PROMOTION OR PROTECTION

THE MANAGEMENT OF TOURIST VISITATION TO NEW ZEALAND'S ANTARCTIC AND SUB-ANTARCTIC TERRITORIES NEW ZEALAND AS A CASE STUDY

A thesis presented in partial fulfilment of the requirements

for the degree

of Master of Business Studies

in Management Systems at

Massey University

Mariska Marieke Wouters

1993

ABSTRACT:

Antarctica and the sub-Antarctic islands are among the last regions on earth that are still relatively unspoilt from human activity. At the same time, they are also among the last tourism frontiers in the world. The forms of tourism, trends, impacts and the current management mechanisms are described and assessed.

New Zealand is offered as a case-study because it is experiencing increased visitation to its Antarctic and sub-Antarctic territories. As claimant to a section of Antarctica and signatory to the Antarctic Treaty, New Zealand has a vested interest in preserving this unique area. As the operator of Antarctic bases, it is probable that the New Zealand government may be called upon to provide assistance to tourist expeditions in the Antarctic. New Zealand companies are involved in tourist visits to the sub-Antarctic islands. Attention is drawn to areas of concern, and the various policies New Zealand applies to Antarctic and sub-Antarctic ecotourism are analysed. The need for a sustainable tourist management regime is examined, in order to balance the paradox between preservation and visitation.

The varying aspects of international and national management regimes to manage Antarctic and sub-Antarctic tourism are discussed. Antarctica is managed by an international system, whereas the sub-Antarctic islands are subject to national legislation. This has implications for tourism management in these regions. It is questioned whether the present tourist regulations are adequate to protect the sub-Antarctic and Antarctic environments from the impacts of tourism. It is suggested that the current mechanisms are not sufficient, and the establishment of an International Convention on Antarctic and sub-Antarctic Tourism is proposed.

PREFACE

Antarctica and the sub-Antarctic islands are unique among the continents and islands of the world. Their natural environments are generally described in superlatives. Although Antarctica and the sub-Antarctic islands are usually associated with scientific research and fishing, tourism is increasingly becoming a major factor in the management of activities in these regions.

Green, *sustainable*, or *eco* tourism have become much-used terms of the 1990s. Public awareness of environmental issues is growing, and tourism has become a focus of this. Ecotourism is indeed the fastest growing sector of the world-wide tourism industry. As tourist numbers continue to rise and the industry even reaches the South Pole, there is increasing concern about the impacts and regulation of tourism

Antarctic and sub-Antarctic tourism is generally in the form of nature or ecotourism. This form of tourism has as its primary objective nature-oriented experiences, but even this type can still impact on the natural environment. Tourism to Antarctica and the sub-Antarctic regions can produce environmental changes which may be irreversible. It is not always possible to predict the ultimate consequences of tourism to these areas. Before any management regimes are composed, it will be necessary to conduct research in the ecological consequences of tourism impact. A major obstacle in the formulation of rational strategies of conservation and tourism management is the difficulty in obtaining information, and the irregular exchange of information.

Antarctic and sub-Antarctic tourism is invariably associated. Many cruise ships travelling to Antarctica will visit several sub-Antarctic islands *en route*. There are a range of opportunities for the visitor to travel to the sub-Antarctic and Antarctic. These various methods differ in the impact they produce on the natural environment, which has implications for management.

The major objective of this thesis is to review the current forms of regulation of Antarctic and sub-Antarctic tourism. Antarctica is controlled by the Antarctic Treaty System, whereas the sub-Antarctic islands are covered under national jurisdiction. Antarctic and sub-Antarctic tourism is expected to grow, posing

the question whether current regulations are sufficient. Currently, tourism management relies on self-regulation by the tour operators.

Antarctic and sub-Antarctic ecotourism management is complicated by the issue of sovereignty. In the sub-Antarctic national jurisdiction applies, which regulates any visitor. This can result in a wide variety of measures being applied by the nations administering the islands. In the Antarctic, all activities are regulated by the Antarctic Treaty System, which only affects the nationals of its member states. New Zealand's policies for the administration of Antarctic and sub-Antarctic tourism are reviewed to illustrate the variances in Antarctic and sub-Antarctic tourism regulation.

The author suggests that current tourism regulations are insufficient and incoherent. The establishment of an International Convention on Antarctic and sub-Antarctic tourism is promoted, which will enable increased coordination of tourism management throughout the Southern Ocean.

ACKNOWLEDGMENTS:

This thesis would not have been possible without assistance from the following people. I wish to thank them for their attentions, support, suggestions and acknowledge their valuable contributions.

I am indebted to my supervisor, Dr. Michael Hall, for his valuable input, suggestions of topics, and general perseverance.

I thank Professor T. Vitalis, Head of Department, for his encouragement.

I am grateful to my fiancé, Tom Hanly, whose endurance and support are immensely appreciated.

My extended family, who were always available for encouragement.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1 INTRODUCING THE PARADOX:

1.1 INTRODUCTION:

> **Tourism is the world's largest civilian industry... Tourist activities are virtually unlimited in extent, penetrating to the most remote and marginal lands, including the poles.**
> (International Union for Conservation of Nature and Natural Resources (IUCN) Submission 1992:1)

Antarctica is unique among the continents of the world and represents one of the last frontiers to tourism. Its remote geographical location, lack of indigenous population, extreme climate and physical conditions have deterred continuous human occupation until the middle of the twentieth century. The Antarctic continent and the contiguous Southern Ocean cover approximately ten percent of the world's surface. Antarctica is vast, about one and a half times the size of Australia, and nearly 98 percent of the continent is covered with ice, the remaining two percent provide breeding and nesting grounds for the abundant wildlife found in this region. Nevertheless, the superlative conditions and beauty of the continent attract visitors to Antarctica in ever-increasing numbers.

Tourism has become an integral part of life in Antarctica, and is the fastest growing and the largest commercial enterprise in Antarctica, together with fishing. The potential for further growth is immense, though the pattern of growth is unpredictable due to the range of commercial and operational variables involved. Antarctic tourism has increased dramatically in the past few years. Since commercial tourist activity began in the 1960s, more than 45,000 tourists have visited Antarctica. Over 5,000 ship-borne tourists and smaller numbers of airborne tourists now visit Antarctica each summer, a figure which is higher than the number of scientists based in Antarctica in that season. These tourists not only visit the Antarctic continent, but cruise ships and smaller yachts also tend to visit a range of sub-Antarctic islands en route. The sub-Antarctic region is therefore also experiencing an increase in tourism growth, and is invariably associated with any discussion on Antarctic tourism.

While the opening up of one of the world's last tourism frontiers may be a welcome economic payoff for some, substantial questions are now being asked about the effects of tourism on the natural environment in Antarctica and the sub-Antarctic. One of the major issues concerns the paradox produced by the desire for visitation and the need for preservation. As will become apparent, preservation necessitates visitation, without it, preservation would receive little public support. The Antarctic and sub-Antarctic regions are amongst the most pristine places in the world and are of utmost ecological value. At the same time, due to their appeal of wilderness and isolation they continue to be visited. To maintain support for management strategies, management regimes often have to provide access to the resource. Although this access can be totally controlled, it will, however slightly, impact on the environment. Therefore, deliberation of how to balance this paradox is essential.

In the immediate future, Antarctic tourism is likely to be marked by substantial growth. It is thus imperative that appropriate management regimes be put into place. However, regulation of the commercial tourism industry in the Antarctic Treaty Area poses special challenges to policy makers. The contentious issue of sovereignty is seen as a major impediment to the successful implementation of any management regime, both in Antarctica and the sub-Antarctic islands.

This thesis will provide a comprehensive overview of tourism in Antarctica and the sub-Antarctic region. It will not only address the impacts of tourism, but also the mechanisms by which it may be managed and regulated in order to overcome the paradox ultimately associated with Antarctic and sub-Antarctic tourism. Particular emphasis is given to the *Protocol on Environmental Protection*, which is the most recent development in Antarctic management. Specific attention is paid to the role of national legislation in controlling sub-Antarctic tourism, and the part that this may play in providing a suitable framework for tourism on the Antarctic continent. Special reference is made to the New Zealand situation and policy environments within which it administers the operation of Antarctic tourism and tourism to New Zealand's sub-Antarctic islands.

This thesis elaborates on existing Antarctic documentation by simultaneously focusing on the management of sub-Antarctic tourism. Sub-Antarctic and Antarctic tourism are regularly linked due to their geographical proximity;

several nations which administer sub-Antarctic islands have also laid claim to a section of the Antarctic continent; and, moreover, commercial cruise ships and private yachts frequently visit the sub-Antarctic islands *en route* to the continent.

This chapter will identify the issues that make the study of Antarctic and sub-Antarctic tourism significant. Similar themes may be identified in both regions, however, each area will also present unique features which will need to be considered in the management of tourism.

1.2 ECOTOURISM AND THE PARADOX:

One of the most enduring themes in Antarctic and sub-Antarctic tourism is the attraction of wilderness and wildlife in its purest form. However, tourism can easily destroy the fragile nature of Antarctica and the sub-Antarctic islands. One of the major issues integral to the analysis of Antarctic and sub-Antarctic tourism is therefore an understanding of the dominant form of tourism that occurs in these regions. This is imperative to resolve the anomaly of preservation versus visitation in management plans.

Antarctica and the islands in the surrounding Southern Ocean are areas where there is a special need for thorough management of tourism. Despite its physical isolation, its extreme climate and rough surrounding oceans, Antarctica and the sub-Antarctic islands have not remained free from tourists. Antarctica is still among the least visited places on earth, but its beauty and abundant wildlife have made it a destination for thousands of tourists on both sea-borne and airborne excursions.

Antarctica is visited because this polar region has a beauty and a uniqueness to be found nowhere else on the planet, and it has thus been described as the 'last wilderness on earth' (for example, in Brewster 1982; Johnson 1985; Chester 1991). Interest is further aroused from individual and historical accounts, magazine and science articles, and published books outlining its history, wildlife and scenery (Department of Scientific and Industrial Research (DSIR) 1990; Enzenbacher 1991). Its wilderness value combined with its remoteness and little human interference are likely to be the most sought-after

values for those who visit Antarctica. Many visitors are also interested in the adventure and scientific component of Antarctica, which can be viewed in the historic exploration sites, and more recently, scientific base stations (Wace 1990:335; IUCN Submission 1992:1).

