed	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
9	I am aware of natural hazards in this area	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*10	At this glacier, I have at times felt unsafe	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
11	This natural area strikes me as unpredictable and unstable	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
12	I have not thought about hazards at this glacier	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*13	While at the glacier, I have not been concerned for my personal safety	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
14	There are dangers at this glacier which are obvious to me	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
15	Any hazards here seem to be beyond the control of management	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*16	While visiting the glacier, I have felt secure	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
17	I would be surprised to find out that this is a dangerous place to visit	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
18	I feel physically vulnerable in this area	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*19	I am not aware of any natural hazards in this area	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
20	As a visitor to this site, I feel responsible for my own safety	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
21	Visitors should be held more accountable for their actions in natural areas like this one	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*22	Managers should do more to protect visitors from harm in natural areas	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
23	As a visitor to this glacier, I have assumed that I am well protected from any dangers	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
24	While I am at the glacier, my safety is the responsibility of those who manage the area	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree

*25	I would like to see more obvious evidence of management at this glacier	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
26	Management should prevent access to areas which might be dangerous	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
27	I should be allowed to decide where it is safe to go	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*28	I prefer to look after my own safety while at this place	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
29	I am reliant on others for my safety at this glacier	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
30	If visitors will not accept responsibility for their own safety they should not visit this glacier	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
*31	I would prefer less obvious management in this area	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
32	I prefer others to be in charge of my safety in this area	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
33	A little danger is an accepted part of visiting a natural area like this	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree
34	Those who manage this area have an obligation to inform me about all things which might affect my safety	Completely Agree <u>1 2 3 4 5 6 7</u> Completely Disagree

*3 What hazards or dangers (if any) have you been aware of **while visiting this glacier**?
Please use these spaces to list.

1	6
2	7
3	8
4	9
5	10

I am not aware of any hazards at this glacier ρ
(tick only if this applies)

*4 While visiting this glacier, have you been aware of signs or messages warning you of hazards or dangers? (please tick)

ρ YES
ρ NO
(if NO go to Q6
on the next page)

5 If YES can you recall what these signs or messages have warned you about? (please list)

1	6
2	7
3	8
4	9
5	10

I have been aware of the signs or messages, but I can't recall what they have warned me about
 ρ

***6** While visiting **this glacier**, have you been aware of signs or structures which have restricted your access to parts of the glacier? (please tick)
 ρ YES
 ρ NO
 (if NO go to Q8)

7 If YES, did you enter any restricted areas? (please tick)
 ρ YES, with a professional guide
 ρ YES without a professional guide
 ρ NO

***8** How close did you get to the glacier face itself? (please tick one only)
 ρ I did not go all the way to the glacier face
 ρ Close enough to touch the glacier face
 ρ I went as close as the barrier would allow

9 Would you have liked to get closer to the glacier face? (please tick)
 ρ YES
 ρ NO

Finally, we require some more general information

***10** Where do you normally live? (please write these in the spaces below)

Town /City:..... (specify) Country/Nation: (specify)

11 **Are you:** Male ρ or Female ρ
 (please tick)

12 Which of these categories describes your age? (please tick)

- | | |
|-----------------|----------------------|
| 1 ρ 15 – 19 yrs | 7 ρ 45 – 49 yrs |
| 2 ρ 20 – 24 yrs | 8 ρ 50 – 54 yrs |
| 3 ρ 25 – 29 yrs | 9 ρ 55 – 59 yrs |
| 4 ρ 30 – 34 yrs | 10 ρ 60 – 64 yrs |
| 5 ρ 35 – 39 yrs | 11 ρ 65 – 69 yrs |
| 6 ρ 40 – 44 yrs | 12 ρ 70 yrs and over |

***13** Which of the following best describes your travelling group? (please tick **one** only)

I am visiting the glacier:

- Alone
- With my partner
- With my friends
- With my family group
- With my family (or partner) and friends
- With an organised tour
- With a club
- Other (please specify here).....

***14** Are you visiting the glacier with children under your care? (please tick) YES (go to Q15)
 NO (go to Q16)

15 Please indicate the age of the youngest child under your care (please tick one only)

- under 2 years
- 2 – 4 years
- 5 – 9 years
- 10 or more years

***16** My visit to the glacier today is..... (please tick one only)

- Independent of a guide
- Guided by a professional
- Guided by friend or family member

***17** Approximately how much time will you spend visiting this glacier? (please tick one only)

- ¼ hour (15 minutes) or less
- ½ hour (30 minutes)
- ¾ hour (45 minutes)
- 1 hour (60 minutes)
- 1½ hours (90 minutes)
- 2 hours (120 minutes)
- 2½ hours (150 minutes)
- 3 hours (180 minutes)
- 4 hours (240 minutes)
- 5 hours (300 minutes) or more

18 While in the Glacier region, I will visit..... (please tick one only)

- Both Fox and Franz Josef Glacier
- Only this glacier

***19** Did you visit the Department of Conservation Information Centre (in the township) before arriving at this glacier? (please tick one only)

- YES
- NO

20 In your home country (where you live), about how often do you visit largely unmodified natural areas? (please tick one only)

- never
- once every two years
- once a year
- twice a year
- between 3 and 5 times a year
- between 6 and 10 times a year
- more than 10 times a year

THANK YOU FOR YOUR TIME. YOUR COOPERATION AND HONESTY IN
COMPLETING THIS SURVEY ARE GREATLY APPRECIATED.

ENJOY YOUR VISIT!

This research is undertaken with the authority of the Department of Conservation,
and in association with Lincoln University.

