

# VISITING THE KOSCIUSZKO ALPINE AREA

## VISITOR NUMBERS, CHARACTERISTICS AND ACTIVITIES



*By Stuart W. Johnston and Andrew J. Growcock*

SUSTAINABLE  
TOURISM



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## **Abstract**

A visitor monitoring program was undertaken in the 1999/2000 summer in the alpine area of Kosciuszko National Park, Australia to measure visitor numbers, demographics, activities, distributions, motivation and satisfaction levels. A total of 35,351 people were recorded arriving at the two main access points to the alpine area over 40 days surveyed between December 1999 and April 2000. When extrapolated for the entire 1999/2000 non-winter period, this provided a total estimate of 102,500 visitors with an estimated 47,250 people visiting for a half day or more. This represented a 10% increase over a 1990/91 study. Walks were by far the most common activity (78.8% for short and long walks) with the Mt Kosciuszko summit the most popular destination. The most popular times to visit the area were public holidays, especially New Years Day and Easter, with 12 pm to 1.30 pm receiving the most visitors at the Kosciuszko summit. Party sizes were small, mostly two people and few over four people, and most visitors were between 20 and 49 years of age (63.2%). A range of motivations inspired people to visit the area and upon departure most visitors were very satisfied with their experience though raised some concerns about specific facilities.

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## **Summary**

The largest contiguous alpine area in Australia (100 km<sup>2</sup>) occurs within Kosciuszko National Park in New South Wales and is a part of the Australian Alps. The alpine area in Kosciuszko National Park begins at an approximate elevation of 1,830 metres, the upper limits of the tree line, extending to the summit of Mt Kosciuszko at 2,228 metres.

This area is recognised as an area of ‘Outstanding Natural Value’ by the 1982 Kosciuszko National Park Plan of Management and is considered to greatly contribute to the potential World Heritage Status of the Australian Alps. At an international level, Kosciuszko National Park is recognised as a World Biosphere Reserve under the UNESCO Man and the Biosphere program and is one of 167 centres of biodiversity identified by the World Conservation Monitoring Centre.

## **Objectives of Study**

The need for data on the recreational use of the alpine area of Kosciuszko National Park is important for the sustainable visitor use of the highest area in Australia. Previous visitor monitoring surveys and estimations of visitor numbers have shown significant increases in visitation between the late 1970s and the early 1990s.

Over the 1999/2000 summer, a 40 day monitoring program was undertaken for the Kosciuszko alpine area by the New South Wales National Parks and Wildlife Service in conjunction with the Sustainable Tourism Cooperative Research Centre to:

1. Identify non winter visitation and track use levels;
2. Identify the type of visitation in regards to visitor demographics, group size and activities undertaken;
3. Provide information on the level of satisfaction of visitors in regards to specific facilities and attitudes towards the alpine area and its management; and
4. Provide recommendations to allow for sustainable tourism to continue in the Kosciuszko alpine area.

## **Methodology**

This study has used a standardised sampling approach to estimate visitor numbers and identify visitor characteristics. Sites were established at the top of the Crackenback chairlift in Thredbo Village and at Charlotte Pass. Additional sites were also established at popular destination points such as Blue Lake, the summit of Mt Kosciuszko and the Kosciuszko lookout.

A total of 40 days were sampled with approximately equal numbers of sampling days allocated to “peak”, “intermediate” and “low” tourism demand days. Data recorded included the number of visitors, their time of arrival, estimates of age, gender, party size, activity, track utilised and a rating of the visitor’s level of preparation.

To help ascertain which tracks visitors were using and their destinations, visitors were asked where they were intending to go as they departed from each access point. This information was cross-referenced with observations and questions asked of visitors after they had returned from their walks/trips into the area.

Data was also collected from departing visitors through individual interviews. The responses for motivations, perceptions, attitudes, residential area and opinions of facilities are reported here.

## **Key Findings**

Results of the survey found that:

- Approximately 102,500 people in total visited the Kosciuszko alpine area during the non-winter period of 1999/2000;
- Approximately 47,250 of visitors undertook trips of half-day or more. This is a 10% increase on figures reported in 1993;
- Party size is typically small – two people was the most frequent party size with more than four in a group uncommon;
- Public holidays, especially around New Year’s Day and Easter, have the highest visitation levels;
- On average, weekends receive the highest visitation while mid week receives the least;
- Daily visitation to the summit of Mt Kosciuszko was greatest between 12 noon and 1.30 pm;
- More visitors access the Kosciuszko alpine area from Thredbo and the Crackenback chairlift than from Charlotte Pass;

- The predominant age of all visitors to the area is between 20 and 49 (63.2%), with a significant number of children below the age of 15 (18.5%) also present indicating family groups are common;
- There is no difference in the proportion of male and female visitors;
- A range of activities are undertaken by visitors to the area and includes short and long distance walks, sightseeing, camping and cycling. Walking (78.8% combining long and short walks) was the most popular activity of these activities;
- Groups departing on camping trips into the Kosciuszko alpine area are more likely to depart from Charlotte Pass than from Thredbo;
- Preparation levels (i.e. appropriate clothing, water etc.) of day walking in the area tended to be poor.
- Satisfaction levels were high regarding the area as a destination, but concerns are raised about some of the facilities provided, such as parking, toilets and signage;
- More choice of walks in the alpine area is desired (e.g. short loop walks);
- The dominant motivation for people to visit the Kosciuszko alpine area in summer was the area's natural values.

## **Future Action**

Visitor information such as this can benefit a range of management activities and has specific value in aiding visitor management initiatives for the Kosciuszko alpine area. Furthermore, this information provides a solid baseline for developing long term trends and allows for links to be developed between use levels and environmental impact monitoring. In a broader sense, this information is beneficial in (1) justifying the allocation of resources, (2) formulating policy and assisting management strategies, and (3) focusing marketing and promotional opportunities.

By understanding who visitors are, where they are going and what their motivations are for coming to the area, management strategies can continue to be developed that suit both long term environmental needs and provide quality visitor experiences. This study provides the basis for further monitoring of visitors in the Kosciuszko alpine area.





Chapter 1

Introduction

Overview

Alpine and subalpine environments are limited in Australia with these areas representing only 0.15% of the land surface area. Approximately 5,200 km<sup>2</sup> of Australia’s alpine and subalpine areas exist on the mainland with the majority of 6,500 km<sup>2</sup> found in Tasmania (Costin et al. 2000).

Kosciuszko National Park contains the most extensive alpine area on the Australian mainland and is located in the Snowy Mountains region of the Great Dividing Range in New South Wales (NSW). The Park is a part of the Australian Alps National Parks (Figure 1), which encompasses all the mainland alpine environments, stretching from Victoria into New South Wales and the Australian Capital Territory (Australian Alps Liaison Committee 1998).

Figure 1: Location of the Australian Alps (Australian Alps Liaison Committee 1998)



The Kosciuszko alpine area, the largest contiguous alpine area in Australia (100 km<sup>2</sup>) centred around Mt Kosciuszko, has great biological and geomorphological significance (Good 1992a). The alpine area begins at an approximate elevation of 1800 metres, the upper limits of the tree line, and extends to the summit of Mt Kosciuszko at 2,228 metres.

This area has been recognised for its ‘Outstanding Natural Value’ by the 1982 Kosciuszko National Park Plan of Management and is considered to greatly contribute to the potential World Heritage Status of the Australian Alps (Costin et al. 2000; Mosely 1992). At an international level, Kosciuszko National Park is recognised as a World Biosphere Reserve under the UNESCO Man and the Biosphere program and by the World Conservation Monitoring Centre as one of 167 centres of biodiversity (Independent Scientific Committee 2003).

The Kosciuszko alpine area includes a number of outstanding natural features that are of great scientific interest. The area contains Australia's best representation of past glacial activities in the form of glacial cirques and moraines (Galloway 1989). The resulting glacial lakes provide spectacular scenery while pollen in the sediment of Blue Lake and Club Lake have provided valuable information on vegetation changes associated with post-glacial warming (Galloway 2003).

The soils of the Kosciuszko alpine area are unique as they have a number of unusual characteristics. Firstly, the podzol features typical to soils of oceanic moor lands found around the world are absent or poorly developed (Johnston & Ryan 2000). As such, the alpine humus soils of Australia have developed to become the climatic climax soil, although the organo-mineral solum is acid throughout and base unsaturated (Costin 1954, 1986; Good 1992b; Johnston & Ryan 2000). Secondly, alpine landscapes in many other parts of the world are dominated by steep rocky terrain, contain scree slopes, and have an incomplete cover of organic soils and only sparse vegetative cover. In contrast, the Australian alpine humus soils completely cover all but a few rocky areas and support an almost complete vegetative cover contributing to the general undulating rounded character of the alpine landscape (Costin et al. 1952; Costin 1986; Good 1992b; Johnston & Ryan 2000). Finally, the soils are substantially deeper than the high mountain organic soils found elsewhere in the world. Some of the fens and bog communities are estimated to be 15 000 years old, beginning their development at the retreat of glacier ice (Costin et al. 2000). These communities are critical in regulating stream flow through out the year (Good 1992b; Growcock 1999; Lawrence 1995; Wimbush 1970).

The Kosciuszko alpine area also contains a distinctive, and often restricted, assemblage of flora. In total, 212 native ferns and flowering plants can be found with 21 species endemic and 33 rare (Costin et al. 2000). These species occur in a range of communities including herb fields, heaths, bogs and fens and fieldmarks and reflect different responses to snow, groundwater and physiography (Costin et al. 2004). As a result of a short flowering season there are massed displays of wildflowers during the summer months.

Although there are no native ungulates (hoofed graziers), the Kosciuszko alpine area is home to a number of endemic native fauna species. Perhaps most well known and iconic for the Park are the Mountain Pygmy Possum (*Burrhamys parvus*) and the Southern Corroboree Frog (*Pseudophryne corroboree*). Other species in and around the snow country include the Broad-toothed Rat (*Mastacomys fuscus*), the Kosciuszko Grasshopper (*Kosciuscola tristis*), the Alpine Water Skink (*Eulamprus kosciuskoi*) and the Mountain Galaxias (*Galaxias olidus*) (Green et al. 1992; Green & Osborne 1994).

### **Tourism in the Kosciuszko Alpine Area**

Tourism in Australia, including ecotourism, makes use of natural areas that have high conservation value. The natural environment itself may be the attraction, or it may provide the setting for some other activity such as bushwalking or camping. Tourism to natural areas is estimated to account for 20% of all international travel expenditures with over 22 million people visiting protected areas in NSW in 1994 (Newsome et al. 2002; Worboys et al. 2001).

Kosciuszko National Park is one of the most visited national parks in NSW, being within easy access of approximately 50% of the Australian population. Approximately 78% of visitors to the region visit for holidaying or leisure. Less than 3% are international visitors (Worboys & Pickering 2004). In the past visitor numbers have been greatest during the winter period due to snow sport activities. In the last 25 years however, non-winter visitation has been increasing and has been estimated as now representing up to 50% of annual visitation (Good 1992b; Virtanen 1993; Worboys & Pickering 2004). This figure however, is debatable.

Summer tourism is one of the largest land uses in Kosciuszko National Park with an estimated 479,000 people visiting the park during the snow-free period (Worboys & Pickering 2004). Tourism is the single largest form of land use in the alpine area attracting many visitors who wish to ascend the Mt Kosciuszko summit, Australia's highest mountain (Good 1992a; Worboys & Pickering 2002). Other visitors are attracted to the unique natural scenery and mass floral displays.

Visitation to the Kosciuszko alpine area has been popular for over 100 years. The first tourists to visit the Summit area were taken on horseback under the guidance of local graziers. This, along with the associated grazing, led to the formation of bridle tracks throughout the area. With increasing tourist use, construction of a road from Jindabyne to Mt Kosciuszko commenced in 1906, and was completed in 1909 (Worboys & Pickering 2002). After the Second World War the recreational use of the Summit area increased due to the increasing mobility of the general population of Australia and the interest generated by the construction of the Snowy Mountains Hydro-Electric Scheme. During the 1970s there was increasing concern over the impact that tourists were having on the Summit area and in particular with the Kosciuszko Road. Visitors to the area had increased to such a point that traffic jams were common on this access road. In 1971 the road was closed at Rawson Pass (at the base of Mt Kosciuszko) and the car park was expanded at this point. Subsequently, the road was closed at Charlotte Pass for private vehicles in the summer of 1974/75, with a shuttle bus service used to ferry people from Perisher Valley to Rawson Pass. In 1982 Kosciuszko Road was formally closed at Charlotte Pass to all but Park

management vehicles (Worboys & Pickering 2002). From this time on, visitors were restricted to walking or cycling to the summit.

Even after this closure, visitation by walkers still had a detrimental effect on the walking tracks provided. In response, in 1979 the NSW National Parks and Wildlife Service (NSW NPWS), the agency responsible for both conserving the area and facilitating its use as a recreational destination, instituted a rehabilitation program for each summer to improve and maintain the walking tracks. This has continued to occur till the present day.

Previous surveys and estimations of visitor numbers to the Kosciuszko alpine area have shown significant increases in visitation between the late 1970s and the early 1990s. The need for data on the visitor use of the Summit area was first recognised in 1978, when the NSW NPWS estimated that approximately 20,000 visitors were accessing the alpine area during the non-winter period (Worboys 1978). In 1985, another survey estimated that numbers had increased to 36,000 visitors in the non-winter period (Murphy 1985). The most recent estimation, in the 1990/91 summer, by the NSW National Parks and Wildlife Service suggested that 43,000 visitors were accessing the alpine area for at least a half a day or more. This last figure was expected to be higher if short stay visits were included (Virtanen 1993).

## **Research Objectives**

Effective planning for the Kosciuszko alpine area requires information on both the current situation and indicators of change. Without some knowledge of the nature of visitor use – the character, number, destination, satisfactions, preferences and motivations – management of these areas may be inefficient or misdirected (Lucas 1985; Roggenbuck & Lucas 1987). Instead of being based on information, management might instead be based on intuition.