Dingwall (1990:9) observes that the diversity of activities suggests there are several motives for visiting Antarctica. These include thrill-seeking in a challenging wilderness environment; exploring uncharted terrain and scaling unclimbed peaks; the experience of awesome vistas of mountains, glaciers and icebergs; the remarkable profusion of sea-birds, penguins and seals; or the chance to visit scientific stations. Others are motivated by the publicity given to ozone depletion and minerals. Some undoubtedly by the fashionable ambition to set foot on the world's seventh largest, yet least visited continent. Others may not have scientific ability or other suitable skills to enable them to work in the Antarctic, and they have therefore sought other means to see the continent for themselves (Enzenbacher 1991).

Due to the pristine and wilderness nature of Antarctica and the sub-Antarctic islands, and the principal motivation of venturing into a natural environment of the visitors, the form of tourism in Antarctica and the sub-Antarctic is generally described as ecotourism. Ecotourism (or nature tourism), special interest tourism to relatively undisturbed natural areas, is now the fastest growing sector of the international tourism industry (Mason 1992:1). More than 200 companies conduct ecotours, with thousands of tourists exploring natural areas all over the world, enjoying close encounters with `watchable wildlife´ (Janiskee 1991:1). The World Tourism Organisation (WTO) states that adventure tourism, which includes ecotourism in their definition, made up almost ten percent of the market in 1989, and is increasing at the rate of 30 percent a year (Whelan 1991:4). Sawyer (1991:4) determines ecotourism as,

> travelling to relatively undisturbed areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas.

Eagles (1992:3) describes the term ecotourism as, "a specific travel market... characterised as being composed of those who select a certain travel

experience and destination, that of nature-oriented experiences in pristine natural environments". Ecotourism is centred around leisure travel to observe and experience nature, and ecotourists have clear, distinct travel motivations. Eagles (1992:6) believes that, "ecotourists are travelling to learn about nature within wilderness, to be with others they can learn from and with, and to be with people that share an appreciation of the richness of nature". Whelan (1991:5) argues that most ecotourists come from Europe, North America, and Japan; are relatively wealthy; are between thirty-one and fifty years of age; and are familiar with the outdoors. The general motivations of ecotourists are also largely shared by Antarctic tourists as described above and are encouraged by the majority of Antarctic tour operators, as will be shown in Chapter 2. From a pastime of a select few, ecotourism has rapidly evolved to a range of activities that encompasses many people pursuing a wide variety of interests in nature (Boo 1990:2).

Ecotourism has an advantage over traditional tourism in that it can require less infrastructure and fewer services. Generally, nature tourists are more accepting of conditions different from home than are other types of tourists. In many cases, nature tourists do not expect accommodation, food, or nightlife that meet the standards of comfort or luxury held by other groups of tourists (Boo 1990:13). Unfortunately, there is evidence that even this form of tourism added to the activities of scientists and others stationed in Antarctica, is inflicting significant ecological damage (Janiskee 1991:1; Hall 1992b). The growth of nature tourism can be in direct conflict with its original concept of venturing into the wilderness to experience it without human modification. There are few areas which have experienced tourist visitation and have gone unscathed. The demand tourism places on ecosystems and natural resources can threaten the survival of the very attractions that drew people to the site in the first place. On the Galapagos islands near Ecuador, for example, long-time residents as well as naturalist guides have noted that the albatross, which once nested beside tourist paths, have moved further away, while the sea-lions on Isla Labos are becoming increasingly nervous and aggressive (Sawyer 1991:4).

Perhaps the most obvious pitfall that ecotourism (and tourism in general) produces is often that of `too much, too soon´, without sufficient regard for planning and management of resources. In Annapurna National Park in Nepal,

at elevations of 2000 to 3500 meters, ridges which were covered in rhododendrons five years ago, are now barren because large areas have been cleared to build and heat lodges. This type of activity is counter-productive, "ecotourism is based on nature and will only succeed if nature remains in a relatively pristine state" (Boo 1990 in Sawyer 1991:4). This will not be the case if tourist numbers shoot upwards while the facilities to cope with them do not change. The activity of tourism, in effect, can destroy the very experience it wanted to encounter.

Major Issues in Antarctic and Sub-Antarctic Ecotourism:

In recent years the number of visitors to Antarctica has increased substantially. Between 1985 and 1990, Antarctic tourism increased 600 percent (Enzenbacher 1992a:17). Tourism to Antarctica is likely to increase, but future levels are difficult to predict. Rising current levels prompt the question of whether Antarctica's environment is adequately protected against existing and possible future levels of tourist activity. Inevitably, tourism raises various questions regarding a conflict of interest, such as between conservation and development or prohibition and regulation (Beck 1990a:253).

The most prominent issue surrounding tourism, in both Antarctica and the sub-Antarctic islands, is the potential of environmental impacts caused by tourism. Due to its extreme temperatures, Antarctica develops at an incredibly slow rate and the ability of Antarctic ecosystems to withstand changes induced by humans is less than that of most ecosystems elsewhere. A footstep made today may last tens of years, and rubbish decomposes very, very slowly in the extreme cold (Brewster 1982; House of Representatives Standing Committee on Environment, Recreation and the Arts (HRSCERA) 1989:9). Proponents of unregulated tourism argue that the tourists who now visit Antarctica annually have no significant detrimental impact on the area which covers almost ten percent of the earth's land surface. It is said that Antarctica is being more profoundly affected by changes in the global atmosphere caused by fossil-fuel burning and fluorocarbon emissions than by tourism. This may be true, but in specific places, tourism does pose a threat. Although the impact of tourism may be insignificant compared to damage caused by scientific bases, or oil and mineral exploitation, it still remains as one of the main barriers to the development of the sub-Antarctic islands as tourist destinations and to an

increase in tourist levels to the Antarctic continent. Given the size of the Antarctic continent, the impact of tourism to date has been relatively small (Dingwall 1990:10). Yet, although tourists visits are infrequent, they are localised, repetitive and highly seasonal (DSIR 1990; Bonner 1984:840). The expansions of tourist facilities may also have a significant impact as their construction requires space, competing with the vegetation and breeding areas for birds (May 1988).

In the past, tourism has also disrupted activities at scientific bases. For example, Palmer Station in the Antarctic Peninsula was visited by 891 tourists from four ships in January-February 1988. Most tourists are perceived as a threat to the cause of science in spite of the fact that certain non-governmental expeditions perform invaluable research, logistical and other work (Beck 1990b:350). Any discussion of the management of tourism in Antarctica will have to take into account that science continues to be the principal activity on the continent.

The unpredictable nature of the climate, heavy pack-ice and uncharted coastlines can create problems for tourist cruises and adventure expeditions. Both tourists and adventure-seekers ultimately depend on the Antarctic professionals for assistance if they get into difficulties (DSIR 1990; Fogg and Smith 1990). As tourism has the potential to destroy parts of a unique environment and can jeopardise scientific research, prior environmental and technical assessment of activities is necessary (DSIR 1990).

The unique political situation in Antarctica can lead to difficulties in the management, enforcement and monitoring of tourism. Any activity in Antarctica is administered by the Antarctic Treaty System, which came into effect on June 23, 1961, to which its member states (currently 40) are subject. Originally set up to protect the science potential of the region, the member states have been forced recently to make decisions on mineral exploitation and tourism. The Antarctic Treaty is the only governing body in Antarctica, and although some countries claim supremacy, and some of the claims are conflicting, no claims are recognised under the Antarctic Treaty.

Enforcement of legislation accepted by the Antarctic Treaty Parties concerning any type of activity, including tourism, is difficult. Enforcement primarily exists

in the form of persuasion and exhortation rather than compulsion (Beck 1990b:348). The issue of enforcement is complicated by the uncertain and unresolved nature of sovereignty in Antarctica, arriving out of the rival view of claimants and non-claimants (Beck 1990b:351). Under the Treaty each Consultative Party has the responsibility to ensure that any of its nationals who are part of a tourist or non-governmental expedition abide by the Agreed Measures (May 1988). Because many visitors to Antarctica are not part of any nationally supported programmes and do not come under the direct control of any government, their activities can present a real problem for coordinated management of Antarctica (Hall 1992a:2).

At present, cruise tourism tends to be self-policing, and the conservation ethic, `leave nothing behind you except footprints´ and `only take photographs and litter away with you´, is firmly upheld by tour operators and inducted into their clientele (Wace 1990:336; International Association Antarctica Tour Operators (IAATO) 1991). Nevertheless, even leaving a footprint can be a serious problem in a region where the ability of plants to regenerate from even minimal damage is extremely slow.

The notion of tourism to vulnerable areas such as Antarctica and the sub-Antarctic islands may thus seem unjustifiable. Many of the sub-Antarctic islands have already lost their original ecological status with the introduction of exotic species, usually predators, and the impact of human activities, such as farming. Antarctica for the most part has remained relatively free of any great human impact, but even the presence of scientific research has caused change to the original state of the environment. Many conservationists wish to see Antarctica, and to a lesser extent the sub- Antarctic islands, completely free of any human activity.

Antarctica, however, offers one of the greatest challenges left on this earth. It is the impression of the author that Antarctica will continue to draw people despite the difficulties of arriving there. As the president of National Geographic, Gilbert Grosvenor (1991), wrote:

> ...no one who witnesses the desolate beauty of Antarctica can fail to come back home as anything but an advocate for its preservation. No one who marvels at the sight of humpback whales snoozing on floes, or

> orcas slicing through the sea can tolerate the idea of beer cans in the snow.

It is thus imperative that any activity will not be to the detriment of the continent itself and its endemic species. Despite the well-meaning disruption of ecotourism, one must avoid overwhelming Antarctica's seemingly unlimited space even with well-meaning intrusion. While most of the visitors still arrive in ships run by responsible cruise lines, care must be taken against future tour operations that might fail to comply with the accepted norms of Antarctic 'ecotourism' (Grosvenor 1991).

In respect of the sub-Antarctic islands, one has to be aware that each one is distinctive. This inherent endemism is the basis of much of the interest in islands. Management must not destroy that uniqueness (Gibbs 1990:123). Few islands have remained in their pristine state, but many of the sub-Antarctic islands are still relatively untouched. To preserve this unique status, incredible care is required and will need to be given, in order to maintain their pristineness, as well as allowing people the opportunity to experience this. Proper island management should thus recognise the intrinsic value of each island. There are many uses, but not all are compatible.

Even on these islands reputed to be among the remotest and wildest on earth, people have made their impact. In the sealing and whaling days, the islands' elephant seals, rare Hooker's sea lions, and fur seals were hunted to the verge of extinction. As Bruemmer (in Fraser 1986:187) concludes:

> The very isolation of the Auckland islands [New Zealand sub-Antarctic] is perhaps their best protection. But the Arctic islands, too, were extremely isolated and little known about 30 years ago. Change, unfortunately, came in a rush and commercial exploration and exploitation often preceded detailed scientific studies. This resulted in a considerable amount of destruction, and a lot of *ad hoc* legislation to deal with acute problems in certain areas. What was painfully missing, was a scientifically based management plan for the entire region.