Gletscherbesucherumfrage 1998

Uns interessieren Ihre Ansichten über Gefahren und Sicherheit in dieser Gegend. Wir möchten gern mehr darüber wissen, wie Sie sich hier fühlen, so daß diese natürliche Gegend so gut wie möglich verwaltet werden kann. Diese Umfrage ist Teil einer weiteren Studie, die 1998 in verschiedenen neuseeländischen Orten stattfindet. **Alle Antworten sind für uns wertvoll und werden streng vertraulich behandelt.**

Für die meisten Fragen werden Sie gebeten, Ihre Meinung auf einer Skala anzudeuten. Bitte tun Sie das indem Sie die Nummer einkreisen, die am besten Ihre Meinung beschreibt. Einige Aussagen können wiederholt erscheinen. **Bitte tun Sie Ihr Möglichstest, um auf jede Aussage zu antworten.**

Bitte geben Sie **Ihre eigenen** Antworten. Geben Sie nicht die Antworten von anderen Leuten oder Antworten, von denen Sie denken, daß sie akzeptabler sind. **Uns interessieren IHRE Ansichten. Es gibt keine richtigen oder falschen Antworten.**

1 Ihrer Meinung nach, wie sicher ist: (bitte nur **eine** Nummer einkreisen)

- Neuseeland als Reiseziel..... sehr sicher 1 2 3 4 5 6 7 sehr unsicher
- Ihr eigenes Land (falls es ein anderes als Neuseeland ist) als Reiseziel sehr sicher 1 2 3 4 5 6 7 sehr unsicher
- Dieser Gletscher als Reiseziel..... sehr sicher 1 2 3 4 5 6 7 sehr unsicher

2 Bitte zeigen Sie an, sie sehr sie einverstanden oder nicht einverstanden sind mit den folgenden Aussagen. Die Nummer 1 auf der Skala bedeutet komplette Übereinstimmung mit (oder Unterstützung für) eine Aussage, während die Nummer 7 andeutet, daß Sie anderer Meinung sind (oder diese Aussage nicht unterstützen).

	AUSSAGE	BITTE KREISEN SIE DIE NUMMER EIN, DIE AM BESTEN IHRE MEINUNG ZEIGT
1	Diese natürliche Gegend scheint stabil und berechenbar zu sein	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
2	Dies scheint ein sicherer Ort zu sein	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
3	Ich fühle mich, als ob ich ein Risiko eingehe, während ich diesen Gletscher besuche	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
4	Die Gefahren am Gletscher scheint das Management gut zu kontrollieren	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
5	Als Besucher fühle ich mich hier körperlichen Gefahren ausgesetzt	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung

6	Es würde mich nicht überraschen, zu erfahren, daß dies eine gefährliche Gegend ist	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
7	Die physische Natur dieser Gegend macht mich besorgt um meine persönliche Sicherheit	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
8	Während ich hier war, habe ich oft über die Gefahren, denen ich ausgesetzt sein könnte, nachgedacht	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
9	Ich bin mir der natürlichen Gefahren in dieser Gegend bewußt	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
10	Hier am Gletscher habe ich mich manchmal unsicher gefühlt	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
11	Diese natürliche Gegend kommt mir unberechenbar und instabil vor	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
12	Ich habe über Gefahren an diesem Gletscher nicht nachgedacht	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
13	Während ich hier am Gletscher war, habe ich mir über persönliche Sicherheit oder über die Sicherheit anderer in meiner Obhut keine Gedanken gemacht	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
14	Es gibt hier an diesem Gletscher für mich sehr eindeutig Gefahren	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
15	Die Gefahren hier scheinen außerhalb der Kontrolle vom Management zu liegen	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
16	Während ich diesen Gletscher besuchte, habe ich mich sicher gefühlt	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
17	Es würde mich überraschen, herauszufinden, daß dies eine gefährliche Gegend ist	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
18	Ich fühle mich körperlich verletztlich in dieser Gegend	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
19	Ich bin mir nicht bewußt, daß es hier natürliche Gefahren gibt	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
20	Als Besucher hier fühle ich mich verantwortlich für meine eigene Sicherheit	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung

21	Besucher sollten selber mehr verantwortlich sein für ihr Handeln in natürlichen Gegenden wie dieser	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
22	Manager sollten mehr tun, um Besucher vor Schaden in natürlichen Gegenden zu schützen	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
23	Als Besucher an diesem Gletscher habe ich angenommen, daß ich gut for Gefahren geschützt werde	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
24	Während ich an diesem Gletscher bin, ist meine Sicherheit die Verantwortung von denen, die die Gegend verwalten	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
25	Ich würde gern mehr offensichtliche Anzeichen von Management sehen	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
26	Das Management sollte Zutritt zu Gegenden, die vielleicht gefährlich sind, verhindern	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
27	Es sollte mir erlaubt sein, selber zu entscheiden, wo es sicher ist	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
28	Ich passe lieber selber auf meine Sicherheit auf, während ich hier bin	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
29	Ich verlasse mich auf andere für meine Sicherheit, während ich hier bin	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
30	Wenn Besucher keine Verantwortung für ihre eigene Sicherheit übernehmen wollen, dann sollten sie diesen Gletscher nicht besuchen	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
31	Ich würde hier gern weniger offensichtliche Anzeichen von Managementpräsenz sehen	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
32	Ich ziehe es vor, für meine Sicherheit in dieser Gegend selber verantwortlich zu sein	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
33	Ein bißchen Gefahr ist ein akzeptabler Teil eines Besuches in einer natürlichen Gegend wie dieser	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung
34	Management hat eine Verpflichtung, mich über alles, was meine Sicherheit hier betrifft, zu informieren	Stimme absolut zu <u>1 2 3 4 5 6 7</u> Bin anderer Meinung

3 Welcher Risiken oder Gefahren (falls überhaupt welcher) sind Sie sich bewußt gewesen während Sie diesen Gletscher besuchten? Bitte benutzen Sie die untenstehenden Zeilen, um diese aufzulisten.