Data on visitor numbers is often the easiest to measure but is often not collected, or not collected systematically, thus making it difficult to determine trends (Lucas 1985). Information on use and users is also important in identifying causes of ecological damage in reference to levels of use.

The NSW NPWS has recognised the value of knowing the level of visitation to the Kosciuszko alpine area since the park's establishment in 1967. Previous studies have provided visitor estimations and to some extent, levels of use on specific tracks within the area. These studies have shown increasing use of the area, even when access has been reduced from full car access to walking or limited cycling.

While these studies have been valuable in identifying this trend, they were usually undertaken with minimal resources that understandably resulted in minimal replication of survey days. This led to unclear results and uncertain answers. With greater resources available through funding from the Sustainable Tourism Cooperative Research Centre the NSW NPWS and volunteers from the Australian National University, it was possible to undertake a more systematic study.

This report aims to provide a repeatable approach to counting and identifying visitor numbers and characteristics within the Kosciuszko alpine area during the non-winter period. With this in mind, the specific objectives of this study, in regard to the Kosciuszko alpine area were to:

1. Identify non winter visitation and track use levels;
2. Identify the type of visitation in regards to visitor demographics, group size and activities undertaken;
3. Provide information on the level of satisfaction of visitors in regards to specific facilities and attitudes towards the alpine area and its management; and
4. Provide recommendations to allow for sustainable tourism to continue in the Kosciuszko alpine area.

With the completion of these objectives data specific to the Kosciuszko alpine area are available for managers. These data may provide baseline information for future monitoring strategies and assist park managers in the allocation of resources for facilities and services provision, permit and licensing systems and information distribution. This information will also be of value for tourism managers and operators for marketing and alpine information interpretation.

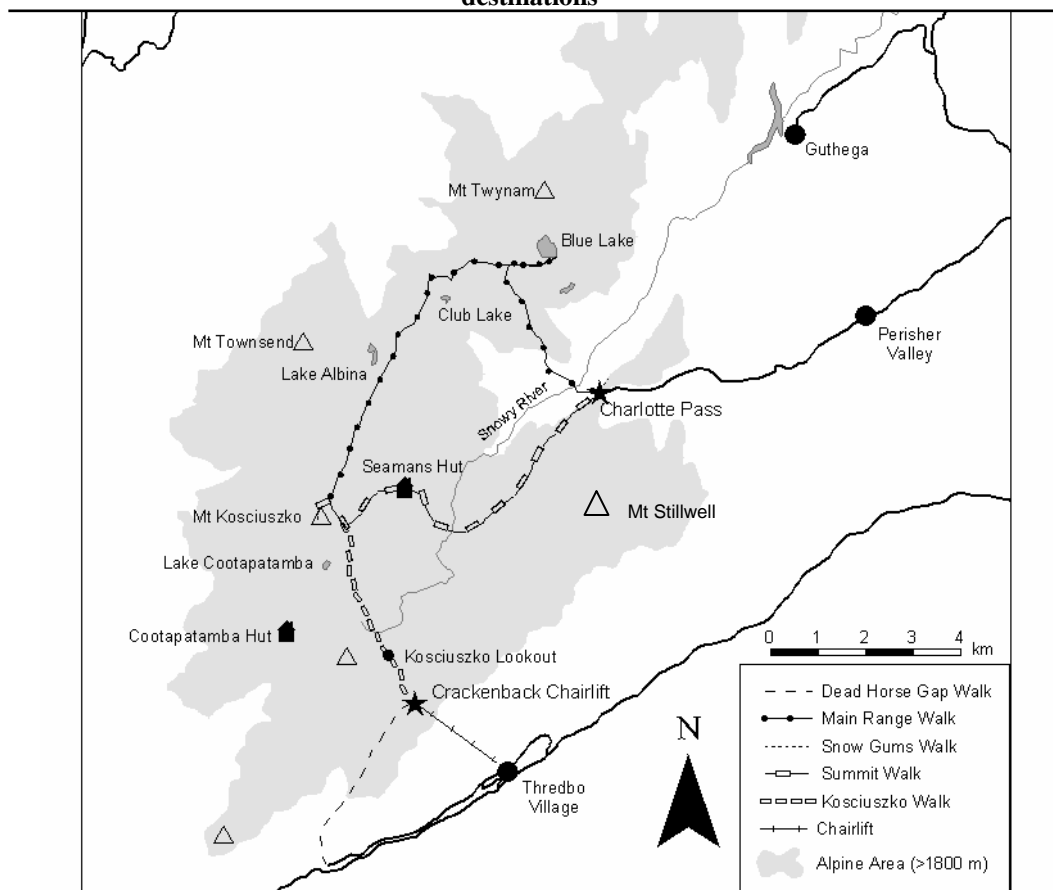
Chapter 2

Methodology

The Kosciuszko Alpine Area

Nearly all access to the Kosciuszko alpine area during the non winter period occurs through two main access points – Thredbo Village and Charlotte Pass, with minor access (less than 1%) from Guthega (Figure 2). Thredbo Village ski resort is a popular year round destination providing a range of accommodation, restaurants and shops. Access to the alpine area is via the “Crackenback chairlift” which rises almost 600 metres over a distance of approximately two kilometres. From the top of the Crackenback chairlift three tracks can be undertaken (Figure 2). The “Kosciuszko Walk” along a raised metal walkway is a moderate gradient trail allowing an easy walk into the alpine area and eventually finishes at Rawson Pass at the base of Mt Kosciuszko. The “Dead Horse Gap Walk” is a 14 km walk that passes through both alpine and subalpine areas before finishing at the Thredbo Village. “Merits Trail” begins at the top of the Crackenback chairlift and returns directly to Thredbo Village below following the chairlift line.

Figure 2: Map of the Kosciuszko alpine area showing main access points, main tracks and major destinations



Charlotte Pass is at the end of the Kosciuszko Road, 41 km from Jindabyne, and is arguably the most spectacular entrance point into the Kosciuszko alpine area. From this point three main walks can be taken (Figure 2). The “Summit walk” is along the gravel management trail that originally allowed access for vehicles to just below the Mt Kosciuszko summit. The trail finishes at Rawson Pass (at the base of Mt Kosciuszko) after crossing the upper reaches of the Snowy River and passing Seamans hut. The partially paved “Main Range Loop walk” also passes the Mt Kosciuszko summit, but it is a longer walk. The walk takes in views of Blue Lake, Club Lake, Lake Albina and many of the main peaks of the alpine area. This track is also used by many visitors for other trips such as accessing Mt Twynam, Blue Lake, the Sentinel or the Rolling Grounds and then returning to Charlotte Pass. The third walk, the short “Snow Gums walk” (5 minutes return), is located at Charlotte Pass and accesses a viewing platform with spectacular views over much of the Main Range.

From both of the main access points a number of summer activities may be undertaken. These include day walking, mountain bike riding, camping, sight seeing, running, wild flower viewing, abseiling, painting, photography and skiing on late lying snow.

## Monitoring Approach

### Numbers and Activities

In the past it has been difficult to estimate the number of people visiting the alpine area in any one year as studies have been based on small sample sizes and irregular sampling approaches. Previous surveys have been based on short term ranger assessments (Ingram 1980; Mackay 1983; Virtanen 1993), school and special study group surveys (Stankey 1986), Thredbo chairlift ticket sales (acting as a major entrance point to the Kosciuszko alpine area), Kosciuszko National Park entrance permits and best estimates by NSW NPWS staff.

This study has used a standardised sampling approach to estimate visitor numbers and identify visitor characteristics. Initially, a pilot study was established in the 1998/1999 summer. Sites were established at all access points into the alpine area including Thredbo, Charlotte Pass and Guthega. Sites were also intermittently established at popular destination points such as Blue Lake, the summit of Mt Kosciuszko and Rawson Pass. Multiple days were surveyed around peak visitation periods including New Year’s Day, Easter and the Australia Day long weekend in order to determine the most appropriate survey locations and methods.

Following this pilot study, a stratified sampling approach was used for the 1999/2000 non-winter period. The non-winter period was designated as occurring from the October long weekend (11 October 1999) to the end of May 2000. A sample of 40 days was taken across this period with approximately equal numbers of sampling days allocated to “peak”, “intermediate” and “low” tourism demand days (Table 1).

**Table 1: Survey dates for specific demand periods**

Intensity	Number of Days	Period
Peak	14	New Year Period – 27 Dec to 03 January Australia Day – 26 January Easter – 21 April to 25 April
Intermediate	12	School Holidays – 18 January – 30 January (excluding January 26)
Low	14	Pre School Holidays – 13 December to 19 December Post School Holidays – 14 February to 20 February

Monitoring was undertaken at a number of locations across the Kosciuszko alpine area. Charlotte Pass and Thredbo (at the top of the Crackenback chairlift) were the primary survey points due to their high visitation. Though Guthega was also identified as an access point into the alpine area, results from the pilot study had suggested that this was very low (less than 1% of visitors) and so was not surveyed in the 1999/2000 study.

Three key destinations were surveyed to provide information on the dispersal of visitors from Charlotte Pass and Thredbo. These were the Kosciuszko lookout, the Kosciuszko summit and Blue Lake (Figure 2). Due to poor weather one sampling day from each of the survey periods (high, intermediate and low) could not be surveyed at the Mt Kosciuszko summit. At the Kosciuszko lookout, two survey days were not completed during the intermediate period nor were one day for each of the high and low periods. Visitor numbers recorded at Blue Lake were only completed during the New Years period. Though surveying of additional destinations was desired there were a limited number of volunteers and therefore only the major destination points identified during the pilot study were surveyed.

Data recorded at the major access and destination sites through observation of visitors included the number of visitors, their time of arrival and departure, estimate of age, gender, party size, activity, track utilised and a rating of the visitor’s level of preparation.

To help ascertain which tracks visitors were using and their destinations, visitors were asked where they were intending to go as they departed from each access point. This information was cross-referenced with observations and questions asked of visitors after they had returned from their walks/trips into the area.

Kosciuszko Thredbo Pty Ltd, the company that manages Thredbo Village, supplied information on visitor numbers for the period between December 1999 and April 2000. This data was specific to the Crackenback chairlift providing total ticket sales for each day.

## Surveys

Data were collected from 1,126 visitors after they had completed their activities and were departing the alpine area. A volunteer interviewed visitors with each interview taking an average of 15 minutes (Appendix A). Visitor interviews took place at Charlotte Pass and at the top of Crackenback chairlift. A stratified random sample of visitors was surveyed to ensure that the sample was representative of the entire population. This was accomplished by choosing equal numbers of males and females of various ages from different group sizes who were undertaking a wide a range of activities.

The surveys examined:

- Visitor motivations
- Visitor postcodes or country of origin;
- Information sources utilised by visitors to prepare for their trip;
- Visitor opinions on the value of the information they gained;
- Visitor safety;
- Visitor expectations and satisfaction of their experience in the alpine area; and
- Visitor perceptions of provided facilities, services and opportunities.

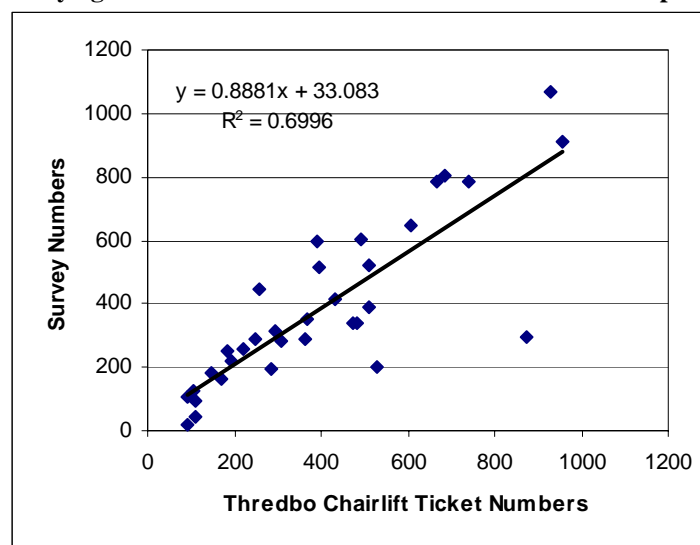
Responses for motivations, perceptions, attitudes, residential area and opinions of facilities are documented in this report. The remaining information can be found in theses produced by Arkle (2000) and McMaster (2000).

## Analysis of Data

Figures were determined for visitor numbers, party size, visitor patterns, track use, visitor demographics, activities and levels of preparation. Responses were also collated for visitor motivations for visiting the alpine area and satisfaction with facilities.

The total number of visitors to the alpine area for the non-winter period was estimated using three steps. Firstly, the visitor number data recorded during the 40 survey days was totalled. This data was then plotted against the Thredbo chairlift ticket sales data for corresponding days in order to derive a linear regression equation (Figure 3). This was used to estimate total visitor numbers for non-surveyed days between December 1999 and May 2000 (inclusive). Finally, the months of November 1999 December 1999 and May 2000 (days for which no chairlift ticket figures were available) were designated as periods of “very low” or “low” tourism demand. Estimates of visitor number for these months were made by using daily averages from other very low or low tourism periods (see Table 2, and Appendix B).

**Figure 3: Linear regression model plotting visitor numbers in the alpine area recorded during the 1999/2000 survey against Thredbo chairlift ticket numbers for corresponding days**



**Table 2: Classification of the non-winter period into periods of visitation (very low, low, intermediate and high)**

<b>Month</b>	<b>Period Classification</b>
October 11 – October 31 1999	“Very Low” (Low average divided by 2)
November 1999	“Low”
December 1999*	“Low” till December 25 “High” December 26 – 31
January 2000*	“High” January 1 – 3 “Intermediate” January 4 – 25 “High” January 26 – 31
February 2000*	“Low”
March 2000*	“Low”
April 2000*	“Low” from April 1 – April 20 “High” from April 21 – April 25 “Low” from April 26 – April 30
May	Low

**Periods in which overlapping ticket sales figures are available are marked (\*)**

Chapter 3

Results

Visitor Numbers

Through comparing figures counted during the survey and ticket sale figures from the Crackenback chairlift, the equation in Figure 3 was determined. Using this equation and the daily ticket sales figures from the Crackenback chairlift, an estimate for the non-winter period may be determined.