The development of an adequate and foreseeing environmental tourism policy is therefore of the utmost importance for Antarctica and the surrounding sub-Antarctic islands.

Clark and Dingwall (1985:179) recognised in their report for the International Union for the Conservation of Nature and Natural Resources (IUCN) that, "it is unrealistic to lock-up the southern islands exclusively for meteorological or scientific purposes. Tourism has a valid place in the Southern Ocean, as long as it is regulated and carefully supervised". The subsequent problem hence is that of developing appropriate management strategies. This concern has focussed considerable attention on New Zealand's efforts to manage visitation to their sub-Antarctic islands.

Establishing barriers against tourism development in Antarctica may not be an appropriate course of action, but certain constraints are necessary. As mentioned above, existing agreements among the Treaty Parties on tourist regulation are far from complete. Despite the financial and logistical hurdles, interest in visiting Antarctica is growing rapidly, and the potential for expansion of tourism remains high. Although many scientists and conservation groups are opposed to the expansion of additional human pressure on the environment, it is clear, however, that there are entrepreneurs keen to exploit what they consider to be a potential tourist boom in the Antarctic. This adds urgency to the need for agreement on comprehensive regulatory measures to ensure that future Antarctic tourism, no matter what form it takes, is guided by sound conservation principles (Dingwall 1990:10).

This thesis will thus focus on the major issue of management of tourist visitation to Antarctica and the sub-Antarctic islands, in particular from the New Zealand perspective. Great emphasis will be placed on analysing current management strategies, and their function to protect the fragile environments and to minimise impacts of tourism activities.

1.3 NEW ZEALAND AND ECOTOURISM TO ANTARCTICA AND THE SUB-ANTARCTIC ISLANDS:

The development of ecotourism carries political implications for the sub-Antarctic islands of New Zealand and its Antarctic territory. New Zealand has always been at the forefront of Antarctic issues, and it was among the first twelve countries to sign the Antarctic Treaty and become a Consultative Party to the Treaty. The comprehensive management strategies which New Zealand has developed for its sub-Antarctic islands are increasingly seen as a model for Antarctic and sub-Antarctic tourism management by other nations (Radio New Zealand 1992).

New Zealand is also at the forefront of environmental issues in regards to environmental legislation. Its *Resource Management Act* (RMA) (1991), often considered to be the first of its kind in the world, introduces the concept of sustainability into its national law. Although the Act may be superfluous in some areas, it does provide a base for increased environmental accountability for the sustainable development of New Zealand's natural resources.

Geographically, New Zealand and Antarctica are close neighbours. New Zealand's southern most islands are about 1600 kilometres from the nearest point in the Ross Dependency, which makes Antarctica the closest landmass to New Zealand. New Zealand has expressed concern about any uncontrolled activity on the continent (Ministry of Foreign Affairs (MoFA) 1984), as New Zealand's "environment and climate are affected by events in the southern oceans" (Ministry for the Environment (MfE) 1989:3). This can mean climate change, the extraction of minerals, or the threat of increased military support for logistic activities. The activity of tourism to these regions can also have economic consequences of concern to New Zealand, particularly in terms of New Zealand's own inbound tourist industry:

> It is also important to remember that tourism is an increasingly important aspect of New Zealand's economic equation. A great deal of the tourist appeal of this country (particularly in America, Australia, and Japan) is in terms of New Zealand as an open, unpolluted, and unspoilt country. If this image of New Zealand is to continue to be stressed, contradictions and tensions will arise if New Zealand is in any way

associated with bad management in the protection and preservation of the Antarctic environment (Roberts 1983:9).

This is particularly relevant as the principal groups of Antarctic tourists are generally similar to the majority of international visitors to New Zealand, as will be discussed in Chapters 2 and 4.

In recent years, increasing interest has been given to the commercial tourism potential of the New Zealand sub-Antarctic islands and associated territories (Hall 1992b). It is imperative that an adequate and foreseeing environmental tourism policy is developed for Antarctica and the surrounding islands in the Southern Ocean. As New Zealand has already produced national legislation in terms of access to its sub-Antarctic islands, New Zealand could become at the forefront to devise legislation protecting the entire Antarctic environment on an international level. With this in mind, a major component of this thesis is an analysis of New Zealand's involvement in Antarctic and sub-Antarctic tourism.

1.4 VALUE POSITION OF AUTHOR:

In view of the ambiguous situation regarding tourism in Antarctica and the Southern Ocean, it is the opinion of the author that a statement illustrating a value position in terms of this paradox is essential. Most decisions made about the management of this area do tend to originate from a personal inclination. It is felt that bias can not be avoided in the writing of this thesis also, and that it is therefore important to state this separately.

When reading the literature and viewing material about Antarctica and the sub-Antarctic islands, the author feels drawn to experience these areas personally. The isolation and mostly pure conditions, with a varied wildlife and challenging conditions are certainly a major drawcard. It is therefore accepted without doubt that the Antarctic and sub-Antarctic are areas of immense attraction.

However, this captivating purity is also incredibly easily affected by human activity, which can often lead to irreversible alteration of the environment. Unfortunately, any form of human activity inherently leads to modification of the original ecosystem. Most areas on earth have already been modified to

sometimes unrecognisable extent. Antarctica and the Southern Ocean are among the very few untouched places left. Any form of human activity will and does already affect this.

The predominant reaction of the author is thus to prevent the presence of people in this area as they are not part of the original ecosystem. As these regions are one of the last untouched areas on the earth they have an undefinable intrinsic value and unique flora and fauna.

While it is the position of the author that most of the Antarctic and sub-Antarctic regions be kept in a pristine state, it is recognised that this would only lead to deregulated use of this area through non-compliance. Therefore the author advocates a system of `next-best´ options which may include preserving large tracts of ecologically representative areas in their pristine state, while at the same time allowing people the opportunity to view this last wilderness in specially designated areas, as a desirable compromise.

While the ultimate solution for the region may be to continue and enhance its isolation from any human intervention (an obvious reaction on the part of the author), this would not provide protection for the environment under `real world´ pressures. In this thesis, the paradox of visitation versus preservation are thus explored. That is, to maintain support for management strategies, which are usually based on ecological considerations, managers often have to provide access to the resource. Although access can be totally controlled, it will impact, however slightly, the ecological resource.

This thesis has thus come forward out of the perceived need to provide a comprehensive analysis of current and future tourism activities in the last almost completely unspoilt areas of the world, by taking into account the intrinsic ecosystems and the conflicting inevitable human urge for exploration and discovery, and to discuss the effectiveness of the current system of protection.

administers the Ross Dependency in the Antarctic as well as five sub-Antarctic archipelagos. A study of New Zealand's Antarctic and sub-Antarctic management policies and processes will therefore aid in providing an in-depth analysis of the responses of one nation to the issues associated with tourism in the Southern Ocean region.

To gain a more personal insight, international researchers on Antarctic and sub-Antarctic tourism were contacted, as well as industry, non-governmental and governmental representatives. To assist in research on New Zealand's Antarctic involvement several government departments were contacted. Unfortunately, Antarctic data is retained by several agencies in New Zealand, and is difficult to obtain. The Department of Conservation, however, was most helpful in providing information on its management of New Zealand's sub-Antarctic islands. To obtain insight into sub-Antarctic islands administered by other nations was more difficult. However, only France did not reply when contacted. Overall, information on sub-Antarctic tourism and its management is scarce.

The objectives of this thesis are first to document the status of ecotourism in Antarctica at the international level, and the sub-Antarctic islands at the national level. The thesis will identify the numbers and trends of visitors to both the Antarctic and the sub-Antarctic islands. To be able to identify appropriate management plans, the legal framework which applies to Antarctic and sub-Antarctic tourism will be discussed. This study will also evaluate the environmental impacts of nature tourism in the Antarctic and sub-Antarctic areas. Based on these findings, the study will highlight critical issues emerging in the development of Antarctic and sub-Antarctic tourism and make recommendations where appropriate. New Zealand was chosen as a case study as it represents both Antarctic and sub-Antarctic eco-tourism management.

1.6 OUTLINE OF THESIS:

In order to ascertain appropriate management regimes for Antarctic and sub-Antarctic tourism, a comprehensive overview of tourism in these areas is necessary. Chapter 2 will examine the issues associated with Antarctic tourism. First, it will provide a definition of Antarctic tourism and then describe its trends and growth. Management of Antarctic tourism is linked to an understanding of the type of impact tourism in its various forms can have on the Antarctic environment. This chapter will therefore examine the impacts Antarctic tourism has on the environment and scientific research in the region. Regulation of Antarctic tourism presents a special challenge to policy makers as Antarctica does not constitute one single nation, but is administered by the Antarctic Treaty System. A brief history of how the Antarctic Treaty System has responded to tourism issues is therefore presented.

Since Antarctic tourism is at present largely self-regulated, particular emphasis is given to guidelines generated within the industry. The effectiveness of the self-regulated Antarctic tourism industry is examined. The spirit of cooperation evident among major Antarctic tour operators should be encouraged. However, this chapter concludes with the suggestion that voluntary compliance with existing guidelines may not be sufficient to protect Antarctica's environment from the adverse affects of tourist activity, and that the legal and political dimensions surrounding Antarctica may necessitate the establishment of an alternative tourist management regime.

Chapter 3 examines the natural significance of the sub-Antarctic islands and the management of tourist activity in these islands. This chapter excludes a discussion of the management of tourism to the New Zealand sub-Antarctic islands which will follow in Chapter 5. A discussion of the islands' characteristics is provided, followed by a description of the management regimes enacted by national governments. The chapter concludes with an outline of the political dimensions, in particular sovereignty, which affect the management of sub-Antarctic tourism, and the potential relevance to the establishment of a Southern Ocean tourism management regime.