1	6
2	7
3	8
4	9
5	10

Ich bin mir keiner Gefahren an diesem Gletscher bewußt ρ
 (bitte nur ankreuzen falls Sie zustimmen)

4 Während Sie diesen Gletscher besuchten, sind Sie sich Schilder oder Nachrichten bewußt gewesen, die Sie vor Risiken oder Gefahren warnten? (bitte ankreuzen) ρ JA
 ρ NEIN
 (falls NEIN, gehen Sie zu Frage 6)

5 Wenn Sie JA geantwortet haben zu Frage 4, können Sie sich erinnern, wovor Sie diese Schilder oder Nachrichten gewarnt haben? (bitte auflisten)

1	6
2	7
3	8
4	9
5	10

Ich bin mir dieser Schilder und Nachrichten bewußt gewesen, kann mich aber nicht erinnern, wovor sie mich warnten ρ

6 Während Sie diesen Gletscher besuchten, sind Sie sich Schildern oder Absperrungen bewußt gewesen, die Ihnen den Zutritt zu Teilen des Gletschers verwehrten? (bitte ankreuzen) ρ JA
 ρ NEIN
 (falls NEIN, bitte gehen Sie zu Frage 8)

7 Falls Sie JA zu Frage 6 geantwortet haben, haben Sie Teile des Gletschers besucht, wo der Zutritt eingeschränkt war? (bitte ankreuzen) ρ JA, mit Führer
 ρ JA, ohne Führer
 ρ NEIN

8 Wie nahe sind Sie an den Gletscher herangegangen? (bitte nur eine Antwort ankreuzen) ρ Nicht bis ganz an die Gletscherwand
 ρ Nah genug, um den Gletscher anzufassen
 ρ Ich bin so nah herangegangen, wie es die Absperrung zuließ

9 Wären Sie gern näher an den Gletscher herangegangen? (bitte ankreuzen) ρ JA

Zum Schluß brauchen wir noch allgemeine Information

10 Wo leben Sie normalerweise? (bitte schreiben Sie in die untenstehenden Zeilen)

Wohnort: Land/Nationalität:
 (bitte hier angeben) (bitte hier angeben)

11 Sind Sie: Männlich ρ oder Weiblich ρ
 (bitte ankreuzen)

12 In welche der folgenden Kategorien fallen Sie altersmäßig? (bitte ankreuzen)

- | | |
|-----------------|----------------------|
| ρ 15 – 19 Jahre | ρ 45 – 49 Jahre |
| ρ 20 – 24 Jahre | ρ 50 – 54 Jahre |
| ρ 25 – 29 Jahre | ρ 55 – 59 Jahre |
| ρ 30 – 34 Jahre | ρ 60 – 64 Jahre |
| ρ 35 – 39 Jahre | ρ 65 – 69 Jahre |
| ρ 40 – 44 Jahre | ρ 70 Jahre und älter |

13 Welche der folgenden Kategorien beschreibt Ihre Reisegruppe am besten? (bitte nur **eine** Antwort ankreuzen)

Ich besuche diesen Gletscher:

- | | |
|----------------------|--|
| ρ Alleine | ρ Mit meiner Familie (oder Partner) und Freunden |
| ρ Mit meinem Partner | ρ Mit einer organisierten Tourgruppe |
| ρ Mit Freunden | ρ Mit einem Club |
| ρ Mit meiner Familie | ρ Oder (bitte geben Sie hier an)..... |

14 Besuchen Sie den Gletscher mit Kindern in Ihrer Obhut?(bitte ankreuzen) ρ JA (bitte gehen Sie zu Frage 15)
 ρ NEIN (bitte gehen Sie zu Frage 16)

15 Wie alt ist das jüngste von den Kindern in Ihrer Obhut? bitte ankreuzen) ρ Jünger als 2 Jahre
 ρ 2-4
 ρ 5-9 Jahre
 ρ 10 Jahre oder älter

16 Mein Besuch am Gletscher heute ist.. (bitte nur eine Möglichkeit ankreuzen) ρ Professionell geführt
 ρ Ohne Führer
 ρ Von Freunden oder Familie geführt

17 Wie lange ungefähr planen Sie heute an diesem Gletscher zu bleiben? (bitte nur **eine** Möglichkeit ankreuzen)

- | | |
|---|--|
| ρ ^{1/4} Stunde (15 Minuten) oder weniger | ρ 2 Stunden (120 Minuten) |
| ρ ^{1/2} Stunde (30 Minuten) | ρ 2 ^{1/2} Stunden (150 Minuten) |
| ρ ^{3/4} Stunde (45 Minuten) | ρ 3 Stunden (180 Minuten) |

ρ 1 Stunde (60 Minuten)
ρ 1^{1/2} Stunden (90 Minuten)

ρ 4 Stunden (240 Minuten)
ρ 5 Stunden (300 Minuten) oder mehr

- 18 Während Sie in der Gletscherregion sind, werden Sie.....
(bitte nur eine Möglichkeit ankreuzen)
- ρ Fox und Franz Josef Gletscher besuchen
ρ Nur diesen Gletscher besuchen
- 19 Haben Sie das Department of Conservation Auskunftsbüro (im Ort) besucht bevor Sie hier am Gletscher ankamen? (bitte ankreuzen)
- ρ JA
ρ NEIN
- 20 In Ihrem Heimatland (wo Sie leben), wie oft besuchen Sie weitgehend im Naturzustand belassene Gegenden?
(bitte nur eine Möglichkeit ankreuzen)
- ρ Nie
ρ Einmal alle zwei Jahre
ρ Einmal pro Jahr
ρ Zweimal pro Jahr
ρ Drei bis fünfmal pro Jahr
ρ Sechs bis zehnmal pro Jahr
ρ Mehr als zehnmal pro Jahr

DANKE FÜR IHRE ZEIT. WIR WISSEN IHRE KOOPERATION UND
AUFRICHTIGKEIT ZU SCHÄTZEN.

VIEL SPASS BEI IHREM BESUCH!

Diese Untersuchung wird mit der Erlaubnis des Department of Conservation und in Assoziation mit der Lincoln Universität ausgeführt.
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INFORMATION FÜR TEILNEHMER

Sie haben an der Gletscherbesucherumfrage 1998 teilgenommen. Diese ist Teil einer weiteren Studie, die sich mit Besucheransichten über Risiken und Gefahren in natürlichen Gegenden befasst. Eines der Ziele dieser Studie ist es, herauszufinden, wie bewußt Besucher sich der Gefahren in natürlichen Gegenden in Neuseeland sind und welche Warnschilder (falls überhaupt welche) am wirkungsvollsten über diese Gefahren informieren. Um dies zu erreichen, hat der Forscher verschiedene Gefahrenwarnschilder auf dem Gletscherzugangsweg plaziert. Einige der Gefahren, auf die diese Schilder hindeuten, sind echte Gefahren der Gegend während andere es nicht sind. Es ist wichtig, daß beide, also berechnigte und unberechnigte Gefahrenwarnungen benutzt werden, so daß wir die Wirkung der Schilder bemessen können.