From the monitoring program in the 1999/2000 summer, 35,351 people were recorded arriving at the two main access points to the Kosciuszko alpine area: 67.5% (23,881) were recorded at the top of the Crackenback chairlift and 32.5% (11,470) at Charlotte Pass. The daily ticket sales information for the Crackenback chairlift showed that for the period between December 1999 and April 2000 inclusive, a little over 60,000 tickets were sold.

It was therefore determined that the total number of visitors accessing the Kosciuszko alpine area during the entire non-winter period of 1999/2000 was 102,500. This figure included both short stay (< half day) and long-term (> half day) visitors. It was estimated that just under half 47,250 (46%) visited for more than a half a day.

Further data on visitor numbers were collected at several destinations within the alpine area (Table 3). It was not possible to monitor these sites as frequently as the main access points due to either poor weather conditions or the limited number of volunteers.

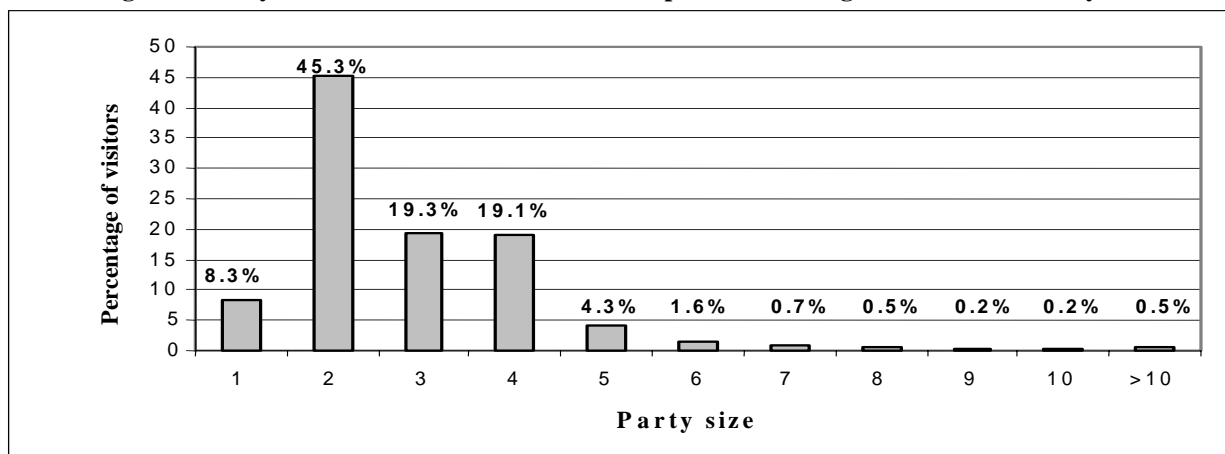
Table 3: Visitors counted at surveyed destination points within the alpine area

Destination location	Number of days surveyed	Number of visitors
Mt Kosciuszko summit	37	12,022
Kosciuszko lookout	35	8,956
Blue Lake	6	1,252

Party Size

There were 12,196 groups of people entering the alpine area. The most common group size was two people (45.3% of groups) with groups of three and four also frequent (19.3% and 19.1% respectively). Less than 4% of visitors were in groups of 6 or more (Figure 4).

Figure 4: Party size recorded in the Kosciuszko alpine area during the 1999/2000 survey



Visitation Patterns

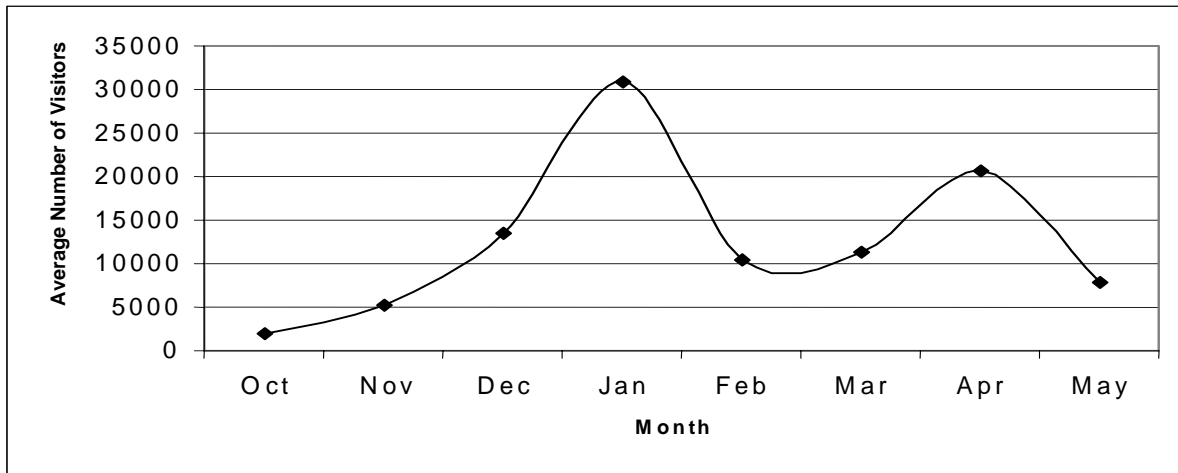
Temporal Patterns

Visitation to the alpine area was unevenly distributed across the survey period with greatest visitation occurring on public holiday and during school holiday periods. The New Year and Easter periods received the largest number of visitors over the summer period (Figure 5). In total, the five days surrounding each of these periods represented 53.7% of all visitors counted over the survey period (over 19,000 visits). The Easter period in 2000



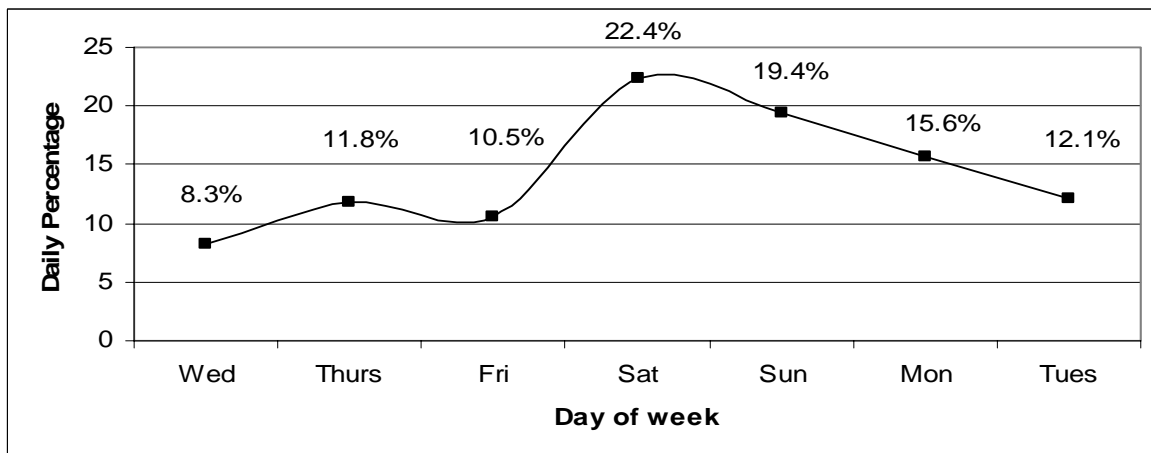
had the busiest day recorded during the study period. On Easter Saturday 2,560 visitors were counted (768 from Charlotte Pass, 1,792 from Thredbo) between 9.30am and 3pm. This intense visitation on Easter Saturday was also found in the pilot study in the autumn of 1999 with 2,506 visits between 9.30am and 3.30pm.

**Figure 5: Visitation trend over the 1999-2000 non-winter period**



The weekly visitation results (Figure 6) identified Saturdays and Sundays as the busiest days of the week (22.4% and 19.4% respectively) while Wednesdays were quietest (8.3%). The quietest days overall were weekdays that were not public or school holiday periods.

**Figure 6: Weekly visitation pattern of tourists to the Kosciuszko alpine area**



### Weather Influences

Weather also had a strong influence on visitor numbers. When conditions were poor visitor numbers were very low with only 5.9% of total visitors counted on these days (Table 4). Visitor numbers were highest when weather conditions were good and very good. Regardless of weather condition Charlotte Pass continued to have an average 32% of the daily visitors indicating that weather did not influence access point choice.

**Table 4: Visitor numbers and percentage of total according to weather conditions during the 1999/2000 survey**

	1	2	3	4	5	Total
Thredbo	1301	3919	3647	8065	6949	23881
Charlotte Pass	774	1939	1876	3491	3390	11470
Total number	2075	5858	5523	11556	10339	35351
Percentage	(5.9%)	(16.6%)	(15.6%)	(32.7%)	(29.2%)	

1= poor (rain and/or gale force winds); 2 = (overcast, strong winds); 3 = average (partially overcast, moderate winds); 4 = good (fine, moderate winds, late cloud overcast); and 5 = very good (fine and calm)

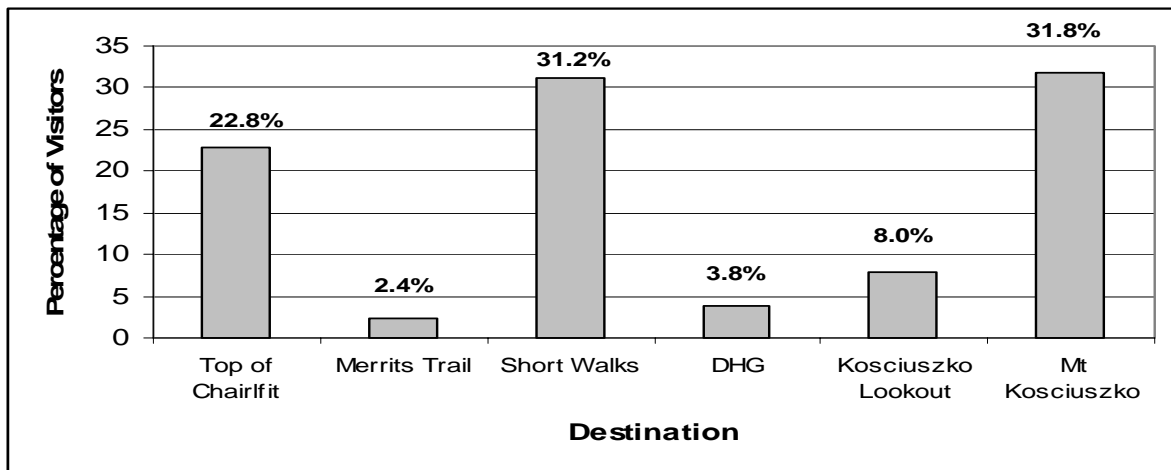
**Track Use and Destinations**

On average 67.5% of visitors were recorded at Thredbo and 32.5% at Charlotte Pass. Many visitors undertook only a short walk (< half a day) or stayed in the immediate area. At Thredbo 25.2% of all visitors were in this category as were 46% of visitors at Charlotte Pass.

**Via Thredbo**

Visitors entering the alpine area from the Crackenback chairlift most frequently took the Kosciuszko walk (74.8% of visitors) (Figure 7). Approximately 39.8% of visitors walked along this track as far as the Kosciuszko lookout, with 80% of these (31.8% of Crackenback chairlift total) continuing on towards Mt Kosciuszko. Thirty five percent of visitors who started the Kosciuszko walk returned to the chairlift before reaching the Kosciuszko lookout or else accessed the Dead Horse Gap walk. Visitors utilising the Dead Horse Gap Track made up 3.8% of the total visitors arriving at the top of the Crackenback chairlift. Sightseeing at and around the viewing area of the chairlift accounted for 22.8% of visitors arriving at the top of the Crackenback chairlift. Few visitors walked up Merrits trail to the top of the chairlift (0.8%), with only 2.4% of visitors departing on walks down Merrits trail from the top of the Crackenback chairlift.

**Figure 7: Destinations/tracks utilised by visitors leaving the top of the Crackenback chairlift during the 1999/2000 survey**



[DHG = Dead Horse Gap walk]

**Via Charlotte Pass**

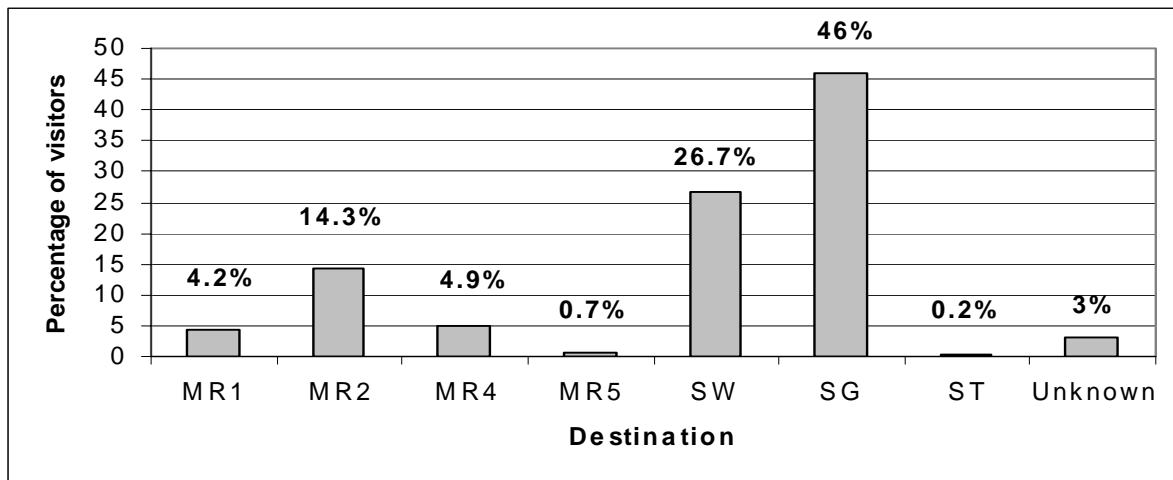
Visitors accessing the Kosciuszko alpine area from Charlotte Pass undertook a number of walks – the Summit walk, the Main Range Loop Walk, and the Snow Gums walk (Figure 8). The most popular of these walks was the Snow Gums with 46% of visitors taking this short walk.