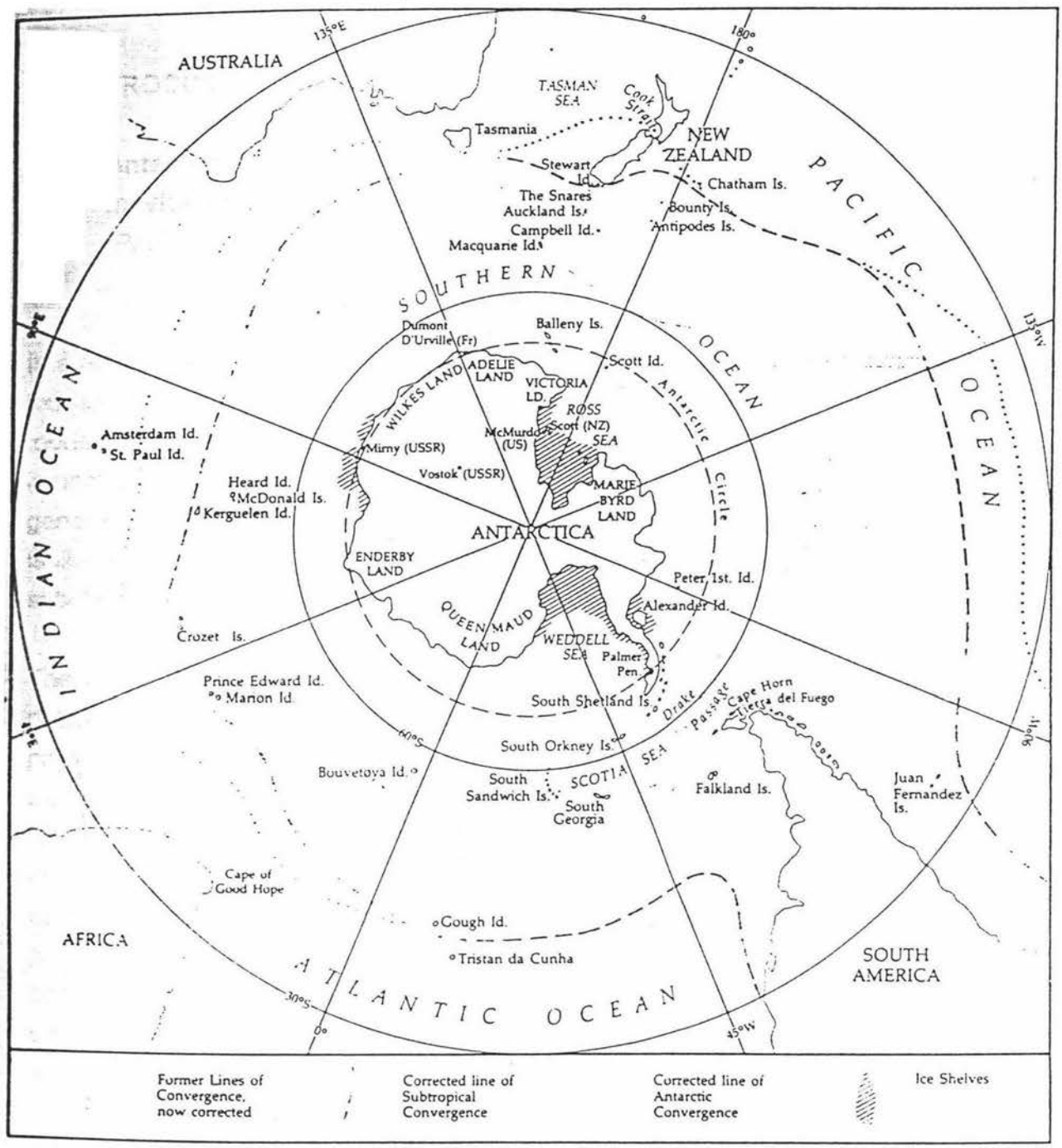
Most studies of tourism to Antarctica do not discuss the issue of sub-Antarctic tourism. However, comprehensive analysis should take account of the two

areas together. New Zealand can be used as an example in the discussion of Antarctic and sub-Antarctic tourism. New Zealand administers five sub-Antarctic island nature reserves, and also claims a section of the Antarctic continent. Although this claim is frozen under the Antarctic Treaty, New Zealand still concerns itself with the making of policies affecting Antarctica, including tourism. Chapter 4 presents New Zealand's involvement in Antarctic tourism and its policies on tourism management.

Chapter 5 reviews the management of tourist activity in the New Zealand sub-Antarctic islands. This chapter discusses the characteristics of the islands and their ecological significance, the growth of tourist visitation, environmental impacts and the development of an appropriate regime to manage these areas sustainably. Comparisons and recommendations are made in light of the findings of New Zealand government policy for Antarctic and sub-Antarctic tourism.

The preceding chapters raise a range of issues which need to be considered in the process of creating tourism management regimes in Antarctica and the sub-Antarctic islands. To balance the impacts of tourism with conservation and other goals in the Antarctic and sub-Antarctic regions, visitor management strategies will need to be determined. Chapter 6 highlights the need for minimum impact visitor management strategies, the significance of self-regulation by operators and visitor codes of conduct, and the distinctive variances national jurisdiction and Antarctica's unique political system create in determining appropriate visitor management practices. Chapter 2 already indicated that the current framework may not be sufficient to control tourism effectively at the international level. This chapter will conclude with the recommendation that, although the Antarctic Treaty System provides a forum within which a more comprehensive regulatory framework for Antarctic tourism can be agreed, it is essential that an `International Convention on Antarctic Tourism´ is convened at the earliest possible occasion.

Figure 2.1 Map of Antarctica and the Sub-Antarctic Islands:



The Subantarctic Region, lying between the Antarctic and the Subtropical Convergences.

Source: Fraser 1986:14

CHAPTER 2 ANTARCTIC TOURISM: GROWTH, IMPACTS, INDUSTRY AND MANAGEMENT:

2.1 INTRODUCTION:

> **Antarctic tourism is not controversial, everyone agrees it's inevitable. What's controversial is how it's done.**
> (Parfitt 1988, in Enzenbacher 1991:102).

It is anticipated that Antarctic tourism will grow, although the actual pattern of tourism growth can not be adequately predicted. Nevertheless, any form of tourism, even with great goodwill from the visitors, will cause some form of impact on the local environment. Whereas visitor numbers at any one time are generally small, it is the unregulated frequency of visits to the same sites which is likely to be a major issue in the management of tourism in the Antarctic and sub-Antarctic regions.

The following section will look at the nature of Antarctic tourism in greater detail, and the specific effects the various forms of tourism may have on the physical, scientific and social aspects of Antarctica. It is widely understood that tourism is an acceptable component of Antarctic activity. Nonetheless, it requires control alongside the other activities in the area. The current management regime of the Antarctic Treaty System will be examined and compared with other propositions that have been offered by different interest groups. Any management regime suggested for tourism will be considered bearing in mind the value of the environment itself; the knowledge of the private Antarctic tour operators; the demands of the visitors; the needs of the scientific community, as well as international political restrictions.

The analysis of tourism on the Antarctic continent will be followed by a similar study of tourism in the sub-Antarctic islands in Chapter 3. Both sections will examine the respective tourism management strategies effective in the two areas. Any activity in such fragile and easily affected environments demands proper regulation in order to balance the paradox of tourism with the preservation of such unique environments. These findings will then be used in the discussion of the New Zealand policies on Antarctic and sub-Antarctic

tourism, and how New Zealand has tried to overcome the paradox of preserving these unique wilderness areas with visitation to these regions.

2.2 ANTARCTIC TOURISM:

Location:

The Antarctic continent lies mainly south of latitude 70° south, its rocky and ice cliff coastline the border of the Southern Ocean, the great unbroken expanse of circumpolar sea linking the Pacific, Atlantic and Indian Oceans. The Weddell Sea south of the Atlantic, and the Ross Sea south of the Pacific, are the only two major indentations in the near-circular continent. The Antarctic Peninsula projects towards South America with its tip reaching 63° south, and its flanking islands almost 60° south. The region where the cold surface waters spreading outward from the continent meet warmer surface seas is called the Antarctic Convergence. It is an invisible frontier in the sea, and is often defined as the physical boundary of the Antarctic. This natural boundary extends further north than the Antarctic Treaty limit (60° south) and includes many of the sub-Antarctic islands (IUCN 1991:9-10). A map of this region is shown in Figure 2.1, page 18.

For the purpose of this thesis, any discussion about Antarctica involves the region south of 60° latitude. The sub-Antarctic islands which are north of 60°S will be outlined in the following chapter.

Definition:

In order to appropriately analyse the issue of Antarctic and sub-Antarctic tourism, a definition of what constitutes an Antarctic tourist is critical. Many Antarctic Treaty Parties are concerned over the issue of tourism in Antarctica. However, any discussion of Antarctic tourism by Treaty Parties is often automatically linked to the management of non-governmental activities on the continent. This complicates the appropriate defining of Antarctic tourism. Hemmings, Cuthbert and Dalziell (1991:2) in particular argue that the term non-governmental activity is imprecise, covering a range of disparate activities. They assert that some activities most often characterised as `non-governmental´ are in fact carried out by, or for, government agencies. This

includes tourist cruises on government owned or operated ships, including ships which are at the same time supporting national Antarctic programmes (eg. Argentina, Soviet Union), or logistic or scientific support of national Antarctic programmes by non-governmental operators (eg Adventure Network International (ANI) support for British Antarctic Survey (BAS) construction of Rothera airstrip). Some Treaty Parties, including New Zealand, have addressed themselves to `non-governmental activities' as a category, although there has also been concern about a sub-category, that is tourism. Hemming, Cuthbert and Dalziell (1991:3) assert that, "it is tourism, rather than non-governmental activities per se which has been the publicly acknowledged problem. Yet when it comes to actually drafting something, the terms of reference suddenly become wider than merely tourism".

Whereas national governments have generally been hesitant to provide a definition of Antarctic tourism, many prominent researchers on Antarctic tourism do attempt an explication. In Enzenbacher (1992a:17), tourists are defined as,

> Visitors who are not affiliated in an official capacity with an established National Antarctic Program. They include both fare-paying passengers, whose numbers are usually reported reliably by tour operators, and private expedition members and adventurers aboard sea or airborne vessels, whose numbers are more difficult to determine.

The IUCN (IUCN Submission 1992:1) also makes a distinction between commercial and private tourism activities for management purposes, "Operations by commercial tour companies, whether shipborne or aircraft supported, are usually larger in scale, involve more people, have greater potential for environmental impact or disruption of activities, and, therefore, demand greater management effort". Hemmings, Cuthbert and Dalziell (1991:2-3) likewise note that tourism in Antarctica includes commercial and non-commercial ventures. These may include national governments, as in the case of Chile, or can be totally independent such as Adventure Network International (ANI), or Society Expeditions. They categorise the principal tourism activities into large group tourism, adventure tourism and recreation. Non-governmental activities such as journalism, science or independent assessment of human activities are not included in their interpretation.