Die Ergebnisse dieser Studie werden für die Doktorarbeit des Forschers an der Lincoln Universität verwendet werden. Die Ergebnisse werden ebenfalls für einen Bericht für das Department of Conservation über Besucherbewußtsein von - und Ansichten über - Gefahren benutzt werden. Teile der Ergebnisse könnten veröffentlicht werden, aber Sie können absoluter Vertraulichkeit versichert sein. Der Fragebogen ist anonym. Die Identität von Teilnehmern kann nicht bestimmt werden durch die Information, die Sie uns gegeben haben.

Dieses Projekt wird durch Stephen Espiner ausgeführt, unter der Aufsicht von Dr. Kevin Moore. Beide Forscher können Sie an der Lincoln Universität erreichen (obige Adresse) und beide besprechen gerne jegliche Besorgnis, die Sie über die Teilnahme an diesem Projekt haben, mit Ihnen. Sollten Sie sich, zu beliebigem Zeitpunkt innerhalb der nächsten zwei Wochen, entscheiden, daß Sie lieber doch nicht teilgenommen hätten, können Sie sich jederzeit mit dem Forscher in Verbindung setzen und Ihre Information zurückziehen. Um dies zu tun, brauchen Sie lediglich die dreistellige Kennzahl oben auf dieser Seite. Nach Ablauf dieser zwei Wochen nehmen wir an, daß Sie Ihre Zustimmung zur Teilnahme an dieser Studie und zur Veröffentlichung der Ergebnisse (unter strikter Anonymität) gegeben haben.

Dieses Projekt ist vom Ethik-Auschuß der Lincoln Universität und von dem Department of Conservation überprüft und genehmigt worden.

氷河地域旅行者アンケート (Glacier Visitor Survey 1998)

— アンケートにご協力を —

皆様のこの地域における安全と危険性に対するご意見をぜひお聞かせください。この自然保護地域が最善の方法で管理されるためには、皆様がどうお感じになられているか知ることが必要です。この調査は今年一年を通して、いくつかのニュージーランド内の地域において、一斉に行われる大きな研究の一部です。返答はすべて大切に扱い、また個人的秘密は厳守いたします。

ほとんどの質問事項は皆様のご意見を7段階で計るよう設定されていますので、ご意見、お気持ちにもっとも近い番号を○で囲んでください。質問事項には繰り返し述べている部分もあります。各問に最善の答えをお書きいただくようお願いします。

あなたご自身のご意見をお聞かせください。他人の答えを書き写したり、ご自身のご意見でない、迎合的な答えはご遠慮ください。われわれはみなさまご自身のお考えに関心があります。答えには正解も不正解もありません。

1 安全性についてのあなたのお考えは — (答えはひとつだけ、○で囲んでください。)

旅行先として、ニュージーランドは・・・非常に安全 1 2 3 4 5 6 7 非常に危険
 旅行先として、あなたの国は (NZ 以外) 非常に安全 1 2 3 4 5 6 7 非常に危険
 旅行先として、この氷河地帯は・・・非常に安全 1 2 3 4 5 6 7 非常に危険

2 以下の意見について、あなたがどの程度賛成、もしくは不賛成であるかを教えてください。

1 = その意見に完全に賛成 (または支持する) ~ 7 = その意見に全く賛成できない (または支持できない)

No	意 見	数字を○で囲んでください
1	この自然保護地域は明らかに安定した、危険予測が可能な地域のようなだ。	全く賛成 <u>1 2 3 4 5 6 7</u> 全く不賛成
2	この自然保護地域は安全な訪問地のようなだ。	全く賛成 <u>1 2 3 4 5 6 7</u> 全く不賛成
3	この氷河を訪れるのは危険を伴うように思われる。	全く賛成 <u>1 2 3 4 5 6 7</u> 全く不賛成
4	この氷河ではどのような危険に対しても安全なように十分に管理されているようだ。	全く賛成 <u>1 2 3 4 5 6 7</u> 全く不賛成
5	この地域への旅行者として身体的危険にさらされているように感じる。	全く賛成 <u>1 2 3 4 5 6 7</u> 全く不賛成
6	この地域が危険な訪問地だと知らされても驚かないだろう。	全く賛成 <u>1 2 3 4 5 6 7</u> 全く不賛成