The Summit walk was the most popular of the longer alpine walks with 26.7% of all visitors to Charlotte Pass undertaking this walk. Major destinations include the upper Snowy River crossing, Seamans Hut, Rawson Pass and the summit of Mt Kosciuszko.

The Main Range Loop Walk is a 20 km circuit (incorporating the Summit walk after reaching the Kosciuszko summit) with additional destinations including the lower Snowy River Crossing, Blue Lake and Mt Carruthers. Mt Twynam, the Sentinel and Watson’s Craggs can also be accessed through initially using this track. The Main Range Loop walk (MR1, MR2, MR4 and MR5) was started by 24.1% of visitors at Charlotte Pass.

Less than 1% of surveyed visitors were heading up Mt Stillwell (ST) from the Charlotte Pass car park.

Figure 8: Destinations/tracks utilised by visitors leaving from Charlotte Pass



(MR1 = lower Snowy River Crossing; MR2 = Blue Lake; MR4 = Main Range Loop walk; MR5 = Mt Twynam, The Sentinel and Watson's Craggs; SW = Summit Walk; SG = Snow Gums Walk; ST = Mt Stillwell)

### Duration of Visit

Of the total number of people utilising the Kosciuszko alpine area, 46% of visitors (43.6% from Thredbo, 49.8% from Charlotte Pass) appeared to be departing on walks or camping trips into the Kosciuszko alpine area that lasted a half day or more. For the remaining 54% of visitors, the duration of their visit was less than half a day and tended to involve sight seeing at and around the Crackenback chairlift or at Charlotte Pass utilising the Snow Gums walk or a short walk down to the lower Snowy River Crossing.

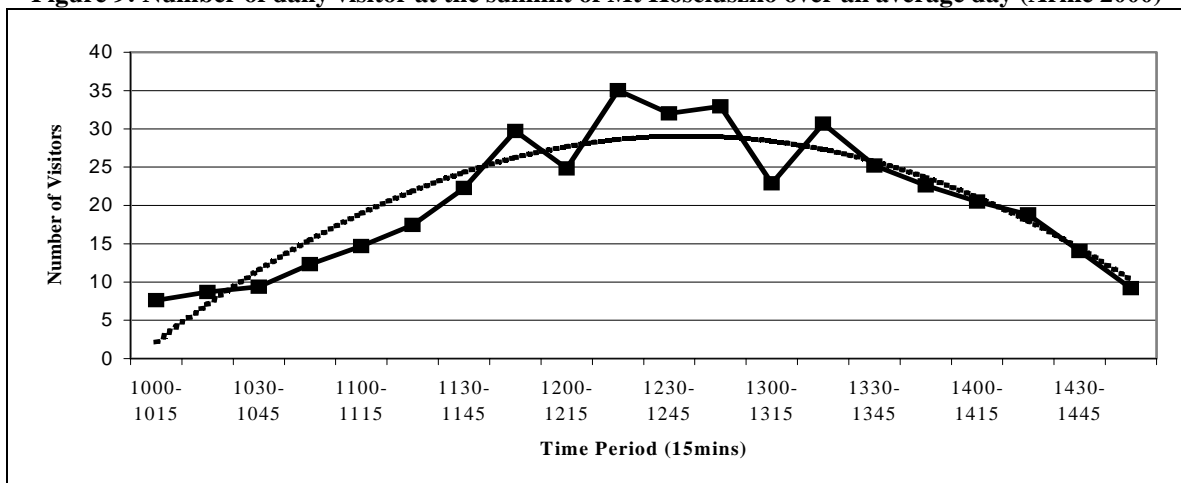
### Destinations

#### The Summit of Mt Kosciuszko

The summit of Mt Kosciuszko was the most popular destination in the Kosciuszko alpine area. During the 37 days that the summit was surveyed, 12,221 visitors were recorded (Arkle 2000). Between 65% and 70% of visitors had accessed the summit from Thredbo while 30% to 35% accessed the area from Charlotte Pass. These proportions varied according to demand period. In peak times a relatively higher proportion departed from Thredbo (70%), but during low demand periods a relatively lower proportion departed from Thredbo (65%).

The most popular days tourists chose to visit the Mt Kosciuszko summit were the 5 days around New Year's Day and over Easter. During these two periods, 7,668 visitors arrived at the summit (Arkle 2000). Visitation was most intense on Easter Saturday with 1,535 visitors arriving at the Kosciuszko summit between 10.30am and 3pm (of a total of 2,560 visitors for the day). Most visitors arrived at the summit between 12 and 1:30pm (Figure 9) (Arkle 2000).

Figure 9: Number of daily visitor at the summit of Mt Kosciuszko over an average day (Arkle 2000)



**Blue Lake**

It was estimated that 14.5% of total visitors departing on walks for a half day or more in the Kosciuszko alpine area visited Blue Lake, indicating that it is a major destination. More than 90% of visitors to Blue Lake accessed the area from Charlotte Pass.

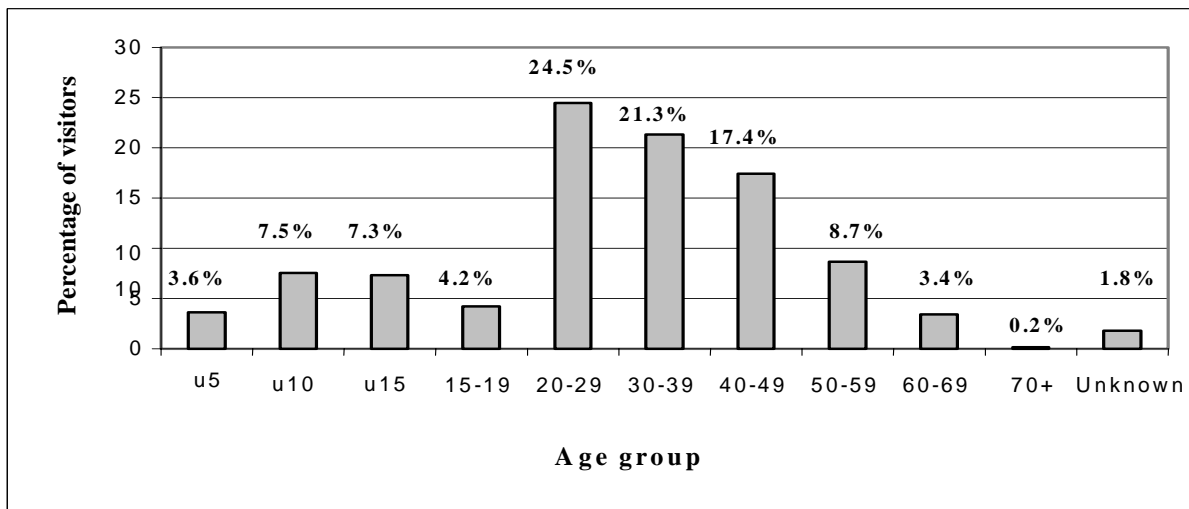
Of those arriving at Blue Lake, the onsite survey indicated that 38% of visitors returned directly to Charlotte Pass along the Blue Lake track while another 38% continued along the Main Range track towards Mt Kosciuszko. The remaining 24% of walkers departed for other points such as Mt Twynam, the Sentinal, the Watson’s Craggs and Mt Townsend before returning to Charlotte Pass. These results, when compared to Figure 8, indicate that destinations indicated by visitors when departing from Charlotte Pass did not always match their actions with many visitors extending their stay and visiting other sites within the alpine area once arriving at Blue Lake.

**Visitor Demographics**

Age group and gender were recorded for all visitors at the Crackenback chairlift and Charlotte Pass during the survey period (Figure 10). Almost half of the visitors were under 30 years old (47.2%) with 20-29 year olds the most common age group visiting the alpine area (average 24.5%). In the 20-29 age bracket there was variation at both the Crackenback chairlift (27.8% in low visitation periods, 19.5% in moderate visitation periods and 27.1% in high visitation periods) and Charlotte Pass (16.2% in low visitation periods, 17.7% in moderate visitation periods and 26.2% in high visitation periods) during the different demand periods.

Children (aged 15 and under) represented 18.5% of all visitors to the alpine area and were frequently associated with visitors in the 30-39 age bracket (i.e. they were part of a family group) (72% of children). A greater proportion of visitors with children accessed the alpine area from the Crackenback chairlift (average 20.7%) rather from than Charlotte Pass (average 13.8%). Children and consequently family groups most frequently visited during intermediate periods i.e. the January school holidays away from the peak time around New Year (23.7% at Crackenback chairlift and 16.9% at Charlotte Pass).

**Figure 10: Age distribution of tourists visiting the Kosciuszko alpine area during the 1999/2000 survey**



People in the 40-49 age bracket (17.4%) tended to represent a constant proportion of visitors during all of the survey periods. Visitors over the age of 50 (average 12.3%) tended to access the alpine area via Charlotte Pass (17.6%) rather than the Crackenback chairlift (9.7%). More visitors over 50 were visiting the alpine area during low periods at both Charlotte Pass (31.2% of all visitors) and the Crackenback chairlift (15.5% of all visitors).

There was no significant difference between the number of males (52.1%) and females (47.9%) visiting the alpine area.

Information about the visitors’ place of origin was collected during interviews and surveys (Table 5). The largest proportion of visitors to the Kosciuszko alpine area came from Sydney (38%), followed by Canberra/ACT (19%), regional NSW (16%) and the local area (12%).

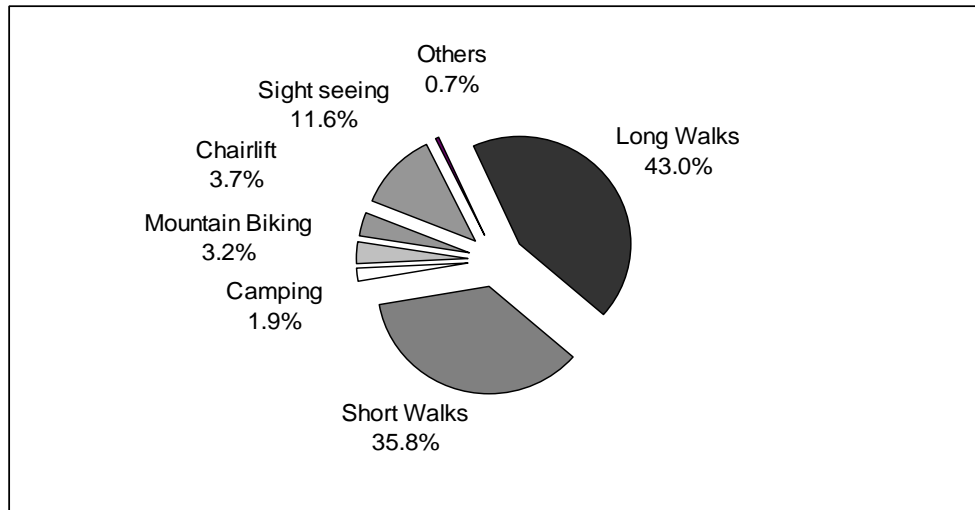
**Table 5: Place of origin for visitors to the Kosciuszko alpine area**

Place of Origin	Percentage (%) of Visitors
Sydney	38
Canberra/ACT	19
Regional NSW	16
Local area (Monaro)	12
Victoria	6
Queensland	5
South Australia	2
Tasmania	1
Western Australia	-
Northern Territory	-
Overseas	1

### Recreational Activities

Within the Kosciuszko alpine area a wide variety of recreational activities are undertaken (Figure 11). The more popular activities include both short and long (at least half day) walking trips (78.8%), mountain bike riding (3.2%), camping (1.9%) and sight seeing (11.6%). Other activities include running, wild flower viewing, rock climbing, abseiling, swimming, picnics, painting, photography and skiing on late lying snow.

**Figure 11: Percentage breakdown of recreational activities undertaken in the Kosciuszko alpine area**



Almost no differences were found in the relative proportion of visitors undertaking activities either from Thredbo and Charlotte Pass. Camping was the exception. Camping represented only a small proportion of total visitors, with Charlotte Pass (3.2%) being a more popular departure point for campers than the Crackenback chairlift (1.3%). There were slightly more male campers (58.2%) than female campers (41.8%).

The proportion of people in each age group participating in each activity was identified (Table 6). There were high numbers of visitors under 15 years old who took chairlift rides without getting off (38.5%). More people in the 20-29 age bracket participated in mountain biking (70.5%) and camping (47.4%) than in the other age groups. Walking and sightseeing was the most popular activity with children and visitors aged 40-49.