As will become apparent in this chapter, the Antarctic Treaty Parties are divided about the issue of Antarctic tourism management. Chile, France, Germany, Italy and Spain have produced a draft Annex on Tourism (Chile, France, Germany, Italy, Spain Submission 1992:3) in which they distinguish between an organised group visitor, who is any natural person taking part in a trip prepared by a `tour organiser´[1]; and an independent visitor which is any person that organises on his/her own account a trip to Antarctica.

To summarise the above definitions, tourism in the Antarctic and sub-Antarctic context can be defined as "all existing human activities other than those directly involved in scientific research and the normal operations of government bases" (Hall 1992a:4). This definition covers the activities of commercial tourism operations, non-government expeditions and the recreational activities of government personnel. Besides scientific research, tourism is the activity in which the largest number of people participate in Antarctica. Moreover, tourism is the only form of economic exploitation of the islands in the Southern Ocean, although oil and mineral exploration, fishing and whaling are becoming prominent activities (HRSCERA 1989:3; Hall 1992a:4, 1992b).

Due to the pristine and wilderness nature of Antarctica, and the principal motivation of venturing into a natural environment of the visitors (as outlined in the previous chapter), the dominant form of tourism in Antarctica is generally described as ecotourism (Janiskee 1991:1). As became apparent in Chapter 1, the motivations of ecotourists as described by Eagles (1992), are also largely shared by Antarctic tourists. As outlined above, tourism includes all activities except scientific research, thereby including the tourist activities of all staff at the bases. However, this thesis will primarily concentrate on tourist ventures which travel to and from Antarctica for the primary purpose of tourist visitation.

The majority of Antarctic tourists originate from northern hemisphere countries and then assemble in Australasia or South America for transit to Antarctica (Wace 1990:327). At present, Americans comprise the largest percentage of Antarctic tourists, which may partly be attributed to the marketing strategies of existing tour operators (Enzenbacher 1992a:20). These passengers are usually older and affluent, as the cost of an Antarctic cruise is very high

[1] any enterprise or any organisation that, for other than scientific purposes, organises tours to Antarctica, under its own responsibility.

(HRSCERA 1989:3; Janiskee 1991:2; Madden 1993a). During the 1992-93 season, the *Kapitan Khlebnikov* carried approximately 36 percent Australian visitors, 34 percent from the United States, 10 percent German and the remainder came from Great Britain and South Africa (Sanson 1993:1). Passengers on the *Frontier Spirit* Cruise in January-February 1993 consisted of about 50 percent Japanese, about 25 percent German, Austrian and Swiss, about 20 percent American and about 5 percent Australian. Many had travelled on the ship and/or visited Antarctica before. The average age was early to mid fifties. As many of the passengers were non-English speaking nationals, staff experienced difficulty instructing visitors ashore (Cooper 1993:7). The variation in dominant visitor groups may be due to different departure points, as the *Kapitan Khlebnikov* travelled from Fremantle to Bluff, and the *Frontier Spirit* used Bluff as both departure and arrival point.

Antarctic tourism can be broadly categorised into shipborne tourism, air-borne tourism, and land-based tourism. Shipborne tourism can include both commercial and private ventures, and is of much greater nature than airborne tourism. Commercial shipborne tourism is generally in the form of travelling on cruise ships, whereas yachts tend to be the prominent method of travelling for private expeditions. Airborne tourism is generally of a commercial nature, due to logistics and expense, and consists of overflights without landing and flights including landing. Flight facilities can also be in support of private expeditions and/or adventure tourism. Land-based tourism generally requires the use of the previous two forms of tourism to travel to Antarctica, and describes the tourist activities on the continent itself. Adventure tourism is a component of the above tourism types describing the motivation rather than the travel method of the tourist. It is generally of a private nature, although the commercial cruise companies attempt to incorporate a sense of adventure and exploration in their itineraries, as will be shown below. Some private expeditions also contain a scientific research component. In the context of this thesis however, adventure tourism will be considered separately, as it has some unique features. Combining these different ways to view the continent is becoming increasingly popular.

Tourism in Antarctica is very seasonal (Janiskee 1991:3). Due to the harshness of the climate, access to the continent is restricted to only about four months of the year, that is, tourism can only safely occur between late October and early March. This is also the time of year that there are 24 hours

of sunlight a day (Herr and Hall 1989:15; Enzenbacher 1992a:19; Louisson 1992). All tourists are thus migratory, spending limited time in the region visited (Wace 1990:340). Such a limited tourist season will affect the intensity of the impact caused by tourism, and may also restrict the areas which can be visited. This has major implications for the management of Antarctic tourism.

The following section will describe the forms of tourist activities and the current measures to manage Antarctic tourism. Recommendations are then made in Chapter 6 in response to the conclusions drawn.

Forms of Tourist Activities:

Antarctic tourists have a wide-ranging choice of land or sea-based services to travel to Antarctica. The methods of transportation available include private, government, charter of commercial aircraft and seaborne vessels, including cruise liners and yachts (Wace 1990:328; Enzenbacher 1991). Travel within the continent can consist of travel by foot, skis, snow machines, wheeled and over-snow vehicles, zodiacs, helicopters, or aircraft. Zodiacs are a particularly popular form of travel, as they provide safe and reliable transport across the sea, to inaccessible areas, while limiting the number of tourists landing at a particular site at any given time (Enzenbacher 1991). Zodiacs allow tourists to see sights of interest they would otherwise not be able to see.

Shipborne Tourism:

Tourism by ship and air began slowly in the late 1950's, when the Chilean and Argentinian governments respectively organised the first tourist expeditions to the Antarctic Peninsula (Brewster 1982). Ships have the easiest access to Antarctica as aeroplanes are easily affected by changing weather patterns and the difficulty of finding safe landing sites. This mode of conveyance has therefore been the most popular form of transport. Sea-borne passengers normally make up more than 90 percent of Antarctic tourists (Stonehouse 1992a:214; Enzenbacher 1993:142). During the 1991/92 season, this proportion increased to over 97 percent (Enzenbacher 1992a:17) (refer Table 2.1). Antarctic shipboard tourism has grown irregularly. In 1974-75, the numbers of passengers rose to a height of more than 3500, but declined to fewer than 1000 in 1980, then increased again during the 1980s to exceed 4000. During the southern summer 1990-91, more than 4600 tourists are

estimated to have visited Antarctica, and during 1991-92 over 6000 (Stonehouse 1992a:215). Ship-borne tourists currently outnumber scientists, support staff and all other categories of summer visitors. A very small number of tourists winter over, mostly in private yachts (Stonehouse 1992a:215).

Table 2.1 Estimated numbers of seaborne tourists in Antarctica from 1957-1992:

Year	No of tourists	Year	No of tourists
1957-58	194	1978-79	1048
1958-59	344	1979-80	855
1965-66	58	1980-81	855
1966-67	94	1981-82	1441
1967-68	147	1982-83	719
1968-69	1312	1983-84	834
1969-70	972	1984-85	544
1970-71	943	1985-86	631
1971-72	984	1986-87	1797
1972-73	1175	1987-88	2782
1973-74	1876	1988-89	3146
1974-75	3644	1989-90	2460
1975-76	1890	1990-91	4698
1976-77	1068	1991-92	6317
1977-78	845		

Note the absence of tourist activity from the end of the 1958-59 season until the 1965-66 season. Numbers of seaborne tourists after the 1979-80 season include yachts when known.

Source: Enzenbacher 1993:144

The first cruise was made by an Argentine vessel, *les Eclaireus*, to the Antarctic Peninsula in 1958. Since then, cruise ships have visited the northern tip of the Peninsula annually. In the period to 1980 more than 80 voyages were undertaken, carrying an estimated total of 17,000 passengers, the majority of whom come from northern hemisphere countries (May 1988; Wace 1990:327). In 1989-90, five ships offered 21 cruises in the Antarctic. In 1990-91 the number of cruises had increased to 31 when eight different ships were used. During the 1991-92 season ten cruise ships, one military vessel and one chartered vessel, made a total of 53 Antarctic cruises (IAATO Submission 1992a; Enzenbacher 1993:142), with only two working out of New Zealand to the Ross Sea (Louisson 1992).

Expedition/educational cruising is the most popular form of Antarctic tourism (Hart 1988:95). The concept of 'expedition cruising' coupled with education as

a major theme, began with Lars-Eric Lindblad in 1966, and has been followed by most cruise operators (IAATO Submission 1992a; Stonehouse 1992a:215). Initially, Lindblad chartered an Argentine naval vessel and Chilean ships (Brewster 1982). In 1969, Lindblad had the first ice-strengthened Antarctic tourist ship built, the *Lindblad Explorer*. Other ships and tour operators followed, and by the late 1980s there were at least four ships operating in Antarctica (IAATO submission 1992a). During the 1980s, Lindblad Travel and Society Expeditions, both American tour operators, offered the majority of cruises to Antarctica (Enzenbacher 1991). A number of new operators entered the market during the 1991-92 season, but Society Expeditions carried the most passengers with a total of 1803 aboard 16 Antarctic cruises, more than 29 percent of the market share. Since 1957-58, tour ships have carried a total of more than 43,000 passengers to Antarctica (Enzenbacher 1993:142).

The Antarctic Peninsula is the most frequently visited area of Antarctica due to its proximity to South American ports (Nicholson 1986:1; Hart 1988:93; Raymond 1990:32). It also has a relatively milder climate than anywhere else in Antarctica, and relative freedom from pack-ice for landings compared with other parts of the Antarctic coast. Furthermore, it has diverse and abundant wildlife offering photo opportunities, and the largest concentration of Antarctic research stations, to which visits are included in most tours (Enzenbacher 1992a:19). Stonehouse (1992a:215) estimates that some 2000 tourists visit there annually. Many ships come from Argentina, Chile, Spain, the United States and West Germany. Nearly all Antarctic cruises begin from Punta Arenas (Chile), Puerto Williams (Chile), or Ushuaia (Argentina). This is because the crossing of the Drake passage to the Antarctic can be made in 48 hours as compared to up to 10 days from Hobart (Australia) and Christchurch (New Zealand), which are also traditional departure points for Antarctic expeditions (Hall 1992a:4). Other cruises, often involving the same ships, leave southern ports in New Zealand and Tasmania to visit the McMurdo Sound, Cape Adare, and Commonwealth Bay Sectors, usually including Macquarie Island and some of the southern islands of New Zealand. Other areas on the continent are less frequently visited (Wace 1990:335; IUCN 1991:56; Stonehouse 1992a:215). Circumnavigation of the Antarctic continent is very rare and will be discussed in greater detail in Chapter 4.