7	この地域の自然から身の安全に心配を覚える。	全く賛成 1 2 3 4 5 6 7 全く不賛成
8	ここに滞在している間に、絶えず身体に降りかかる危険を体験した。	全く賛成 1 2 3 4 5 6 7 全く不賛成
9	この地域に自然の危険があることを承知している。	全く賛成 1 2 3 4 5 6 7 全く不賛成
10	この氷河で時々安全でないという感じを持ったことがある。	全く賛成 1 2 3 4 5 6 7 全く不賛成
11	この自然保護地域では予測できないことが起こることや、不安定なことに驚かされる。	全く賛成 1 2 3 4 5 6 7 全く不賛成
12	この氷河の危険について考えたこともなかった。	全く賛成 1 2 3 4 5 6 7 全く不賛成
13	この氷河に滞在している間、私個人の安全を気づかったことはなかった。	全く賛成 1 2 3 4 5 6 7 全く不賛成
14	この氷河には危険があると私にははっきりわかる。	全く賛成 1 2 3 4 5 6 7 全く不賛成
15	この地域におけるどんな危険もちゃんと管理されていないように思われる。	全く賛成 1 2 3 4 5 6 7 全く不賛成
16	この氷河を訪れている間、安全だと感じていた。	全く賛成 1 2 3 4 5 6 7 全く不賛成
17	ここは危険な訪問場所だとわかったら驚くだろう。	全く賛成 1 2 3 4 5 6 7 全く不賛成
18	ここではわが身が弱々しい存在のように感じる。	全く賛成 1 2 3 4 5 6 7 全く不賛成
19	ここでは全く自然の危険を感じない。	全く賛成 1 2 3 4 5 6 7 全く不賛成
20	この地域を訪れた旅行者として安全は自分自身に責任があると思う。	全く賛成 1 2 3 4 5 6 7 全く不賛成
21	このような自然地域における旅行者たちはその行為についてもっと責任を問われるべきだ。	全く賛成 1 2 3 4 5 6 7 全く不賛成
22	管理責任者は自然地域での危険から旅行者たちを守るためにもっと努力すべきである。	全く賛成 1 2 3 4 5 6 7 全く不賛成
23	この氷河への旅行者としてどのような危険からも十分保護されていると思う。	全く賛成 1 2 3 4 5 6 7 全く不賛成
24	氷河に滞在している間は、私個人の身の安全はこの地域を管理する人たちの責任である。	全く賛成 1 2 3 4 5 6 7 全く不賛成
25	この氷河の管理が確実に行われているという証拠をもっとはっきりと知りたい。	全く賛成 1 2 3 4 5 6 7 全く不賛成
26	管理者は、危険が起こりうるかもしれない地域への行路を遮断すべきである。	全く賛成 1 2 3 4 5 6 7 全く不賛成
27	安全であるかどうかは個人の判断に委ねるべきである。	全く賛成 1 2 3 4 5 6 7 全く不賛成
28	この場所に滞在している間は身の安全は自分で面倒見たい。	全く賛成 1 2 3 4 5 6 7 全く不賛成
29	私はこの氷河における身の安全は他人に依存している。	全く賛成 1 2 3 4 5 6 7 全く不賛成

30	もし旅行者たちが自分たち自身で安全に責任を持つことができなければ、この氷河を訪れるべきでない。	全く賛成 1 2 3 4 5 6 7 全く不賛成
31	この地域内ではこれ以上はっきりした管理規制は望まない。	全く賛成 1 2 3 4 5 6 7 全く不賛成
32	この地域内では、誰かが私の安全の面倒を見てくれることを希望する。	全く賛成 1 2 3 4 5 6 7 全く不賛成
33	ある程度の危険は、このような自然地域の訪問では避けることができないことである。	全く賛成 1 2 3 4 5 6 7 全く不賛成
34	この地域の管理者は、私の安全にかかわる全ての事柄を私に知らせるべきである。	全く賛成 1 2 3 4 5 6 7 全く不賛成

3. この氷河地域に滞在中、突発的な事故または身の危険を感じられるような状況に遭遇されましたか。あれば次の空欄にお書きください。

1	6
2	7
3	8
4	9
5	10

この氷河地域で一度も身の危険を感じなかった。 (感じたことがなかったらのなかにレ印)

4. この氷河を訪問している間、危険であることを警告する表示、メッセージをご覧になりましたか。

はい

(どちらかにレ印)

いいえ (問6へ)

5. もしご覧になられたことがありましたら、その表示、メッセージが何について危険を警告していたのか覚えていますか。 次の空欄にお書きください。

1	6
2	7
3	8
4	9
5	10

表示、メッセージには気付きましたが、何について危険を知らされていたのか思い出せません。

(そうならレ印を入れてください)

6. この氷河地域を訪れている間、ある場所へ接近することを制止するような表示や物体がありま

したか。(どちらかにレ印)

- はい
- いいえ (問8へ)

7. 「はい」の場合、禁止区域に足を踏み入れましたか。(一つだけレ印)

- はい、専門ガイドといっしょに
- はい、専門ガイドなしに
- いいえ

8. どのぐらいの距離まで氷河表面に近づきましたか。(一つだけレ印)

- 氷河表面近くまでは行かなかった。
- 氷河表面に手を触れることができるほど近くまで行った。
- 防御柵手前まで行った。

9. 氷河表面近くまで行きたいと思いましたか。(どちらかにレ印)

- はい
- いいえ

最後に、あなたご自身についてお聞かせいただきます。

10. 住所を教えてください。

国名 _____ 都道府県 _____ 市町村 _____

11. 性別 男性 女性 (どちらかにレ印)

12. あなたの年齢は次のどのグループに入りますか (どれかにレ印)

- | | |
|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> 15歳 -- 19歳 | <input type="checkbox"/> 45歳 -- 49歳 |
| <input type="checkbox"/> 20歳 -- 24歳 | <input type="checkbox"/> 50歳 -- 54歳 |
| <input type="checkbox"/> 25歳 -- 29歳 | <input type="checkbox"/> 55歳 -- 59歳 |
| <input type="checkbox"/> 30歳 -- 34歳 | <input type="checkbox"/> 60歳 -- 64歳 |
| <input type="checkbox"/> 35歳 -- 39歳 | <input type="checkbox"/> 65歳 -- 69歳 |
| <input type="checkbox"/> 40歳 -- 44歳 | <input type="checkbox"/> 70歳以上 |

13. 氷河旅行はどのような形態で参加されましたか (どれかにレ印)

- | | |
|-------------------------------|--|
| <input type="checkbox"/> ひとりで | <input type="checkbox"/> 家族(または夫婦)、友人と |
| <input type="checkbox"/> 夫婦で | <input type="checkbox"/> 団体旅行で |
| <input type="checkbox"/> 友人と | <input type="checkbox"/> クラブで |

家族と その他（具体的に)

14 氷河地域へはお子さんもいっしょですか。（どちらかにレ印）

- はい（問15へ）
 いいえ（問16へ）

15 今回同伴の最年少のお子さんの年齢はいくつですか。（どれかにレ印）

- 2歳以下
 2～4歳
 5～9歳
 10歳以上

16. 今回の氷河旅行はガイドといっしょでしたか。（どれかにレ印）

- 単独行動
 専門ガイド付き
 友人または家族のガイドで

17. この氷河旅行には、おおよそどのくらいの時間をかけますか。（ひとつだけにレ印）

- | | |
|---------------------------------|---------------------------------|
| <input type="checkbox"/> 15分以下 | <input type="checkbox"/> 2時間 |
| <input type="checkbox"/> 30分 | <input type="checkbox"/> 2時間30分 |
| <input type="checkbox"/> 45分 | <input type="checkbox"/> 3時間 |
| <input type="checkbox"/> 1時間 | <input type="checkbox"/> 4時間 |
| <input type="checkbox"/> 1時間30分 | <input type="checkbox"/> 5時間以上 |