**Table 6: Age distribution (%) of visitors participating in recreational activities in the Kosciuszko alpine area in the 1999/2000 survey**

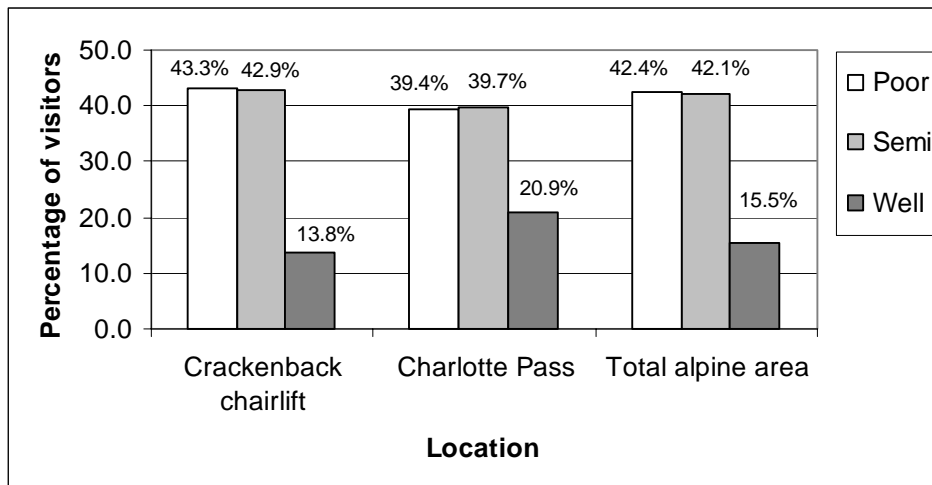
Activity	Total No.	%	Children (0-15)	15-20	20-29	30-39	40-49	50-59	60-69	70+	Unknown
Camping	685	1.9	6.9	5.4	47.4	22.8	11.7	5.3	0	0	0.6
Chairlift riders	1318	3.7	38.5	7.1	12.8	19%	13.1	5.2	1.7	0	2.5
Mountain Biking	1135	3.2	4	8.3	70.5	8.9	3.6	1.4	0.8	0	2.6
Other	236	0.7	14.4	4.5	41.1	21.8	19.3	9.4	3	1.5	2
Sight seeing	4117	11.6	20.2	3	17.8	21	18.8	10.7	5.6	0.2	2.7
Walking	27860	78.8	18.2	4.1	23.5	22	18.1	8.9	3.4	0.2	1.6
<b>Total</b>	<b>35351</b>										

## Level of Preparation

The preparation levels for all visitors departing on walks into the alpine area were observed (Figure 12). The level of preparation was a value judgement by the volunteer observer. Well prepared visitors were described as having good footwear, hats and appropriately prepared for changes in weather. Poorly prepared visitors tended to have a combination of poor footwear, no hats, no bags and/or observable preparation for changes in weather. Semi prepared described a middle ground between these classifications.

Results of these surveys and observations were similar from both of the main departure points although there was a trend for visitors departing from Charlotte Pass to be well prepared (20.9%) compared to Thredbo (13.1%). This difference however, was not significant. Of concern was the high proportion of visitors were poorly prepared (42.4%) or semi prepared (42.1%) with only the minority considered well prepared for the extreme weather conditions (15.5%).

**Figure 12: Preparation levels of visitor entering the Kosciuszko alpine area during the 1999/2000 survey**



Campers were the best prepared (86%) with only 4% considered poorly prepared. Visitors' sight seeing tended to be poorly prepared (59%) rather than well prepared (6%).

Although the days during mid-week received the lowest visitor numbers, visitors arriving during this time tended to be better prepared. Only 28.7% of visitors who entered the alpine area during the mid-week period were poorly prepared. There was no difference in preparation levels between males and females.

## Motivations

To understand why people participate in activities in the alpine environment, it is important to identify their motivations for visiting. Departing visitors were asked an open-ended question during the survey about why they came to the area. The most frequent response was that the visitor considered the alpine area to be a unique destination. Visitors often had more than one reason for visiting. The most common reasons cited for coming to the area were:

- To experience the alpine environment (47%);
- For the walking opportunities (46%);
- To climb Mt Kosciuszko (27%);
- The social opportunities: to “go somewhere” special as a social event with family (25%); and
- To view the flora and fauna (18%).

Other less common motivations included the alpine area being a venue to escape and relax, to see snow and experience a different climate and to participate in recreation activities away from home (Arkle 2000; McMaster 2000).

## Facilities

Upon returning to the main access points, visitors were asked to review and rate the facilities (including tracks, toilets, parking and signage) that they had used or seen while on their trip. Comments on facilities that visitors felt were missing were also made as well as their interpretation of the relevance and success of special works programs such as rehabilitation and revegetation programs. Responses showed that the facilities in place were

above expectation, especially by first time visitors to the area. Weather affected visitor experiences and influenced their response to the facilities. Average ratings are listed below where 5 was excellent and 0 was poor:

- Walking tracks – 4.3;
- Signage, in regards to placement, content and associated practicality – 3.8;
- The Summit area – 4.25;
- Toilets – 4.1; and
- Revegetation and rehabilitation programs – 4.25.

### **Walking Tracks**

Visitors were asked to rate the different track surface types. Average ratings are listed below where 5 was excellent and 0 was poor:

- Raised Metal Walkway – 4.8;
- Pavers – 4;
- Geoweb and crushed Granite – 2.5;
- Natural – 2; and
- Gravel – 1.

Visitors were asked what they wanted in a walking track in the Kosciusko alpine area the most popular responses included:

- As natural as possible (52%);
- Comfortable walking surface (48%);
- Interesting scenery and destination points (42%);
- Reasonable walking grades - good design (28%);
- Environmentally friendly (28%);
- Less crowding - design/choice (27%); and
- Well maintained (25%).

Visitors also indicated that they were not happy with the choice of tracks available in the Kosciuszko alpine area. The most popular responses to what types of tracks they did want included:

- More choice (63%);
- Loop walks (41%);
- Educational walks (32%); and
- Short walks to vista points (such as the Snow Gums walk at Charlotte Pass) (25%)
- Loop walks and short walks to vista points were mostly popular with the elderly and family groups.

### **Signage**

Visitors were asked to rate the signage provided in the Kosciuszko alpine area. The responses included:

- Poor (1%);
- Okay (7%);
- Average (24%);
- Good (41%); and
- Excellent (27%).

McMaster (2000) found that 68% of visitors interviewed felt that the signage provided was good to excellent. However, 71% still made suggestions on how the information and interpretation provided could be improved. Common responses included:

- Progressive distance information along the walking tracks;
- Orientation information along the tracks including directional signage and identification of features;
- More safety information and interpretation;

- More cultural, landscape, geomorphology, geology, flora and fauna information and interpretation along the tracks;
- Information outlining rules and regulations for the area; and
- Information outlining management issues in the area.

### **Toilets**

Visitors were asked to rate the toilet facilities provided in the Kosciuszko alpine area. The responses included:

- Poor (9%);
- Okay (12%);
- Average (35%);
- Good (24%); and
- Excellent (20%)

Visitors were asked to comment on the toilet facilities provided in the Kosciuszko alpine area. Some responses included:

- That the toilets were well appreciated and generally well maintained, although some visitors (15%) indicated that they would like more available – one at Blue Lake and one near the upper Snowy River crossing;
- A few respondents (9%) felt the facilities at Charlotte Pass and Rawson Pass had a large visual impact on the local environment and were not appropriate for a natural setting; and
- 80% of the respondents commented on the smell of the facilities, particularly the Integrated Eco-Village toilet system at Charlotte Pass.

### **General Comments**

Common feedback and comments that were made about other facilities included:

- 42% of respondents at Charlotte Pass indicated problems with parking. A common response was that parking facilities “were frustrating and dangerous” at Charlotte Pass;
- More destinations/lookouts closer to the track heads would be appreciated (not as far to walk); and
- Revegetation works looked very impressive and productive although most visitors would like more information on what was going on and were often not aware of its purpose.



Chapter 4

Discussion

Introduction

With the increasing popularity of summer tourism to the Kosciuszko alpine area, knowledge of visitor demographics, expectations and motivations is essential for NSW NPWS and the local tourism industry to implement management and infrastructure planning for the area. In this chapter, the results of the monitoring program and surveys are discussed with reference to the objectives defined by the study and with consideration to: (1) other studies completed both in the Kosciuszko alpine area and abroad and (2) possible environmental impacts.

Visitor Numbers

Initial estimates of visitor numbers derived from this survey were reported in Johnston and Pickering (2001) and Worboys and Pickering (2002). Both papers estimated that there were 64,000 visitors to the Kosciuszko alpine area during the period from December 1999 to the end of April 2000; however this estimate was inaccurate and did not include the entire non-winter period.

This report estimates that the total number of visitors, both short term (< half day) and long term (>half day), during the 1999/2000 non-winter period for the Kosciuszko alpine area was 102,500 (Table 7; Appendix B). Estimates of the number of visitors accessing major tracks and destinations in the Kosciuszko alpine area were also derived (Table 7). These are based on the assumptions derived from survey data and are listed below:

- That 67.5% of visitors were entering the area from the Crackenback chairlift with the remaining 32.5% accessing the area via Charlotte Pass;
- That 74.8% of visitors arriving at the top of the Crackenback chairlift depart on walks into the alpine area;
- That 3.8% of visitors arriving at the Crackenback undertook the Dead Horse Gap walk;
- That 39.8% of visitors arriving at the top of the Crackenback chairlift walk as far as the Kosciuszko lookout;
- That 80% of visitors arriving at the Kosciuszko lookout continue beyond the lookout; and
- That at Charlotte Pass only 49.8% of visitors depart on walks into the alpine area (46% around Snow Gums walk only, 4.2% short walk down to the Lower Snowy River Crossing).

**Table 7: Estimations of visitors accessing and dispersing into the Kosciuszko alpine area (\*classified as a long walk)**

Estimated Visitor Number Breakdown	Estimation
Total visitors estimated as arriving in the alpine area	102 500
<b>1. Number of visitors arriving via Thredbo</b>	68 850
1(a) Visitors sight seeing around top of chairlift only or walking down Merrits trail	17 350
1(b) Visitors starting up Kosciuszko Walk from top of Crackenback chairlift	51 500
• Short walks	21 000
• Dead Horse Gap*	2 600
• Visitors walking at least to Kosciuszko Lookout*	27 900
(Visitors continuing beyond Kosciuszko Lookout)	21 920
(Visitor returning to Crackenback chairlift from Kosciuszko Lookout)	5 980
<b>2. Number of visitors arriving via Charlotte Pass</b>	33 650
2(a) Visitors sight seeing and short stays	16 900
• Sight seeing and Snow Gums Walk	15 500
• Short walks (Lower Snowy River Crossing)	1 400
2(b) Number of visitors starting walks into alpine area from Charlotte Pass *	16 750
Total number of visitors departing on long walks	47 250

This study estimates that the numbers of visitors accessing the Kosciuszko alpine area for long walks was 47,250. This can be compared with previous surveys as it has been derived using similar parameters (Table 8). There appears to have been an increase of approximately 4,250 visitors departing on long walks into the Kosciuszko alpine area over the 9 years since the previous survey (the previous survey reported by Virtanen

(1993) was undertaken in 1990/91). This figure represents a 10% increase in visitor numbers to the Kosciuszko alpine area during this time.

**Table 8: Changes in summer visitation over the last 25 years (\* specifically referring to long walk trips)**

Study	Estimated Numbers
Worboys (1978)	20 000
Murphy (1985)	36 000
Virtanen (1993)	43 000*
Johnston & Growcock	47 250*

Such an increase has not however, been noted from other sources of visitor information within the Park with Thredbo chairlift data and park gate entry data suggesting that usage patterns have remained fairly stable for the last decade (Worboys & Pickering 2004). This highlights the need for appropriate monitoring approaches and techniques to be applied for specific interest areas. Large-scale surveys or data collection may miss smaller scale or site-specific changes.

Increasing numbers of visitors to national parks have been widely reported and this trend is expected to continue (Buckley et al. 2003; Newsome et al. 2002). As visitor numbers increase, negative environmental and social impacts are also expected to increase. Impacts include:

- Introduction of new and expansion of existing weed species;
- Creation of new pads and trails as a result of off track trampling;
- Increased soil erosion;
- Pollution of lakes and streams;
- Increases in overnight camping pressures;
- Increases in human waste and litter; and
- Reduction of visitor enjoyment due to overcrowding.

In response to the increase in use of the Kosciuszko alpine area as a summer tourism destination the NSW NPWS has progressively hardened and improved the infrastructure within the alpine area (Pickering et al. 2003; Worboys 1978; Worboys et al. 2001). This has included: extensive upgrading of walking tracks (e.g. use of consolidated and unconsolidated gravel and raised steel mesh and wood walkways); hardening of destination points (e.g.. summit of Mt Kosciuszko); provision of lookouts; and the introduction or upgrade of toilets to reduce the impact of human waste (Australian Alps Liaison Committee 2000; Johnston & Pickering 2001; Worboys & Pickering 2002). Visitor perceptions on the effectiveness of these provisions are discussed in the facilities section of this chapter.

## Party Size

Information on the size of groups using sensitive natural areas is important for land managers, as it will assist in the planning sustainable facilities (Watson et al. 2000).

In the Kosciuszko alpine area party size was typically small during the peak and intermediate periods. Almost half (45%) of all groups were just two people (Figure 4). Groups of three and four were also common (~19% each). Larger groups (usually associated with schools, walking clubs or scout groups) used the area outside the peak and intermediate periods. Similar findings were also reported by the Ecotourism Society (1991).

Comparing these results with Stankey’s 1982/83 summer survey of recreational use of Kosciuszko National Park (Stankey 1986), it appears that groups have been getting smaller over the last 18 years (Table 9). The shift towards smaller groups in the last 20 years has also been found in the United States (Roggenbuck & Lucas, 1987; Watson 2000).

**Table 9: Comparison of party size distribution for users in the Kosciuszko alpine area (percentages)**

Party size	Stankey (1986)		Johnston & Growcock	
	Total percentage	Overnight (camping) %	Total percentage	Overnight (camping) %
Number of groups	877	157	12196	277
1	4	8	8	14
2-3	46	43	65	70
4-5	27	20	23	13
6-9	13	15	3	2
>10	10	14	1	1

The size of camping groups also appears to be getting smaller with Stankey (1986) reporting that camping groups of 4 or more members represented 49% of all campers while groups of 2–3 the most common group size (43%). In this study however, groups of 4 or more represented only 16% of the total, with groups of 2-3 representing approximately 70% of the total groups identified.

These results have interesting implications for management. Limiting group sizes is a valuable management tool in many national parks to minimise the impact of visitors on the environment as well as reducing the conflict between, and within, user groups (Monz et al. 2000). However, limiting group sizes in the Kosciuszko alpine area would be of little practical use as groups are already small in day users and overnight campers. Impacts that are occurring are a result of the total number of people visiting the area, not a result of multiple large groups. Furthermore, as party size has decreased it would seem that visitors are looking for a more intimate experience within the alpine area with large groups being undesirable. Track planning and facility provision by management may need to reflect this desire for a quieter experience. Management actions such as providing additional hardened destinations and restricting access through a permit system may be required in the future if visitor numbers continue to increase.