Cruises vary in length, but may last 12-15 days, with 4 or 5 days actually spent landing at different sites (Enzenbacher 1992c:258). Whereas the time spent

ashore is very brief, costs are generally high depending on the length of the voyage. In one typical documented cruise involving 48 passengers and lasting 28 days, only about 18 hours were spent on land (HRSCERA 1989:7). Enzenbacher (1992c:258-259) notes that advertised prices for 10-30 day cruises during 1992-93 ranged from US$2850 to US$16475. A typical 12 day cruise costs between US$5000-7000, generally not including transportation to the cruise departure point. Guest lecturers are present on the ships, and passengers are usually put ashore in zodiacs to inspect penguin rookeries, scientific bases, locations of former whaling stations and historic sites. Accommodation for tourists at the Chilean station Teniente Marsh on King George Island off the Antarctic Peninsula and a seasonal base camp consisting of tents at Palmer station run by Adventure Network International, are presently the only land-based tourism facilities (HRSCERA 1989:4; DSIR 1990; Hall 1992a:4; ANI 1992-93). However, from time to time there have been proposals to create further tourist infrastructures, which will be discussed later in this chapter.

There are substantial variations in the number of passengers carried by tour ships. Argentine cruises conducted between 1958 and 1976, when fuel costs deferred further tourist operations, generally accommodated 400-800 passengers. One cruise is believed to have carried 1,250 passengers. A Spanish-operated cruise aboard *Cabo San Roque* in 1973 carried about 900 tourists (Enzenbacher 1992a:18). However, the nature of these ships, `fun-in-the-sun´ cruising has not fared well in Antarctica as climate conditions do not allow entertainment as is expected (Hart 1988:96). The long-standing operators carry 100-150 passengers in luxurious accommodation on such ships as *Society Explorer* and *World Discoverer* (Stonehouse 1992a:215). Four Antarctic cruising expeditions are planned for the 1993-94 season by the *Marco Polo*. This is a luxury cruise ship capable of carrying over 800 passengers, although in Antarctica passenger numbers will be limited to 400. Stonehouse (1992a:215) asserts that the recent appearance of larger ships carrying up to 400 passengers, and of smaller ships carrying fewer than 60, has broadened the range of cruises available. This would indicate that the market for cruises will continue to expand, and that the industry will grow rather than decline during the next few years.

Private yachts have been manned solo or may carry up to twenty fare-paying passengers (Enzenbacher 1992a:18). These yachts tend to concentrate their

activities in the Antarctic Peninsula region because of the relatively short sailing distance from South America and the Falkland Islands, and more so because of the diversity of wildlife in the area. In most austral summers about half a dozen cruise around the Peninsula (Dingwall 1990:9; Novak 1991:106). Activities range from sightseeing to chartering services for film crews, as well as supporting research studies by Antarctic Treaty Party scientists (IAATO Submission 1992a).

The increasing types of shipborne tourism has implications for management, as yachts tend to be able to travel to a larger number of places and are thus more difficult to control. Management also requires good information, which is often difficult to obtain. The following section will describe the efforts by a British research team to provide the first detailed information on shipborne tourism in the Antarctic.

Monitoring Shipborne visitors in Antarctica:

There is little quantitative information on the impacts of the expanding shipborne tourist industry on the Antarctic environment, and little deliberation has been given to ways on managing its various components, specifically groups of tourists in the field. A research team from the Scott Polar Research Institute, University of Cambridge, in conjunction with Argentine and Chilean scientific institutions, has completed a preliminary study of ship-borne tourism between late December 1991 and March 1992 on Half Moon Island, South Shetland Islands. Stonehouse (1992a:215-218) has provided a summary of the research, which included monitoring visitor activities on the island, categorisation of sites in the maritime Antarctic attractive to visitors, as well as assessment of their suitability for continuing visits.

Within the three month study period, the survey team recorded 14 visits by six tour ships, bringing more than 2000 tourists! Preliminary indications were that tour parties were well-disciplined and organised, and that impacts with animal and plant communities were slight. However, it was felt that the potential for harm by ill-disciplined groups is great, and possible long-term effects on ecosystems must be taken into account in assessing total impact. A survey of visitor's attitudes at the start and end of their voyages, based on questionnaires was made by Enzenbacher, a fellow researcher (Stonehouse 1992a:216). This study produced 2136 completed questionnaires, currently

being analysed. Criteria were drawn up for categorising sites that are currently visited by tour ships and a 15-point plan was devised for assessing qualities and suitabilities (refer Figure 2.2).

Figure 2.2 15-Point Plan for Assessing the Qualities of Tourist Landing Sites:

A. APPROACHES AND ACCESS

1. Approaches. Are there clear, safe, and well-defined approaches for passenger ships?
2. Holding ground. Is there good holding ground for anchorage, or alternatively adequate sea-room for passenger ships, within easy reach by zodiac?
3. Landing sites. Are good landing sites available in a wide range of weather conditions?
4. Access. Is there easy access to features of interest from landing points?
5. Snow-fields. Does snow impede access for any part of the season?

B. ATTRACTIONS FOR VISITORS

6. Penguin populations. How many nesting species of penguins are present?
7. Other bird species. What other nesting or non-nesting species are present, and in what abundance?
8. Sea mammals. Are seals likely to be seen on the beaches? Are whales known to be present in the area?
9. Vegetation and soils. Are there interesting examples of vegetation, soil development, patterned ground, etc?
10. Scenic attraction. Is the site scenically attractive? Are there interesting geological features or rock formations?
11. Human presence. Are there relics of former occupation, for example, by sealers or whalers? Is the site currently in use?

C. ADDITIONAL FACTORS

12. Past research. Has earlier work provided baseline studies on which current and future impact assessments may be based?
13. Research opportunities. Does the site offer research opportunities for monitoring possible visitor impacts, with adequate control areas nearby?
14. Fresh water. Is there a supply of fresh water available in summer?

D. COUNTER-INDICATIONS

15. Are factors present that make this an unsuitable site for regular visitor use?

These criteria have been applied to a number of sites that are in regular use by visitors, and will ultimately be applied to some 50 sites known to be used, as a basis for management plans and impact statements.

Source: Stonehouse 1992a:217

The Stonehouse study identified the types of research needed for the management of visitors from tour ships in Antarctica, and indicated ways in which both research and management can be organised as an internationally sponsored programme within the Antarctic Treaty System (ATS). Arising from this study, a programme of visitor monitoring is planned as a joint project between British, Chilean, and Argentine scientific institutions during the next

five years. The objectives are to find ways of minimising both short-term and long-term impacts of tourists and other visitors on breeding birds and other ecological communities, and to provide a factual basis for regulation under the ATS. This project will provide useful information in the fashioning of an international scheme to administer Antarctic and sub-Antarctic tourism

Airborne Tourism:

This category includes sightseeing overflights of Antarctica without landing, independent adventurers making brief visits in specially equipped light aircraft, and land-based tourists flown in on package deals (Wace 1990:329; Swithinbank 1993:103). Tourist overflights began in 1956 with a flight carrying 66 passengers from Chile to Antarctica (Swithinbank 1993:103). Over 28 years, tourist flights to the Antarctic were rare, and only about 235 visitors landed in the Antarctic from tourist aircraft. all at the United States McMurdo Base (Reich 1980:210). Overflights became regular only from 1977 when Qantas and Air New Zealand began flights to the Ross Sea and adjacent coasts, carrying up to 4000 passengers per season (IUCN 1991:55; Swithinbank 1993:103). These operations were suspended when an Air New Zealand DC-10 crashed on Mount Erebus in 1979 with the loss of all aboard (Beck 1986). Prior to the crash some 11,000 passengers had travelled on the 11-hour journey from New Zealand (Reich 1980:210), during which some 90 minutes were spent over Antarctica. The Erebus disaster underlined the hazards of polar navigation and the danger of inadequate briefings and safety precautions (Brewster 1982). Stonehouse (1992a:215) believes that this disaster ended a form of tourism (overflying Antarctica on scenic flights without landing), that was growing in popularity and which appeared to offer considerable potential for expansion with minimal environmental effects.

Interest in Antarctica has not been deterred however, as flights using small aircraft have continued from time to time. The first commercial flight landing passengers in Antarctica was made in October 1957 by a Pan American Airways Stratocruiser, which flew from New Zealand to McMurdo Sound (Wace 1990:331). There were a few more flights, but these were soon suspended when the US imposed landing restrictions because of deficiencies in accommodation and search/rescue facilities, and alleged disruption of scientific research.

In 1982, the first sizeable party of tourists were flown from Punta Arenas to Teniente Rodolfo Marsh Station on King George Island where they joined a cruise ship. The aircraft returned to Punta Arenas with another group returning home after finishing their cruise. However, these soon ended due to the unreliability in timing due to weather conditions (Swithinbank 1993:104). Flights landing tourists at Marsh Station for a few hours or a few days began in 1983 (DSIR 1990; Wace 1990:331; Swithinbank 1993:104). Visitors are accommodated at the first Antarctic `hotel´, *Guest House* (also called the Hotel Estrella Polar). Visitors are taken on field trips to penguin rookeries, whaling station remains, an elephant seal colony and glaciers. At the end of their visit, the guests fly back to Punta Arenas. Prices for this type of expedition range up from US$3990 (Adventure Associates 1988; Wace 1990:331). This allows the traveller with limited time the possibility to visit Antarctica, as such an expedition may only take six days. To the tour operator, short tours are more profitable than longer ones. By flying tourists at least one way a visit as short as seven days can be made attractive to customers, otherwise too much time is spent crossing and re-crossing the Drake Passage (Boswall 1985:188).

Adventure Network International (ANI), based in Vancouver, has organised expeditions using ski-equipped aircraft, ships and skis to many inland destinations in the Antarctic since 1984 (Enzenbacher 1991). ANI operates as Antarctic Air (Swithinbank 1993:105) and is the only operator of private flights to the interior of Antarctica. Scientists also use ANI expertise to fly them from South America to Patriot Hills, then to their own national station or field study site (Louisson). ANI has been assisted by the Chilean government, which, for a price, has allowed the use of its permanent King George Island gravel runway as a staging post for ANI planes. Chile uses the tourist dollars to support its own science programme as well as a sign of sovereignty (Louisson). Initially, ANI was opposed by some governments due to the risk associated with Antarctic flying. However, ANI believes that it has brought risks to an acceptable level by maintaining sufficient aircraft in the Antarctic to evacuate all personnel in the event of an accident to any aircraft (Swithinbank 1993:107). The Chilean government also provides back-up guaranteeing search and rescue coverage throughout its area.