18 氷河地帯滞在中の計画は次のどちらですか。（ひとつだけにレ印）

- フォックスとフランツ・ジョセフの両氷河を訪れたいと思っている。
 この氷河訪問のみを考えている。

19 この氷河に着く前に自然保護管理局インフォメーションセンター（町内）へ足を運ばれましたか。（どちらかにレ印）

- はい
 いいえ

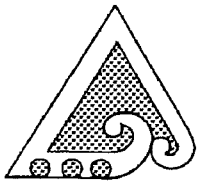
20 あなたの国で大規模の自然地域に何回ぐらい旅行しますか。(ひとつだけレ印)

- 一度もない
- 2年に1回
- 1年に1回
- 1年に2回
- 1年に3回～5回
- 1年に6回～10回
- 1年に10回以上

あなたの大切なお時間をお割きいただきありがとうございました。調査に関わったあなたのご協力と誠実なお答えに感謝申し上げます。

どうぞ残りのご旅行をお楽しみください!

この調査は、自然保護管理局の認可のもとに、リンカーン大学と共同で実施されています。



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調査アンケートご協力者のみなさまへ

「氷河地域旅行者向け調査1998」プロジェクトにご協力いただきありがとうございます。これは自然公園地域内での安全と危険性に対する旅行者の心構えを調査する研究の一部です。この研究を行うひとつの目的は、ニュージーランドの魅力ある自然の中にひそむ危険を旅行者がどう認識しているか、どのような警告表示が安全を伝えるのに最も有効であるか調査することです。このため調査員はすでに氷河への路に沿って危険警告表示を設置しています。これら表示板に示された危険の内容のなかには、本当に危険なものもあればそうでないものもあります。その表示板が有効かどうかを決めるために、有効なものとは無効なものとの両方を使うことにしたわけです。

この研究調査の結果はリンカーン大学の調査員の博士論文の資料に利用される予定です。また、この調査結果は、危険に対する旅行者の意識、態度についての自然保護管理局への報告書に用いられることとなります。この結果報告の一部は出版されることになるとは思いますが、みなさまの個人的内容は決してその中に含まれませんのでご安心ください。このアンケートは匿名で行われます。ご協力者の身元が記入内容から判明することはありません。

このプロジェクトはケヴィン・ムーア博士の指導でステファン・エスピナーによって実施されています。二人ともリンカーン大学で連絡を取ることができます。（連絡先は上記に記載）そしてまた、皆様がこのプロジェクトに協力する際お持ちになったご懸念には喜んでお答えいたします。万一、2週間以内に、このプロジェクトから協力を取り消したいと希望された場合には、調査員に連絡を取り、あなたが提供された情報をデータセットから削除できます。この手続きを取るにあたって必要なものは、このページ上の3ケタ番号です。今後、あなたが、プロジェクトの参加と、匿名で行われることを理解した上での調査結果の出版にご承諾いただいたものと判断させていただきます。

このプロジェクトはリンカーン大学人文倫理委員会と自然環境保護管理局の検閲、認可済みです。

Appendix B: Survey implementation schedule

Day	Glacier	Session	Times	Hazard Signs
1. Tuesday 27-01-98	FOX	A (survey)	10.00 - 13.30	no sign
		B (survey)	14.00 – 17.30	rock, ice
		C (observation)	10.00 – 11.30	no sign
2. Wednesday 28-01-98	FOX	A (survey)	10.00 - 13.30	rock, wind, insects
		B (survey)	14.00 – 17.30	no sign
		C (observation)	10.00 – 11.30 14.00 – 15.30	river, rock no sign
3. Thursday 29-01-98	FOX	A (survey)	10.00 - 13.30	insects, river, rock
		B (survey)	14.00 – 17.30	insects, wind, rock, ice, river
		C (observation)	14.00 – 15.30	rock, ice, river
4. Friday 30-01-98	FOX	A (survey)	10.00 - 13.30	wind, ice, river
		B (survey)	14.00 – 17.30	no sign
		C (observation)	10.00 – 11.30	ice, river
5. Saturday 31-01-98	FOX	A (survey)	10.00 - 13.30	rock, wind, ice
		B (survey)	14.00 – 17.30	insects, river, wind
		C (observation)	10.00 – 11.30	rock, ice
6. Sunday 01-02-98	FOX	A (survey)	10.00 - 13.30	river, ice, insects
		B (survey)	14.00 – 17.30	no sign
		C (observation)	14.00 – 15.30	no sign
7. Saturday 21-03-98	FRANZ	A (survey)	10.00 - 13.30	no sign
		B (survey)	14.00 – 17.30	rock, ice
		C (observation)	10.00 – 11.30	no sign
8. Sunday 22-03-98	FRANZ	A (survey)	10.00 - 13.30	rock, wind, insects
		B (survey)	14.00 – 17.30	no sign
		C (observation)	10.00 – 11.30 14.00 – 15.30	river, rock no sign
9. Monday 23-03-98	FRANZ	A (survey)	10.00 - 13.30	insects, river, rock
		B (survey)	14.00 – 17.30	insects, wind, rock, ice, river
		C (observation)	14.00 – 15.30	rock, ice, river
10. Tuesday 24-03-98	FRANZ	A (survey)	10.00 - 13.30	wind, ice, river
		B (survey)	14.00 – 17.30	no sign
		C (observation)	10.00 – 11.30	ice, river
11. Wednesday 25-03-98	FRANZ	A (survey)	10.00 - 13.30	rock, wind, ice
		B (survey)	14.00 – 17.30	insects, river, wind
		C (observation)	10.00 – 11.30	rock, ice
12. Thursday 26-03-98	FRANZ	A (survey)	10.00 - 13.30	river, ice, insects
		B (survey)	14.00 – 17.30	no sign
		C (observation)	14.00 – 15.30	no sign
13. Friday 27-03-98	FRANZ	A (survey)	10.00 - 13.30	insects, wind, rock, ice, river
		B (survey)	14.00 – 17.30	no sign
		C (observation)	14.00 – 15.30	no sign
14. Saturday 28-03-98	FRANZ	A (survey)	10.00 - 13.30	no sign
		B (survey)	14.00 – 17.30	insects, wind, rock, ice, river
		C (observation)	10.00 – 11.30	no sign

Appendix C: Survey and observation guidelines

For research assistants working on the Glacier Visitor Survey

You will be supplied with the following items. Please ensure that you have them with you at the glacier each day.