## **Visitation Patterns**

Visitation to the Kosciuszko alpine area was unevenly distributed throughout the non-winter period, with public holidays and school holidays the peak periods. The New Year period and Easter were the busiest times with 19,000 visitors (53.7% of the total number of visitors) recorded over just 10 days (five days surrounding each of these holidays). On Easter Saturday alone 2,560 visitors were recorded (1,792 at the Crackenback chairlift and 767 at Charlotte Pass). On average Saturdays and Sundays were the busiest days of the week and weekdays were low periods.

Similar trends of high summer visitation have also been found in other mountain environments where snow restricts access for part of the year. For example, in Glacier National Park, Montana, U.S.A, comparable daily and weekly trends have been identified, though for greater numbers of visitors, with a similar peak of visitation numbers coinciding with the middle of summer (Hartley 2000). Intense visitation in summer is of concern as it co-insides with the short period of time that alpine vascular plants have to grow before the snow returns (Hartley 2000). Damage at this time may have long-term consequences. In the Kosciuszko alpine area, this conflict is likely to be most severe during January, on weekends and between 12pm and 1.30pm.

Weather also had a strong influence over visitation patterns, with poor weather substantially reducing numbers. At Charlotte Pass, when the weather was inclement, the majority of visitors tended to remain in their cars or only ventured out to the viewing platform adjacent to the car park. At Thredbo during poor weather, few people (less than 100 in total) took the chairlift. Of those, the majority (92%) did not leave the immediate area surrounding the top of the chairlift and two thirds of those who attempted to walk to Mt Kosciuszko turned back well before reaching before the summit.

Weather also had a major influence on the congregation patterns of tourists around the summit of Mt Kosciuszko. On days where the weather was sunny and warm visitors stayed on the hardened areas near the summit. However, on cold windy days the majority left the hardened areas to seek protection behind boulders (Arkle 2000). Overcrowding on the Kosciuszko summit may cause people to spread out further from the central hardened area into surrounding vegetation. As a result of the subsequent trampling, considerable damage to vegetation and soil can occur. As these impacts occur just before the start of winter there will be little time for vegetation to recover.

## **Track Use & Destinations**

In total, 67.5% of visitors recorded during the survey were found at the Crackenback chairlift with the remainder at Charlotte Pass. At these sites, a number of other important trends and details were identified:

- A large number of visitors were only sightseeing and not entering into the alpine area: 25.2% of those at the Crackenback chairlift and 46% at Charlotte Pass (including the Snow Gums walk).
- Many visitors were only taking short walks: 30.5% of visitors from the Crackenback chairlift and 4.2% from Charlotte Pass (this did not include the Snow Gums walk).
- Long walks were also popular: 44.3% of visitors from the Crackenback chairlift (walking to the Kosciuszko summit and using the Dead Horse Gap track) and 49.8% of visitors from Charlotte Pass.
- The Kosciuszko summit is the major destination for those undertaken a long walk (> half a day).

Long walks represent an important activity within the Kosciuszko alpine area. From Thredbo and the Crackenback chairlift, the number of visitors departing on the walk to the Kosciuszko summit appears to have

increased over the last 20 years. Ingram noted in his 1980 study that 30 – 40% of people using the chairlift used the walking track to head to the summit. This has increased to almost 75% in the 1999/2000 non-winter period.

Not all of the people departing on the walk however, reach the summit. In total, almost 40% of visitors travelling up the chairlift arrived at the Kosciuszko lookout. Only 8% returned to the chairlift when arriving at the lookout, with the rest continuing onto the Kosciuszko summit. This proportion appears to have remained similar to those identified in the 1983 study (Table 10).

**Table 10: Destination of non-winter visitors travelling up the Crackenback chairlift**

Study	To Kosciuszko Lookout	To Mt Kosciuszko
Ingram (1980)	Not assessed	15 – 20%
Mackay (1983)	2 – 5%	33.5%
Virtanen (1993)	Not assessed	32 – 33%
Johnston & Growcock	8 %	31.7%

The proportion of visitors arriving at the Kosciuszko summit from the two main access points has remained relatively constant over the last 10 years (Table 11) through there is some variation over the non-winter period. Virtanen (1993) for example, noted that during peak visitation periods such as Christmas and Easter 69% and 79% (respectively) of visitors arriving at the summit area were from Thredbo. This study also noted similar variation, though the average percentage from Thredbo tended to be smaller with only 65 – 70% arriving from this access point.

**Table 11: Proportion of visitors from Thredbo and Charlotte Pass arriving at the summit of Mt Kosciuszko during peak periods in three surveys**

Study	From Thredbo (%)	From Charlotte Pass (%)
Mackay (1983)	80	20
Virtanen (1993)	69-79	31-21
Johnston & Growcock	65-70	35-30

The Kosciuszko walk remains the most frequently used track within the Kosciuszko alpine area. The distribution of walkers at any given time in the alpine area appears to have remained similar over time (assuming that people counted for the Kosciuszko walk continue on beyond the Kosciuszko lookout) with Table 12 comparing the 1982/1983 study by Mackay (1983) with the results from this study.

**Table 12: Distribution of walkers at any given time**

Study	Kosciuszko walk	Summit walk	Main Range walk
Mackay (1983)	61.4%	19.3%	19.3%
Johnston & Growcock	62.2%	21.6%	16.2%

## Visitor Demographics

This study revealed that the most visitors to the Kosciuszko alpine area were between 20 and 49 years old (63.2%) (Table 13). However, many visitors were aged below 15 years old (18.5%).

**Table 13: Comparison of age demographics in Kosciuszko alpine area in 1982/83 and 1999/2000**

Age Group	Johnston & Growcock		Stankey (1986)
	(All age groups)	(Excluding under 16)	
Under 15	18.5%	N/A	N/A
15-19	4.2%	5.2%	11.9%
20-29	24.5%	30%	34.5%
30-39	21.3%	26.2%	25.4%
40-49	17.4%	21.4%	14.3%
50+	12.3%	15%	13.6%
Unknown	1.8%	2.2%	0.3%

Although Stankey’s 1982/83 study did not include visitors under the age of 16, comparisons between the two studies can still be made. There does appear to have been an increase in the proportion of visitors in age groups of 30 and above (Table 13). It is possible that this is a result of a greater number of family groups now coming to the area for recreation purposes. This study indicates that the groups of families with children and young couples dominate the profile of visitors to the Kosciuszko alpine area in summer. Other significant groups

identified were mature families and older couples during the off-peak periods of the snow free period (i.e. outside of school holidays). This profile is similar to that found by Tourism Victoria (1996), where visitors to the Victorian alpine regions were dominated by families, young couples and solos.

This study identified approximately equal numbers of males and females visiting the Kosciuszko alpine. This trend was also found in a survey of visitors to the Victorian alpine region Tourism Victoria (1996). Over the last 20 years there has been an increase in the proportion of female visitors to the area. Stankey (1986) stated that about 60% of day use respondents were male with 70% of camper respondents male. This ratio is now more evenly split with only 52.1% of day users male and 58% of campers male.

The identification of a visitor's place of origin/residence is important for marketing tourism strategies. Most visitors to the Kosciuszko alpine area came from Sydney (38%), Canberra/ACT (19%), regional NSW (16%) and the local area (12%). Other areas of origin included Victoria (6%), Queensland (5%), South Australia (2%), Tasmania (1%) and overseas (1%). These results indicate that a marketing strategy directed at Sydney, the ACT and regional NSW would have the highest impact in increasing numbers of visitors to the area. It may also be prudent by tourism stakeholders to widen the marketing efforts to attract more visitors from interstate and the international market.

## **User Groups**

Three groups of users were identified in the survey each with different requirements and environmental impacts. These were:

1. Short stay visitors (< half day);
2. Long stay visitors (> half day); and
3. Experience seekers.

## **Short Stay Visitors**

Almost half of all visitors recorded were short stay visitors undertaking sight seeing (11.6%) and/or short walks (35.8%). Short stay visitors did not venture far from the top of the Crackenback chairlift or the Charlotte Pass car park and were observed to be generally focussing on gaining a "snap-shot" of the alpine area before quickly moving on. They also tended to be poorly prepared for the changeable alpine weather in terms of appropriate clothing.

The environmental impacts from short stay visitors at the two major access points to the alpine area are quite intense. Impacts are from two sources (1) site hardening and tourism infrastructure and (2) tourist use of the infrastructure and the surrounding area. Impacts include trampling (resulting in loss of cover, changes in species composition and diversity), damage to trees, soil exposure and compaction and litter.

At Charlotte Pass there is extensive site hardening and tourism infrastructure, such as toilets, a car park, and information signs. The location and design of the raised wooden Snow Gums walk is an excellent example of how impacts from visitors have been minimised while enhancing the visitor experience. At Charlotte Pass almost all visitors were observed as staying on the hardened areas and not moving onto surrounding natural vegetation. Therefore additional environmental impacts from short term visitors, other than impacts from the infrastructure are not expected.

At the top of the Crackenback chairlift minimal site hardening or infrastructure has been provided other than that necessary for the operation of the chairlift. Short term visitors commonly make their way to nearby vantage point (such as rocky outcrops) in order to appreciate the view. This has led to the degradation of the surrounding vegetation from trampling, exposure of bare soil and the further introduction of weeds.

## **Long Stay Visitors**

Visitors undertaking walks of more than a half-day frequently went to the Mt Kosciuszko summit and the Blue Lake area. With these visitors representing such a large proportion of the visitors to the area, it is important to understand who they are and where they are going, especially considering the increasing number of these users to the alpine area (10% increase from 1990/1 to 1999/2000).

Long stay visitors to the alpine area are likely to cause similar impacts to those described for short stay visitors, though more widespread. While many visitors tend to remain on the hardened tracks others who have specific destinations in mind will go off track and cause further impacts. Pad and trail creation is one impact of this behaviour (Virtanen 1993), where visitors were heading off to mountain top peaks that had no specific trail access (i.e. Mt Twynam, Mt Townsend, and Watsons Craggs). Damage to vegetation cover in this particular case may be exacerbated as a result of physiographic factors (such as slope) that can lead to greater erosion risk.

With consideration to previous surveys within Kosciuszko National Park and further abroad, it is expected that day use will continue to grow into this century (Chavez 2000; Cole 2001; Mackay & Nixon 1995; Virtanen 1993). As such, research into threshold levels of major vegetation communities from recreation disturbance in

these areas will be of great benefit in identifying what limitations should be put on recreational use of sensitive areas. Such information will also benefit management decisions in regards to facility placement and track location and design.

### **Experience Seekers**

Some visitors seek more active and interactive experiences and undertake activities such as running, fishing, abseiling, rock-climbing, skiing on late lying snow, photography and painting. These activities however only accounted for approximately 6% of all activities and were often combined with other more popular activities such as day walking.

Two of these activities however, mountain bike riders and campers, have the have the potential to cause serious negative impacts and are discussed in more detail below.

### ***Mountain Biking***

Mountain bike riders in the Kosciuszko alpine area can be divided into two distinct types. From the Crackenback chairlift mountain bike riding was undertaken as an “extreme” sport, which is promoted and supported by the Thredbo Village. Riders tended to be males in the 20-29 age groups who spent little time in the area, rapidly returning to the Village below via Merritts Trail. From Charlotte Pass, mountain bike riders were mostly families, or small sized social or tour groups of mixed ages.

As mountain bikes allow for easy and rapid access to more remote areas they have the potential to cause environmental damage and social problems. These impacts however, are likely to be minimised in the Kosciuszko alpine area as riders are restricted to roads and management tracks (Australian Alps Liaison Committee 1998). Impacts occur mainly occur through (a) erosion, (b) muddying of tracks when wet, (c) development of multiple parallel tracks (rutting) and (d) the development of informal tracks through switchbacks and corner cutting (Cessford 1995; Chavez 1996; Symmonds et al. 2000).

Social conflicts, often with walkers, are also a problem. Management of these issues is somewhat more complicated as they often deal with visitor perceptions and attitudes. While some of these conflicts are inter-related, they may categorised as (a) mountain biking being perceived as causing greater environmental damage, (b) being a greater safety hazard on management trails (for walkers who don't hear or see them coming) and (c) that many visitors see mountain biking as being an inappropriate use of the area detracting from more passive-use recreationists (Cessford 1995).

Social conflicts within the Kosciuszko alpine area however, are likely to be minimal due to the low use of Merritts trail by walkers and the demographic profile of mountain bike users along the Summit trail from Charlotte Pass. In the first case, there are few walkers down the Merritts trail with mountain biking well established and the dominant summer activity along the trail. Being located within the confines of a ski resort area, it is also likely to be perceived as a more acceptable activity. From Charlotte Pass, those undertaking mountain biking tended to be undertaking it as part of a family group, with the purpose of the riding to further their experience in the alpine area as an alternative to walking. Their slower approach is less likely to conflict with the values of those undertaking day walks.

### ***Camping***

Camping is allowed in most areas of Kosciuszko National Park other than in the catchments of the glacial lakes. Campers, in this study, were mostly in small groups – family members, couples, friends, or club members.

Campers have the potential to cause a range of environmental impacts including: loss of vegetation cover and reduction in species diversity, tree damage, increased soil compaction; changes in water infiltration rates; nutrient influxes from cooking and human waste and pollution of local water sources (Cole & Monz 2004; Frissel 1978; Hardie 1993; Hart 1982; Leung & Marion 1999a, 1999b; McEwan & Cole 1997; Stohlgren & Parsons 1986). Other impacts can include loss of animal habitat through the collection of firewood, alteration of animal behaviour (through feeding), litter and waste (Cilimburg et al. 2000; Cole 1990; Victoria Department of Conservation and Environment 1991).

While impacts from fire scars and fire wood collection are not applicable within the alpine area due to the lack of wood and a “no fire” policy, many of the other impacts may occur. Studies in the United States have shown that damage to vegetation can occur over after only one night's camping (Cole 1995). The extent of damage from camping however is the result of a number of factors, including concentration of campers, length of time and sensitivity of the environment (Leung & Marion 1999b). Studies are needed into the nature of camping impacts and thresholds in the Kosciuszko alpine area.