In January 1988 the first passengers, paying US$25,000-30,000 each, arrived at the South Pole aboard six Twin Otter flights operated by ANI (May 1988:138; Dingwall 1990:9; DSIR 1990). Though most flights occur during a

short summer season from November to March, ANI achieved a record nine-months flying season (July to April) during 1989-90 operations (Enzenbacher 1992a:19). Nevertheless, Enzenbacher's figures (1992a:17) suggest that airborne tourists only accounted for less than 6 percent of the total number visiting Antarctica during the period from 1980-81 to 1990-91. In 1990-91, this ratio decreased in fact to less than 3 percent (Stonehouse 1992a:214).

A brief survey of non-government aircraft flying in Antarctica in the 1991/92 season has been compiled by Swithinbank (1992:232). It shows that the majority of private-sector flights in this season were made by ANI using four different planes. This was the seventh consecutive season of operations undertaken by Antarctic Air. The major activities of the season were in support of the Shirakawa Antarctic Photographic Expedition 1991-92, the Kazama Motorcycle Expedition to the South Pole, and a `Pole to Pole´ film crew with actor Michael Palin. Some support was provided for the Norwegian Aurora Projekt on the Filchner Ice Shelf. In addition, 26 climbers in six groups were taken to Vinson Massif, the highest mountain in Antarctica (4897m). The season began on 11 November, and the last flight was carried out on 16 January 1992. Each flight had to cover a round-trip distance of 6200 kilometres. A total of 88 passengers (clients and staff) were flown into Antarctica in the course of the season. The base camp at Patriot Hills was closed for the winter on 18 February, and all personnel were back in Punta Arenas by 29 February 1992 (NZAS 1992e:366-367; Swithinbank 1992:232). Antarctic Airways' tourist utility is reinforced by the travel facilities available for scientists wishing to move around the continent (Wace 1990:331).

Swithinbank (1992:232) recorded only two other non-government flying activities. These consisted of Twin Otter flights operated by Aerovias DAP of Punta Arenas to the Chilean station *Teniente Rodolfo Marsh* on King George Island. In addition, the Norwegian Aurora Projekt leased a Twin Otter from Greenlandair for glaciological work on the Filchner Ice shelf.

Airborne tourism from Australia and New Zealand has been in a state of limbo since the Erebus crash, however, Wace (1990:334) believes that airborne tourism from South America is likely to continue, as it is facilitated by geographical factors and official logistical support. Flights continued in spite of the crash of a Chilean tourist plane on King George Island in 1985 with the loss of all ten passengers. Swithinbank (1993:104) believes that any rapid

growth in airborne tourism is unlikely because there are only four permanent runways in the whole of Antarctica. Of these, Marsh is the only one that has been open to private or commercial aircraft. It is unlikely that runways specially constructed for airborne tourism will be developed due to only one percent of the total Antarctic area consisting of bare ground, of which most is mountainous, and the high cost of developing a runway. In addition, the commercial risks of Antarctic airborne tourism are high, and its unlikely that ANI will face increased competition (Swithinbank 1993:107). Aerial sightseeing over the Antarctic Peninsula and nearby islands could however be promoted from either Argentina or Chile, while combining airborne tourism with seaborne tourism may be a further possibility.

Joint Cruise-Plane Tourism:

Some tour operators offer a combination cruise/flight visit to Antarctica (Janiskee 1991:4). Under this combination, tourists have the option to fly one-way which reduces both cost and the amount of time needed for an Antarctic holiday, while avoiding a second crossing of the Drake Passage by ship. These shorter visits prove more lucrative for tour operators whilst allowing a larger tourist market to be targeted (UK Submission 1991). For instance, in 1981-82, 510 passengers flew one or both ways to or from *Presidente Frei Station* as part of a tour package offered by Transoceanica, Santiago de Chile, which chartered *World Discoverer* from 31 December 1981 until 20 January 1982 (Enzenbacher 1993:144). Several Antarctic cruise ships carry helicopters. In 1991, the cruise ship *Frontier Spirit* used a helicopter to take passengers ashore in Victoria Land enhancing the scope of travel for Antarctic visitors (Swithinbank 1993:104-105).

Some tourist expeditions from South America combine plane and cruise travel by flying the passengers from Punta Arenas to King George Island, from which they join a passenger freighter. These cruise ships are small, and the passengers spend about 7 days exploring the continental coastline (World Expeditions International Adventures 1988). The exchange of ship passengers represents a potentially lucrative market for airlines as well as cruise operators as it avoids days of sea time out of sight of land. Savings from flying to and from Antarctica would be substantial (Swithinbank 1993:104).

Land-based Tourism:

While the majority of Antarctic visitors travel on a cruise ship a certain amount of time is spent on shore. Similarly, tourists who arrive by plane, will also pass time on the continent itself. Their activities constitute another form of tourism, land-based tourism. This form includes all activities by Antarctic tourists on the Antarctic continent itself. Adventure Network International guests in particular participate in this type of tourism, as they are offered overland expeditions, such as skiing to the South Pole. Land-based tourism tends to be a large component of private expeditions such as that of Fiennes and Stroud who attempted to cross the Antarctic continent unaided during the 1992/93 season (Birnbaum 1993:40). The motivation for land-based tourism varies. Some visitors have an educational or scientific interest, whereas other are involved in adventure tourism, or as in the case of Fiennes and Stroud aim to raise finance for a cause (Birnbaum 1993:42).

Private expeditions, many of which are conducted in the interior, are supported logistically by a private company. Mountaineers in particular use this service because the highest peaks on the continent are found near the base camp at Patriot Hills (IAATO Submission 1992a).

Adventure Tourism:

For many adventurers, Antarctica represents the ultimate challenge (Hart 1988:97). The above mentioned types of tourism are generally based on the method of travel. Adventure tourism does not depict a means to travel, but rather indicates a motivation of the tourist about the type of activity that the visitor wishes to be involved in. These adventure expeditions usually have well-defined aims and began with the American Mountaineering expedition in 1966-67. More recent expeditions include the crossing of Antarctica on ski by Reinhold Messner and Arved Fuchs between November 1989 and February 1990 (DSIR 1990). In 1991, the sloop *Pelagic* sailed to the Antarctic Peninsula for a two and a half month expedition. The ship served as a "mobile mountain refuge" as the aim of the expedition was to climb (Novak 1991:106). The fact that some people pay to participate blurs the distinction between adventure and commercial tourism (Wace 1990:337). Inevitably, a strong sense of independence, in conjunction with an ability to reach more inaccessible places,

separates these visitors from cruise passengers, while further differences arise from relative youth as they are usually aged between 20 and 40 years (*ibid*).

Tourism companies such as ANI offer adventure tours as well as educational and environmental tours. The visitors can choose from a number of adventures, which generally all occur from the base camp at Patriot Hills. Visitors can attempt to climb Antarctica's highest peak, Mt. Vinson, travel to the South Pole by plane or overland, join a ski safari to the Ellsworth Mountains, or partake in a photo safari (ANI 1992-93).

Yachting is also a form of adventure tourism in the turbulent seas around the Antarctic continent, and although comparatively few visits to Antarctica have been made by yachts, they are beginning to increase around the Antarctic Peninsula. In recent summers up to seven yachts have visited the Antarctic Peninsula, and for some of these, it may be a second or third visit (DSIR 1990).

Adventure tourism can thus generally be seen as a component of shipborne, airborne and land-based tourism as the participants may travel on a cruise ship or fly by plane to Antarctica, and from the landing point partake in an adventure type of activity. Only small numbers are involved in adventure tourism, but their independent mode of operations and ability to reach inaccessible areas does create regulatory problems (Wace 1990:338). The relative pragmatic nature of their programme renders it difficult to monitor their activities. Whether by plane or by sea, private `adventure expeditions´ to Antarctica pose the same safety questions as commercial tourism but usually with an even higher level of risk (Hart 1988:98). Private expeditions, especially yachts, do not always seek the advice of Treaty nations nor notify them of their precise intentions, so their locations at any one time are frequently unknown. Overall, tourists have a wide-ranging choice of land or sea-based services to travel to and from Antarctica.

The Growth of Antarctic Tourism:

It is difficult to establish with absolute certainty the exact numbers of tourists that have visited Antarctica. Information is often scattered, ambiguous or incomplete and often inconsistently reported by the Antarctic Treaty Parties (Enzenbacher 1991). However, to describe the trends of the Antarctic tourist industry an evaluation is necessary. Such an evaluation will form a basis for tourist impact assessments and facilitate the formulation of an Antarctic tourism management regime.

Since Antarctica emerged as a tourist destination 35 years ago, 45,000 tourists are estimated to have landed (Enzenbacher 1993:142). Of the total landed, nearly 45 percent travelled during the seasons 1987-88 to 1991-92. During the 1990-91 season at least 4842 tourists visited Antarctica, representing a 600 percent increase from 1985-86 (782 visitors) (Enzenbacher 1992a:17)! At least 6495 tourists visited the Antarctic during the 1991-92 season, presenting the largest tourist presence ever recorded in a single season (Enzenbacher 1993:144). During the 1992-93 season, over 8000 tourists could have visited Antarctica if all planned tours were conducted (Madden 1993b; NZAS 1993a:398). Tourists now outnumber the total number of scientists and support staff based in Antarctica (estimated at 4000). A detailed break-down of tourist numbers since 1980 is provided in Table 2.2.

Exact numbers of visits made by small or non-commercial expeditions to Antarctica are difficult to obtain, and many visits may never be reported. In addition, there is a lack of uniformity in reporting procedures by commercial operators, making the exact statistics of Antarctic visitors difficult to determine (Enzenbacher 1993:142).

The pattern of future Antarctic tourism is difficult to predict in detail (Enzenbacher 1991) as factors such as costs, accessibility, weather and the availability of transport all play a role in determining levels of activity. But the potential of Antarctic tourism remains, and interest and activity will almost certainly increase. There is already growing interest in recommencement of overflights from Australia, and cruise ship operators have plans to increase the number of voyages to the Ross Sea region and the sub-Antarctic islands. The number and variety of private expeditions are also on the increase, including voyages by private and chartered yachts, overland crossings of the continent

and visits to the South Pole (IUCN 1991:56). Hall (1992b) notes that a survey of the interests and activities offered by operators through the *Specialty Travel Index* between 1987 and 1990 shows that the most popular touristic activities undertaken in Antarctica are cruising, flightseeing, mountaineering and nature oriented travel.