- A clipboard for conducting the questionnaire interview
- A second clipboard for self-complete respondents (German & Japanese visitors)
- Identification badge
- Copies of the Glacier Visitor Questionnaire (note: copies are white, blue, and yellow for the three languages used)
- Response cards
- Pens
- Golf umbrella

Selecting respondents

All adult visitors to the glaciers are part of the study's target group. Adults (for the purposes of this study) will be taken as those people over the approximate age of 15 years.

Visitors should only be approached and asked to participate on their return from the glacier walk. This will give them an opportunity to form opinions on hazards and safety, as well as be exposed to the introduced and regular hazard signs.

Participants should be selected on a random basis. That is, approach people according to a random system which gives each visitor an equal chance of selection. I recommend that you use a wristwatch to decide when to approach a potential respondent or group. For instance, decide that when the second hand on your watch reads 30 seconds, you will approach the next person to cross a previously identified imaginary line, or point (perhaps a landscape feature). If (as will often be the case) a group of people are walking together, choose the person in the group who has the next birthday (and is 15 years or over).

When you approach a group of visitors, you should identify yourself immediately, and say something like:

Hi! My name is Stephen, and I'm conducting some research on visitors to this Glacier. This is a joint study between Lincoln University and the Department of Conservation, and we're interested in your opinions and awareness of hazards and safety in this area³². Could you spare 5 or 10 minutes to take part in the survey?

If the person you have approached is from Germany or Japan, please ask them to complete the survey in their language (note: German language questionnaire are copied in blue. The Japanese questionnaires are yellow).

If the person you have approached declines to be interviewed, please record this refusal on the non-response form (attached to your clipboard). Following a refusal, leave about two minutes

³² If you're talking to a group, you might then say: 'Could I please speak to the person aged 15 years or older who next has a birthday. The interview will take between 5 and 10 minutes'.

before approaching another visitor. This may help avoid having a string of visitors refuse (simply because they observed someone else refuse a questionnaire).

Interviewing the respondent

Once you have secured the interview, you need to briefly explain the requirements to the respondent. This information is located on the top of each questionnaire (you can read this out if wish), and partially reiterated on the cover of the response cards booklet. Those completing Japanese or German versions of the questionnaire will not be given a response booklet, but rather, will complete the form themselves. It is important that the questionnaire is completed on site, so provide the respondent with a clipboard and pen to make this easier.

Give the respondent the response booklet and explain that his or her answers should be chosen from here. Read out each question to the respondent and record his or her answers on the questionnaire form. Emphasise that there are no right or wrong answers, and that we are interested in their honest impressions and opinions.

Guide the respondent through the response booklet where necessary. At times, he or she will need to skip a page because a certain question is not applicable.

Thank the participant for his or her time, and offer the information sheet (the final page of the questionnaire). Explain that this page contains information about the study and contact details should there be any concerns or questions. Those completing Japanese or German versions of the questionnaire should also be offered the final page from the questionnaire they complete.

Some general guidelines

- Wear your identification badge at all times in the field
- Always be polite and courteous
- Withdraw from situations where the respondent becomes angry or aggressive; the respondent is ingenuine; the respondent looks upset or disturbed by the contents of the questionnaire; or any other circumstance where your safety may be compromised.
- Ensure each respondent is offered a copy of the study information sheet

Recording Observations

One of your tasks is to spend a small amount of time each day making observations of how visitors behave with respect to hazards while at the glaciers. In particular, we are interested in how visitors react or respond to different hazard safety signs.

At the time specified in the survey schedule (or at other times as directed) set up the appropriate sign at the location previously identified by the project leader (note: on some days no signs will be set up). Situate yourself in such a way that you can easily observe visitors approaching the sign, and their movements beyond the sign.

It is important to count carefully (tally) the people who act against the suggestion or advice on the signs. Use the observation log to make notes about any behaviour such as people climbing on the glacier (without guides), standing immediately beneath the overhanging ice, or people who break the barrier once they've seen others go across. Please be careful to count people only once, and note down the precise time period during which your observations were made.

Appendix D: Record of non-response





	<i>Date</i>	<i>Location</i>	<i>Sex</i>	<i>Age</i>	<i>Nationality</i>	<i>Reason</i>
1.			M.....F	1 2 3 4 5		1 2 3 4 5
2.			M.....F	1 2 3 4 5		1 2 3 4 5
3.			M.....F	1 2 3 4 5		1 2 3 4 5
4.			M.....F	1 2 3 4 5		1 2 3 4 5
5.			M.....F	1 2 3 4 5		1 2 3 4 5
6.			M.....F	1 2 3 4 5		1 2 3 4 5
7.			M.....F	1 2 3 4 5		1 2 3 4 5
8.			M.....F	1 2 3 4 5		1 2 3 4 5
9.			M.....F	1 2 3 4 5		1 2 3 4 5
10.			M.....F	1 2 3 4 5		1 2 3 4 5
11.			M.....F	1 2 3 4 5		1 2 3 4 5
12.			M.....F	1 2 3 4 5		1 2 3 4 5
13.			M.....F	1 2 3 4 5		1 2 3 4 5
14.			M.....F	1 2 3 4 5		1 2 3 4 5
15.			M.....F	1 2 3 4 5		1 2 3 4 5
16.			M.....F	1 2 3 4 5		1 2 3 4 5
17.			M.....F	1 2 3 4 5		1 2 3 4 5
18.			M.....F	1 2 3 4 5		1 2 3 4 5
19.			M.....F	1 2 3 4 5		1 2 3 4 5
20.			M.....F	1 2 3 4 5		1 2 3 4 5
21.			M.....F	1 2 3 4 5		1 2 3 4 5
22.			M.....F	1 2 3 4 5		1 2 3 4 5
23.			M.....F	1 2 3 4 5		1 2 3 4 5
24.			M.....F	1 2 3 4 5		1 2 3 4 5
25.			M.....F	1 2 3 4 5		1 2 3 4 5
26.			M.....F	1 2 3 4 5		1 2 3 4 5
27.			M.....F	1 2 3 4 5		1 2 3 4 5
28.			M.....F	1 2 3 4 5		1 2 3 4 5
29.			M.....F	1 2 3 4 5		1 2 3 4 5
30.			M.....F	1 2 3 4 5		1 2 3 4 5
31.			M.....F	1 2 3 4 5		1 2 3 4 5
32.			M.....F	1 2 3 4 5		1 2 3 4 5
33.			M.....F	1 2 3 4 5		1 2 3 4 5
34.			M.....F	1 2 3 4 5		1 2 3 4 5
35.			M.....F	1 2 3 4 5		1 2 3 4 5