## **Motivations, Attitudes & Perceptions**

Visitors to the alpine area indicated that they sought a variety of experiences; however a common motivation for visiting the area was an appreciation of the uniqueness of the Kosciuszko alpine area. This shows that the preservation of the natural alpine environment is not only important for conservation but also for the continued recreational value of the Kosciuszko alpine area.

Although this may be encouraging for park managers trying to preserve the area, the fact that people seek to escape the pressure of society means that regulation of user behaviour could conflict with their expectations. This is important as it identifies what people want from their experience and what managers need to consider to continue maintaining and improving visitor experiences in their activities.

Knowledge of the user's perception of the quality of the environment is important in the making of management decisions because unless users believe there is a need for management action, compliance with management regulation will be low (Lucas 1985). For example, campers in the alpine area were asked how their activities may impact on the environment, a variety of responses were obtained including:

- No impact
- Litter/waste;
- Damage to vegetation;
- Spread/introduction of weeds;
- Water pollution; and
- Vandalism.

However, when visitors were asked if they thought these issues were a major management problem, the majority (78%) indicated that there was little reason for concern. This lack of concern does not mean that there is not a problem, but that these visitors lack awareness of important issues. This indicates that NSW NPWS signage and interpretation may not be effective.

## **Facilities**

This part of the study identified visitor satisfaction their experience in the alpine area and in particular with walking tracks, toilets, and signage/interpretation. This information provides an understanding of the visitor attitudes and visitor experiences in the area. Although nearly all visitors surveyed (99%) indicated that they were happy or satisfied with their visit to the area, many expressed opinions on ways their experience could be improved. In particular, how the tourism infrastructure could be improved.

### **Walking Tracks**

This study has shown that what management has planned and designed for in terms of track infrastructure within the Kosciuszko alpine area is not necessarily what the visitors want, bringing about a conflict in people's behaviour patterns in this sensitive environment. For example, visitor ratings of the walking tracks in the Kosciuszko alpine area in general indicated that visitors generally thought they were of a high quality. However, when asked specifically about the various surface types found in the area that rating changed from a level of excellence for the raised metal walkway to poor for the natural and unconsolidated gravel tracks found in the area. This led to people commenting about how they had left the tracks to find a more comfortable walking surface. This can lead to the braiding of tracks.

### **Toilets**

In the Kosciuszko alpine area there are two public toilet sites for use during summer visitation, located at Rawson Pass ("portaloo's") and Charlotte Pass. Visitors were generally happy with the standard of toilets currently provided, however, issues such as smell and cleanliness of the toilets at Charlotte Pass, and the high visibility of the portaloo's at Rawson Pass caused some concern. These problems could easily be addressed by more rigorous maintenance and better ventilation of the toilet at Charlotte Pass and a more inconspicuous site could be chosen for the toilets at Rawson Pass. Another suggestion would be to design the toilet site at Rawson Pass so that it blends into the surrounding environment (i.e. hide the toilets behind rocks or vegetated mounds).

More toilets are needed suggested 15% of respondents, especially at locations such as Blue Lake, Seamans Hut and the Upper Snowy River Crossing. These places are major destinations and are at least one to two hour's walk away from the track heads. With increasing visitation to the area envisaged into the future a better waste management strategy for the Kosciuszko alpine area is essential for visitation to be sustainable.

### **Signage**

Improving the provision of information on the natural and cultural history of the Kosciuszko alpine area is one way of increasing visitor satisfaction. At present there are interpretative signs at the track heads and a few points of interest in the alpine area. Information pamphlets are available at the NSW NPWS Visitor Centre in Jindabyne. While most people interviewed stated that the interpretation in the Kosciuszko alpine area was adequate, many had suggestions for improvements. The most common suggestion was the need for distance markers along the alpine walking tracks: a finding also reported by Stankey (1986). If visitors know the distance that they have travelled, they can make informed decisions about whether their original goal destination was realistic (McMaster 2000). Improving information on distances will result in visitors having a more enjoyable time, and fulfil a management requirement to provide information and interpretation.

Information on flora, fauna, geology, geomorphology, the alpine environment and cultural heritage were also subjects on which visitors wanted more information and interpretation. Visitor feedback reflected that seeing and experiencing the alpine environment were major motivations for visiting the Kosciuszko alpine area. Visitors were especially interested in having more signs along the tracks to explain the environment that they were experiencing.

Visitors also commonly asked for more interpretation on safety issues. Currently, there are signs with safety information at the Charlotte Pass and Thredbo chairlift track heads. However, some visitors indicated that it would be good to also have this information on other signs along the tracks or at destinations, as the signs at the track heads may have been missed.

The interpretation information in the Kosciuszko alpine area is very limited and does not appear to satisfy visitor requirements for safety and environmental education and does not adequately fulfil its role as a tool for visitor management (McMaster 2000; Virtanen 1993). More signage with information on the area's natural heritage, history, activities, safety and regulations is required. Education helps to foster an understanding and appreciation of the Park and in particular the alpine area's natural, cultural and recreational values. This assists the visitor in understanding the management agency's policies and practices and can promote behaviour that will protect the natural values of the Kosciuszko alpine area.

### **Parking**

A significant number of all respondents interviewed at Charlotte Pass indicated that they were unhappy with the standard and safety of the parking at Charlotte Pass. Currently there is very limited short-term parking at the turning circle and long-term parking only along the road verge. On busy days, cars were parked on both sides of the Kosciuszko Road turn for approximately one km from the turning circle. Common issues raised by visitors included:

- The danger of moving/walking in and around vehicles near a busy road, where the vehicles in many cases infringe on the road due to the small size of the verge;
- Damage to vehicles due to rocks, the edge of the road and other vehicles;
- On busy days the distance from the Charlotte Pass turning Circle which cars must be parked; and
- The problems encountered by larger vehicles (buses, trucks and campervans) on busy days.

Such complaints call for the upgrading of the road, especially the verges, to accommodate the large number of cars, and to create a safe and secure experience for the visitor. This has implications for NSW NPWS as with increasing visitation to the area envisaged into the future a management strategy for parking at the Charlotte Pass turning circle and track-head is needed for visitation to be sustainable.

This could include options such as:

- Utilising the old quarry site adjacent to the turning circle as long-term parking area;
- Increasing the parking area at Charlotte Pass Village for long-term parking, and utilising a chairlift from the Village to the turning circle and track-heads; and
- A shuttle bus service from Perisher Valley.



## **Chapter 5**

# **Conclusions**

## **Visiting the Kosciuszko Alpine Area**

It is clear that visitation to the Kosciuszko alpine area has increased since 1990/91 survey (10% increase in long stay visitors) and is likely to continue growing. The 1999/2000 survey determined that:

- Approximately 102,500 people in total visited the Kosciuszko alpine area during the non-winter period of 1999/2000;
- Approximately 47,250 of visitors undertook trips of half-day or more. This is a 10% increase on figures reported in 1993;
- Party size is typically small – two people was the most frequent party size with more than four in a group uncommon;
- Public holidays, especially around New Year's Day and Easter, have the highest visitation levels;
- On average, weekends receive the highest visitation while mid week receives the least;
- Daily visitation to the summit of Mt Kosciuszko was greatest between 12 pm and 1.30 pm;
- More visitors access the Kosciuszko alpine area from Thredbo and the Crackenback chairlift than from Charlotte Pass;
- The predominant age of all visitors to the area is between 20 and 49 (63.2%), with a significant number of children below the age of 15 (18.5%) also present indicating family groups are common;
- There is no difference in the proportion of male and female visitors;
- A range of activities are undertaken by visitors to the area and includes short and long distance walks, sightseeing, camping and cycling. Walking (78.8% combining long and short walks) was the most popular activity of these activities;
- Groups departing on camping trips into the Kosciuszko alpine area are more likely to depart from Charlotte Pass than from Thredbo;
- Preparation levels (i.e. appropriate clothing, water etc.) of day walking in the area tended to be poor.
- Satisfaction levels were high regarding the area as a destination, but concerns are raised about some of the facilities provided, such as parking, toilets and signage;
- More choice of walks in the alpine area is desired (e.g. short loop walks);
- The dominant motivation for people to visit the Kosciuszko alpine area in summer was the area's natural values.

Information on visitor numbers and characteristics can benefit managers through (1) justifying the allocation of resource distribution; (2) formulating policy and assisting management strategies; (3) aiding visitor management initiatives; (4) developing long term trends; (5) enhancing grant aid funding opportunities; (6) providing use level information to assist with environmental impact monitoring; and (7) focusing marketing and promotional opportunities (Cope et al. 2000). Accordingly, an important step towards managing these tourists efficiently will be to continue to be aware of who they are and what they are doing. With a solid baseline of information now provided, and a method for quick and easy casual estimations established, this has never been easier.

## **Recommendations**

The following recommendations are proposed to assist the sustainability of tourism in the Kosciuszko alpine area.

### **Establishing a Regular Visitor Monitoring Program**

It is likely that increased tourism in the alpine area in the non-winter period will continue. This may lead to greater impacts on the alpine environment. This study provides a baseline for a long term comprehensive monitoring program for the Kosciuszko alpine area. Ongoing information on visitor numbers, and demographics as well as research into visitor attitudes and behaviour is required.

A monitoring program of this scope has been recommended in the Kosciuszko National Park Plan of Management 1982 (NSW National Parks and Wildlife Service 1982, 1988), recommended in the NSW NPWS

internal report “Conservation and Recreation Management of the Kosciuszko Alpine Area” (Virtanen 1993) and most recently in the 2004 draft Plan of Management. No continuing program however, has as yet been established.

### **Ensure Long Term Environmental Monitoring Points**

As visitor numbers continue to increase, a strategic monitoring approach to measuring the impacts that tourism is having on the environment needs to be ensured. Some information is already available. Arkle (2000), for example, demonstrated that current visitation levels on the Kosciuszko summit often exceed environmental thresholds and capacities at certain times of the day.

Other areas that need to be monitored include the walking track system due to the intense use that they receive and their potential future use. The impacts that occur around tracks and of which should be monitored include: erosion, water quality near the tracks, native species composition and the spread of weeds.

Clearly there will be links between amount of use and the level and type of impact that results. As such, linking biophysical studies to visitor monitoring research will be of great benefit in establishing best approaches to management responses.

### **Short Walk Tracks**

This study has highlighted that there are three major types of users within the Kosciuszko alpine area. Tracks currently exist for those undertaking day trips into the alpine area. Overnight users (campers and other experience seekers) tend to disperse into the area and do not require facilities. Short stay and sight seeing visitors, however, have limited options, but also wish to see the alpine area. Shorter walking tracks and loop walks from each access point should be provided. The high visitation of the Snow Gums walk at Charlotte Pass has demonstrated that this is a successful and popular option that has reduced impacts of visitors immediately around Charlotte Pass.

### **Visitation Patterns**

The alpine area around Mt Kosciuszko is a very popular destination for summer tourists to the Australian Alps with the majority walking to the summit of Mt Kosciuszko. The concentration of people particularly during the middle of the day, especially during the peak periods, is detracting from the experience of tourists to the area and is also causing some damage to the environment in the surrounding areas. NSW NPWS has responded to this by hardening the area around the summit, however, on those peak days the numbers are still too great for the area. A strategy to reduce the lunchtime peak by spreading the summit visitors more across the day would likely make tourists visit to Mt Kosciuszko a more enjoyable experience. This could be done by Kosciuszko Thredbo Pty Ltd extending the chairlift opening and closing times, especially during the peak periods.

### **More Parking Facilities at Charlotte Pass**

The limited parking at Charlotte Pass causes problems during peak periods. A management strategy for parking at the Charlotte Pass turning circle and track-head is needed. Some suggestions are (1) utilizing the old quarry sit at the back of the turning circle as long-term parking area; (2) increasing the parking area at Charlotte Pass Village for long-term parking utilizing a chairlift from the Village to the turning circle and track-heads; and (3) providing a shuttle bus service from Perisher Valley.

### **Toilets**

Visitors are happy with the standard of toilets currently provided in and around the Kosciuszko alpine area, however, the issues of the number of toilets, where they are sited, their maintenance and other ongoing waste issues were still contentious. It is therefore recommended that a waste management strategy be further developed and implemented.

### **Signage and Interpretation**

This study has identified that current levels of signage and interpretation are not adequate in the Kosciuszko alpine area. A signage and interpretation plan for the area is critical. This should include the continual evaluation of all signs and interpretation in the area to ensure that visitors changing needs are met.

### **Conclusion**

Managing an area for both its conservation and recreational value is a mandate for national parks managers. This is difficult because of the impacts some recreation activities can have. The recreation versus conservation

conflict is a problem in both Australian and overseas national park managers because of the popularity of outdoor recreation and the increasing mobility and leisure time available to the general population.

Kosciuszko National park contains Australia's highest mountain and this together with the outstanding scenery attracts more visitors to the alpine area each summer. The NSW NPWS are likely to require alternative methods to manage the large numbers of tourists including:

1. Developing methods to reduce tourism numbers at iconic destinations at peak periods when most impacts occur, possible by encouraging tourism at other times;
2. More research into environmentally sustainable infrastructure including track types; and
3. Ensuring that tourism operations are environmentally sustainable, including increasing the financial contribution of operators, such as ski resorts, to the costs of provision of tourism facilities.

Managing recreation in the Kosciuszko alpine area is essential. With increasing numbers of visitors coming to the area, the potential for damage to the environment will continue to grow, especially around the two main access points where visitation is heaviest. By understanding who visitors are, where they are going and what their motivations are for coming to the area, management strategies can continue to be developed that suit both long term environmental needs while sustaining the experience of visitors to the area.

## Appendix A: Visitor Information Survey to Assess Kosciuszko Alpine Area Usage & the Effectiveness of Park Information

Date: \_\_\_\_\_ Location: \_\_\_\_\_  
Postcode / Country: \_\_\_\_\_ Age / Sex: \_\_\_\_\_  
Group / Individual: \_\_\_\_\_

1. Did you plan your visit to the Kosciuszko alpine area? If yes how long ago?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. In planning your trip to Kosciuszko Alpine Area, where did you obtain your information on the area?