KEY



Age 1= 15-24
 2= 25-44
 3= 45-54
 4= 55-64
 5= 65 +

Reason 1= No time
 2= Not interested
 3= Language difficulty
 4= Too cold/wet/windy
 5= Other

Appendix E: Introduced pictorial warning signs by category

Sign	Hazard	Category
	Rockfall	Hazard is present and identified by DOC in current signs
	Icefall	Hazard is present and identified by DOC in current signs
	River	Hazard is present but not identified by DOC in current signs
	Tripping / falling ³³	Hazard is present but not identified by DOC in current signs

³³ The tripping / falling pictorial sign was damaged in transit to the Fox Glacier and could not be usefully repaired. Hence, this sign is not included in the discussion or analysis.

	Strong winds	Hazard is neither present nor identified in DOC signs
	Stinging insects	Hazard is neither present nor identified in DOC signs

Appendix F: Observation log

Date	Time Start finish	Location	Weather	Sign(s)	Tally
Comments and Observations					Total arriving:

Appendix G: List of key informants

	Pseudonym	Position / Speciality
1	Don	Natural hazard specialist
2	Tom	DOC - Head Office management (External Relations)
3	Mick	Geomorphologist and hazard specialist
4	Todd	Geomorphologist and hazard specialist
5	Gina	Policy Analyst and risk assessment specialist
6	Peter	DOC - Regional Office manager
7	Jane	Regulatory Specialist at Parks Canada
8	Mike	DOC – Senior level manager (West Coast)
9	Jock	DOC – Senior level manager (West Coast)
10	Keith	DOC – Field-level manager (West Coast)
11	Stan	Tourism operator (West Coast)
12	Jim	Outdoor recreation organisation director
13	Bob	DOC - Head Office (Policy)
14	Tim	DOC - Regional-level manager (Wellington)
15	Wayne	DOC - Field-level manager (Wellington)
16	Ray	DOC – Head Office (Policy / Signs)
17	John	DOC – Head Office manager (QCM)
18	Kyle	DOC – Head Office manager (QCM)
19	Dave	DOC – Head Office manager (Health & Safety)
20	Sam	Department of Labour (Health & Safety advisor)
21	Kirk	DOC – Head Office manager (Business / Finance Unit)
22	Neil	DOC – Field-level manager (West Coast)

Code:

Appendix H: Information sheet for survey respondents



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INFORMATION FOR PARTICIPANTS

You have been a participant in a project called the Glacier Visitor Survey 1998. This is part of a larger study looking at the attitudes of visitors to hazards and safety in natural areas. One of the aims of the study is to find out about visitor awareness of hazards at natural attractions in New Zealand, and which warning signs (if any) are the most successful at conveying safety messages. To this end, the researcher has placed several hazard warning signs along the Glacier access walk. Some of the hazards shown in these signs are genuine hazards of the area, while others are not. It is important that both valid and invalid hazard messages are used so that we can determine the effect of the signs.

The results of this study will be used in the preparation of the researcher's doctoral dissertation at Lincoln University. The findings will also be used in a report to the Department of Conservation on visitor awareness of, and attitudes towards hazards. Parts of the results may be published, but you can be assured of the complete confidentiality of the information gathered here. The questionnaire is anonymous. The identity of participants cannot be determined from the information you have provided.

This project is being carried out by Stephen Espiner, under the supervision of Dr Kevin Moore and Dr Pat Devlin. The researchers can be contacted at Lincoln University (see address details above), and will be pleased to discuss any concerns you might have about participation in this project. Should you, at some point in the next two weeks, decide to withdraw your participation from this project, it is possible to contact the researchers, and have the information you have given deleted from the data set. To do this, all you need is the three-digit code number from the top of this page. After this time, it will be understood that you have consented to participate in the project, and consent to publication of the results with the understanding that anonymity will be preserved.

This project has been reviewed and approved by the Lincoln University Human Subjects Ethics Committee, and the Department of Conservation.

Appendix I: Interview consent form

CONSENT FORM FOR INTERVIEW INFORMANTS

Risk Perception Study

I have been briefed and understand the general nature of the Risk Perception Study. On this basis, I agree to participate in the project as an informant, and consent to publication of the project's results with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided.

Signed: _____

Date: _____

Appendix J: Classification of scale scores

Likert Scale number	Standardised scores	Score range	Classification	
1	14.3	14.3 – 28.5	Low	
2	28.6	28.6 – 42.8		
3	42.9	42.9 – 57.0	Moderate	
4	57.1	57.1 – 71.3		
5	71.4	71.4 – 85.6	High	
6	85.7	85.7 -100		
7	100			

The process of standardisation assumes that Likert scale responses are linear. This acknowledgment is important in the use of such scales for analysis of the sort undertaken in Chapter 6.

Scale numbers 1, 2 = low
 3, 4 = moderate
 5, 6, 7 = high

Each classification has a range of approximately 28.5. The classification is made for convenience of reporting and to ensure that the use of summary phrases to describe scale outcomes is consistent and their calculation transparent.