Friends:	<input type="checkbox"/>	Travel centre:	<input type="checkbox"/>
Prior knowledge:	<input type="checkbox"/>	Book:	<input type="checkbox"/>
JVC:	<input type="checkbox"/>	Brochure:	<input type="checkbox"/>
CVC:	<input type="checkbox"/>		

3. Why did you come to the area? What attracted you most to the area? (get them to explain!)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Have you visited the alpine area before? If yes, did you find today's visit:

1. A more enjoyable experience.      2. A less enjoyable experience.      3. No change      **Why?**

\_\_\_\_\_  
\_\_\_\_\_

5. How long will/have you spent in the alpine area? (Alpine and KNP. Ask both)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Where did you visit within the alpine area?

Mt. Kosciuszko:	<input type="checkbox"/>	Snowy River (CP):	<input type="checkbox"/>
Watson's Craggs:	<input type="checkbox"/>	Blue Lake:	<input type="checkbox"/>
Snowy River (KR):	<input type="checkbox"/>	Mt. Twynam:	<input type="checkbox"/>
Seaman's Hut:	<input type="checkbox"/>	Lakes Walk:	<input type="checkbox"/>
Mt. Tate:	<input type="checkbox"/>	Sentinal:	<input type="checkbox"/>
Mt. Townsend:	<input type="checkbox"/>	Kosciuszko lookout:	<input type="checkbox"/>

7. If camping, where did you stay? (alpine and/or local area)

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8. Did the area meet with your expectations? Was it what you expected to see/find? (for first time visitors - did their ideas of the area meet with what they found)

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9. Did you come prepared for the conditions? (i.e. Wet weather gear, sunburn cream, hat, walking boots etc.)

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**Observations:**

10. Do you use the information signs provided, and if yes was the information adequate? (No? why?)

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11. How could the information signs have been improved? (What could be added to the signs? Visibility? Placement?)

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12. Would you like this information presented in another way? (i.e. audio, leaflets, personal contact) (Discuss the answer - How would they implement them?)

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13. Has your attitude towards the environment changed at all for all your experiences in the Kosciuszko National Park? (Have they learnt anything new?)

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14. Did the facilities provided meet with your expectations? (i.e. tracks, toilets)

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15. On a scale between 1 and 5, how would you rate the following:

Tracks:


Revegetation works:

Toilets:

Summit viewing area:

Signage:

Your overall experience:


16. Do you have any observations, suggestions or comments?

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## Appendix B: Daily Visitor Numbers and Estimates

Figures for the Crackenback chairlift and Thredbo are not included in this section due to possible commercial conflicts of interest.

Figures in **bold** were counted during the survey. When creating estimates for the whole non-winter period, figures were not available for the months of October, November and May. As such, estimates were made using daily averages from a corresponding period. The months of November and May were classified as “low” periods, with daily averages from other “low” period months used for these days. October was classified as “very low” with the daily average from the low period being divided by half.

Oct-11	Very Low	Mon	46
Oct-12	Very Low	Tue	79
Oct-13	Very Low	Wed	83
Oct-14	Very Low	Thu	76
Oct-15	Very Low	Fri	83
Oct-16	Very Low	Sat	148
Oct-17	Very Low	Sun	104
Oct-18	Very Low	Mon	46
Oct-19	Very Low	Tue	79
Oct-20	Very Low	Wed	83
Oct-21	Very Low	Thu	76
Oct-22	Very Low	Fri	83
Oct-23	Very Low	Sat	148
Oct-24	Very Low	Sun	104
Oct-25	Very Low	Mon	46
Oct-26	Very Low	Tue	79
Oct-27	Very Low	Wed	83
Oct-28	Very Low	Thu	76
Oct-29	Very Low	Fri	83
Oct-30	Very Low	Sat	148
Oct-31	Very Low	Sun	104
Nov-01	Low	Mon	92
Nov-02	Low	Tue	159
Nov-03	Low	Wed	167
Nov-04	Low	Thu	152
Nov-05	Low	Fri	167
Nov-06	Low	Sat	295
Nov-07	Low	Sun	208
Nov-08	Low	Mon	92
Nov-09	Low	Tue	159
Nov-10	Low	Wed	167
Nov-11	Low	Thu	152
Nov-12	Low	Fri	167
Nov-13	Low	Sat	295
Nov-14	Low	Sun	208
Nov-15	Low	Mon	92
Nov-16	Low	Tue	159
Nov-17	Low	Wed	167
Nov-18	Low	Thu	152

Nov-19	Low	Fri	167
Nov-20	Low	Sat	295
Nov-21	Low	Sun	208
Nov-22	Low	Mon	92
Nov-23	Low	Tue	159
Nov-24	Low	Wed	167
Nov-25	Low	Thu	152
Nov-26	Low	Fri	167
Nov-27	Low	Sat	295
Nov-28	Low	Sun	208
Nov-29	Low	Mon	92
Nov-30	Low	Tue	159
Dec-01	Low	Wed	167
Dec-02	Low	Thu	152
Dec-03	Low	Fri	167
Dec-04	Low	Sat	295
Dec-05	Low	Sun	208
Dec-06	Low	Mon	505
Dec-07	Low	Tue	405
Dec-08	Low	Wed	243
Dec-09	Low	Thu	281
Dec-10	Low	Fri	167
Dec-11	Low	Sat	222
Dec-12	Low	Sun	265
<b>Dec-13</b>	<b>Low</b>	<b>Mon</b>	<b>229</b>
<b>Dec-14</b>	<b>Low</b>	<b>Tue</b>	<b>342</b>
<b>Dec-15</b>	<b>Low</b>	<b>Wed</b>	<b>342</b>
<b>Dec-16</b>	<b>Low</b>	<b>Thu</b>	<b>137</b>
<b>Dec-17</b>	<b>Low</b>	<b>Fri</b>	<b>164</b>
<b>Dec-18</b>	<b>Low</b>	<b>Sat</b>	<b>360</b>
<b>Dec-19</b>	<b>Low</b>	<b>Sun</b>	<b>244</b>
Dec-20	Low	Mon	312
Dec-21	Low	Tue	413
Dec-22	Low	Wed	348
Dec-23	Low	Thu	199
Dec-24	Low	Fri	305
Dec-25	Low	Sat	399
Dec-26	High	Sun	265
<b>Dec-27</b>	<b>High</b>	<b>Mon</b>	<b>673</b>

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<b>Dec-28</b>	<b>High</b>	<b>Tue</b>	<b>1115</b>
<b>Dec-29</b>	<b>High</b>	<b>Wed</b>	<b>955</b>
<b>Dec-30</b>	<b>High</b>	<b>Thu</b>	<b>2272</b>
<b>Dec-31</b>	<b>High</b>	<b>Fri</b>	<b>1263</b>
<b>Jan-01</b>	<b>High</b>	<b>Sat</b>	<b>2477</b>
<b>Jan-02</b>	<b>High</b>	<b>Sun</b>	<b>2010</b>
<b>Jan-03</b>	<b>High</b>	<b>Mon</b>	<b>1532</b>
Jan-04	High	Tue	1024
Jan-05	High	Wed	739
Jan-06	Mid	Thu	1110
Jan-07	Mid	Fri	1431
Jan-08	Mid	Sat	1087
Jan-09	Mid	Sun	1241
Jan-10	Mid	Mon	1020
Jan-11	Mid	Tue	1264
Jan-12	Mid	Wed	1191
Jan-13	Mid	Thu	1264
Jan-14	Mid	Fri	802
Jan-15	Mid	Sat	1047
Jan-16	Mid	Sun	2031
Jan-17	Mid	Mon	823
<b>Jan-18</b>	<b>Mid</b>	<b>Tue</b>	<b>1020</b>
<b>Jan-19</b>	<b>Mid</b>	<b>Wed</b>	<b>376</b>
<b>Jan-20</b>	<b>Mid</b>	<b>Thu</b>	<b>603</b>
<b>Jan-21</b>	<b>Mid</b>	<b>Fri</b>	<b>638</b>
<b>Jan-22</b>	<b>Mid</b>	<b>Sat</b>	<b>1040</b>
<b>Jan-23</b>	<b>Mid</b>	<b>Sun</b>	<b>770</b>
<b>Jan-24</b>	<b>Mid</b>	<b>Mon</b>	<b>811</b>
<b>Jan-25</b>	<b>Mid</b>	<b>Tue</b>	<b>562</b>
<b>Jan-26</b>	<b>Mid</b>	<b>Wed</b>	<b>518</b>
<b>Jan-27</b>	<b>Mid</b>	<b>Thu</b>	<b>112</b>
<b>Jan-28</b>	<b>Mid</b>	<b>Fri</b>	<b>559</b>
<b>Jan-29</b>	<b>Mid</b>	<b>Sat</b>	<b>933</b>
<b>Jan-30</b>	<b>Mid</b>	<b>Sun</b>	<b>530</b>
Jan-31	Mid	Mon	232
Feb-01	Low	Tue	264
Feb-02	Low	Wed	328
Feb-03	Low	Thu	349
Feb-04	Low	Fri	232
Feb-05	Low	Sat	337
Feb-06	Low	Sun	291
Feb-07	Low	Mon	243
Feb-08	Low	Tue	340
Feb-09	Low	Wed	357
Feb-10	Low	Thu	568
Feb-11	Low	Fri	238
Feb-12	Low	Sat	590
Feb-13	Low	Sun	330
<b>Feb-14</b>	<b>Low</b>	<b>Mon</b>	<b>140</b>
<b>Feb-15</b>	<b>Low</b>	<b>Tue</b>	<b>294</b>

<b>Feb-16</b>	<b>Low</b>	<b>Wed</b>	<b>342</b>
<b>Feb-17</b>	<b>Low</b>	<b>Thu</b>	<b>470</b>
<b>Feb-18</b>	<b>Low</b>	<b>Fri</b>	<b>502</b>
<b>Feb-19</b>	<b>Low</b>	<b>Sat</b>	<b>820</b>
<b>Feb-20</b>	<b>Low</b>	<b>Sun</b>	<b>637</b>
Feb-21	Low	Mon	190
Feb-22	Low	Tue	513
Feb-23	Low	Wed	174
Feb-24	Low	Thu	381
Feb-25	Low	Fri	238
Feb-26	Low	Sat	423
Feb-27	Low	Sun	639
Feb-28	Low	Mon	211
Feb-29	Low	Tue	257
Mar-01	Low	Wed	430
Mar-02	Low	Thu	492
Mar-03	Low	Fri	313
Mar-04	Low	Sat	405
Mar-05	Low	Sun	427
Mar-06	Low	Mon	171
Mar-07	Low	Tue	356
Mar-08	Low	Wed	199
Mar-09	Low	Thu	358
Mar-10	Low	Fri	143
Mar-11	Low	Sat	566
Mar-12	Low	Sun	340
Mar-13	Low	Mon	200
Mar-14	Low	Tue	436
Mar-15	Low	Wed	463
Mar-16	Low	Thu	405
Mar-17	Low	Fri	215
Mar-18	Low	Sat	222
Mar-19	Low	Sun	698
Mar-20	Low	Mon	293
Mar-21	Low	Tue	368
Mar-22	Low	Wed	357
Mar-23	Low	Thu	899
Mar-24	Low	Fri	173
Mar-25	Low	Sat	528
Mar-26	Low	Sun	303
Mar-27	Low	Mon	177
Mar-28	Low	Tue	414
Mar-29	Low	Wed	246
Mar-30	Low	Thu	544
Mar-31	Low	Fri	248
Apr-01	Low	Sat	615
Apr-02	Low	Sun	353
Apr-03	Low	Mon	193
Apr-04	Low	Tue	212
Apr-05	Low	Wed	96



Apr-06	Low	Thu	320
Apr-07	Low	Fri	468
Apr-08	Low	Sat	415
Apr-09	Low	Sun	503
Apr-10	Low	Mon	269
Apr-11	Low	Tue	346
Apr-12	Low	Wed	318
Apr-13	Low	Thu	450
Apr-14	Low	Fri	467
Apr-15	Low	Sat	381
Apr-16	Low	Sun	316
Apr-17	Low	Mon	479
Apr-18	Low	Tue	602
Apr-19	Low	Wed	887
Apr-20	Low	Thu	161
<b>Apr-21</b>	<b>Low</b>	<b>Fri</b>	<b>711</b>
<b>Apr-22</b>	<b>high</b>	<b>Sat</b>	<b>2548</b>
<b>Apr-23</b>	<b>high</b>	<b>Sun</b>	<b>2952</b>
<b>Apr-24</b>	<b>high</b>	<b>Mon</b>	<b>2324</b>
<b>Apr-25</b>	<b>high</b>	<b>Tue</b>	<b>1073</b>
Apr-26	Mid	Wed	447
Apr-27	Mid	Thu	357
Apr-28	Mid	Fri	599
Apr-29	Mid	Sat	987
Apr-30	Mid	Sun	651
May-01	Low	Mon	185
May-02	Low	Tue	338
May-03	Low	Wed	334

May-04	Low	Thu	304
May-05	Low	Fri	333
May-06	Low	Sat	590
May-07	Low	Sun	416
May-08	Low	Mon	185
May-09	Low	Tue	338
May-10	Low	Wed	334
May-11	Low	Thu	304
May-12	Low	Fri	333
May-13	Low	Sat	590
May-14	Low	Sun	416
May-15	Low	Mon	92
May-16	Low	Tue	159
May-17	Low	Wed	167
May-18	Low	Thu	152
May-19	Low	Fri	167
May-20	Low	Sat	295
May-21	Low	Sun	208
May-22	Low	Mon	92
May-23	Low	Tue	159
May-24	Low	Wed	167
May-25	Low	Thu	152
May-26	Low	Fri	167
May-27	Low	Sat	295
May-28	Low	Sun	208
May-29	Low	Mon	92
May-30	Low	Tue	159
May-31	Low	Wed	167

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