Table 2.2 Known numbers of tourists in Antarctica from 1980-81 to 1991-92:

Year	No of seaborne tourists	No of airborne tourists	Total no of tourists
1980-81	855	n/a	855
1981-82	*1441	*	1441
1982-83	719	2	721
1983-84	834	265	1099
1984-85	544	92	636
1985-86	631	151	782
1986-87	1797	30	1827
1987-88	2782	244	3026
1988-89	3146	370	3516
1989-90	2460	121	2581
1990-91	4698	144	4842
1991-92	6317	178	6495
Totals	26224	1597	27821

Notes: n/a - the number of airborne tourists during this season is unknown.
*In 1981-82 some passengers were both airborne and shipborne.
Figures for airborne tourists are likely to be low as data are fragmentary.

Source: Enzenbacher 1993:142

The different forms of travelling to the continent, and the varying activities which people perform, require urgent consideration in order to establish an international management regime. The concentration of visitor numbers and the impacts which the tourists activities may have, will need to be understood before such a management regime can be enacted. The following section will analyse the types of impacts caused by Antarctic visitors.

2.3 IMPACTS:

Tourism offers both benefits and threats to Antarctica. On the one hand, according to the Strategy for Antarctic Conservation (IUCN 1991:55), "all who experience its magnificent scenery and wildlife gain a greatly enhanced appreciation of Antarctica's global importance and of the requirements for its conservation". Such visits also bring fulfilment to those seeking personal challenge and wilderness adventure. Moreover, scientific activities may also benefit since tourist visits can provide a useful link with the outside world and strengthen political support for Antarctic science, and small, independent expeditions to remote areas often make valuable scientific observations (Wace 1990:339; IUCN 1991:55; IUCN submission 1992:2). Johnson (1985:45) experienced the reaction to tourism at scientific bases, "there are occasional visits by tourist vessels such as the *Lindblad Explorer* which pass by. Such visits are viewed rather ambivalently. Any break in the monotony is to be welcomed". In these respects, tourism can have positive impacts by increasing awareness of the need to preserve a near-pristine environment; as well as on the scientific community which through lack of funding or resources may be limited in their scope of research. Table 2.3 provides a summary of these positive impacts.

Table 2.3 Positive Impacts of Antarctic Tourism

Impact Factor	Consequence	Benefit to
		Environment
Visitation	Greater understanding	Higher lobbying for protection
		Science
Research by unofficial expedition	Assist official scientific research	Increased knowledge with less cost to national science programmes
		Social
Visitation	Sense of achievement Sense of history	Personal growth Knowledge of past and current Antarctic activities (and how government funding is spent)

Adapted from Boo 1990:7-26, Hall 1992b

On the other hand, there is also the potential for a number of undesirable impacts on the Antarctic environment. Although tourism may increase the

number of people dedicated to the preservation of Antarctica, pressures on the environment will increase at the same time (Johnson 1985). These include physical impacts, such as disturbance at wildlife breeding sites, or trampling of vegetation. Tourism can cause scientific and social impacts as well through disruption of routines at stations and of scientific programmes.

Environmental Impacts:

The characteristics of environmental impacts in Antarctica are closely related to the nature of the tourist activity (refer Appendix 2.1). Overflights to Antarctica provide minimal disturbance of the Antarctic environment and do not require land-based facilities, although hydrocarbon residues from aircraft fuel can be distributed over a wide area by winds (Swithinbank 1993:107). High flying sightseeing flights does not seem to affect wildlife (Swithinbank 1993:107), but low overflights of penguin colonies "have been known to cause panic stampedes or desertion of nests with considerable loss of eggs by crushing or from subsequent predation by skuas" (HRSCERA 1989:10). Helicopters and the high propeller speeds of modern air-craft are also very disturbing (Swithinbank 1993:107).

Once on the ground, tourists brought in by air do not disturb wildlife any more than tourists brought in by ship. Inland operations seldom encounter wildlife, but visitors can leave rubbish behind. Swithinbank (1993:107-108) states that ANI was aware of these problems at the planning stage, and Patriot Hills is the only inland station in Antarctica from which all waste products are taken off the continent. Planes which land interact at a much higher level than ships requiring considerable land based infrastructural support (Graham 1989:29). For example, tourists who fly to Marsh Base for a three day stay at the Chilean `hotel´ require accommodation, meals, water and basic services, all of which impact on the local environment (Enzenbacher 1991).

Landing and take-off have posed problems for aircraft in the Antarctic. Aircraft with retractable undercarriages can only land on hard-ground airstrips or on specially-consolidated ice-free areas, which are costly to lay out and to maintain to high safety standards. Ski-wheels and skis increase the range of possible landing sites, but not all snow-fields are safe for landing. Swithinbank (1993:108) proposes the use of `blue-ice´ areas, which are smooth extensive ice fields at all elevations, swept free of snow by persistent winds. There

appear to be enough suitable blue ice sites to provide a well-distributed system of Antarctic airfields for large conventional transport aircraft and that costs of development should be very low. This method may prove to have less impact on the Antarctic environment.

The impacts of ship-based tourism on the Antarctic environment are more varied. Several ship accidents, which includes the recent grounding of the Argentine resupply/tourist vessel *Bahia Paraiso* in Antarctic waters in 1989 (Herr Hall and Haward 1990:91), bear testimony to the dangers of Antarctic travel, and indicate the degree of disruption which could accompany any unregulated increase in tourist activity. Most tourist vessels are registered in non-Treaty countries and this poses some regulatory difficulties (IUCN 1991:56). The environmental hazards of accidents may require time-consuming and costly search-and-rescue and environmental clean-up operations. Stonehouse (1992a:214) argues that since 1966 when ship-borne tourism began seriously, no tourist ship has suffered serious damage in Antarctic waters or has seriously impacted on the environment. Stonehouse does not appear to include the *Bahia Paraiso* incident in his discussion, perhaps as it did not solely function as a tourist ship. However, Enzenbacher (1991) argues that the *Bahia Paraiso* accident occurred as the ship departed a tourist destination, a place the ship would not have visited had tourists not been on board. The ship's crew members were also advised by US officials not to depart using the channel the ship has used when it arrived, but the warning went unheeded. Moreover, the United States government has not yet been reimbursed for the costs it entailed in the clean up and environmental assessment of the damage caused by the *Bahia Paraiso*.

The type of cruise ship visiting Antarctica can also have an indirect impact on the environment. One of the major operators in Antarctica, *Society Expeditions* has a traditional capacity of less than 140 passengers. However, some of the ships operating in Antarctica carry more than this. Argentine ships have been known to land 1,000 people at a time (Johnson 1985:146). These larger ones tend to follow a different concept, less educational and more of the sight-seeing type. These ships have no ice-hardened hull and probably have no intention to go into the ice. Antarctic tourist ships are not required to use vessels specifically built for use in ice (Enzenbacher 1991). Peter Cox (pers comm) argued that "if indeed they would stay in open water and merely sightsee from the vessel, the impact on the environment would be extremely

minimal. If, however, they would put passengers ashore in larger numbers and not brief and control them properly then damage could easily be done". Enzenbacher (1991:18) states that "cruise vessels which carry fewer than 180 passengers are considered optimal since they allow small groups to off load at landing sites that are capable of reboarding expeditiously if need be".

Cruise travel in the Antarctic summer coincides with the peek breeding periods for many species and may disturb wildlife breeding sites that are a key feature of the tourist attractiveness of Antarctica (Mussack 1988; Hall 1992a:6). Sea-borne landing sites also tend to be the principal locations of plant and animal life (Hart 1988:94). Tourists could unwittingly spread bird or plant diseases and introduce new kinds of organisms (Nicholson 1986:2; May 1988:139). The seasonality of Antarctic tourism greatly affects the pressure and scale of tourism on Antarctic sites. It is thus not only difficult access putting pressure on the relatively few reachable sites, but also the short season in which tourism is possible, hereby increasing the impact on these sites further. For example, Whalers Bay, Deception Island received 1496 passengers in the 1990-91 season, averaged over 13 visits. Maximum days between visits varied from two to 14 days (US Submission 1991).

Ships are self-contained so they have only a low-level of interaction with the environment (HRSCERA 1989:7), as they do not require accompanying infrastructure (Enzenbacher 1992c:259). Passengers from a cruise ship do not generally spend many hours on land. Nevertheless, these tourists can have potentially adverse effects due to their numbers putting significant pressures on locations of tourist interest (HRSCERA 1989:7). Repeated visits, even by well-regulated tours can destroy a fragile plant cover (Wace 1990:337). As ship-based tourism is extremely hard to regulate because of the mobility of cruise operations and their capacity to visit remote locations, the length of time that visitors spend on land and their activities will need further clarification (Codling 1982:9).

However, the length and type of tourist stay also affect impact on the Antarctic environment. Yachts visiting a number of islands and research stations in the Antarctic Peninsula region during the austral summer months have a different impact on Antarctica than over wintering yachts in Antarctic waters (Enzenbacher 1991). Visits by private yachts present a major problem in the Peninsula region, as the authorities have no power over them, whereas cruise

ships are required to give advance notice of a tourist visit. Often private expeditions using yachts have both an educational and adventure component, and may be sponsored or organised by national alpine clubs or similar organisations. Some also make a major contribution to scientific activities. These should be targeted in requesting prior notification of visits (Clark and Bamford 1987:160).

Ships can freely pollute over a wide area through disposal of waste and sewage, while oils spills resulting from damage in the poorly charted Antarctic waters would have a major impact on fragile ecosystems (HRSCERA 1989:8; Hall 1992a:6). To minimise environmental impacts by vessels, it is necessary to establish regulations which cover vessel specifications, which could apply to all tour vessels as well as supply vessels carrying tourists (Enzenbacher 1991).

Tourism and expeditions purely for adventure can lead to expeditions which are less well organised. Well-planned adventures such as David Lewis' solo voyage under sail into the Antarctic ice and the `In the Footsteps of Scott´ expedition have been enormously impressive extensions of human experience. However, these successes may entice others less well prepared and equipped to venture in what will always be the most dangerous seas and terrain on earth. Both tourists and adventure-seekers ultimately depend on the Antarctic professionals for assistance if they get into trouble (HRSCERA 1989:7; Fogg and Smith 1990).

In the future, added pressure for facilities such as wharfs, airstrips and hotels may occur, the construction of which would incur environmental disturbance on a greater scale than has been caused by tourism to date (IUCN 1991:56). As mentioned above, Chile has already opened a hotel on King George Island, with banking and shopping facilities (Eco 1985:1; May 1988:138). The construction of facilities would compete with wildlife for the less than two percent ice-free land in Antarctica, which tends to use these areas for breeding. Wildlife sites may also be affected by constant visitation with the likelihood of behavioural change and denuding of the habitat. The establishment of tourist facilities would also pose problems in terms of sewage and waste disposal, and food and water supply (HRSCERA 1989:7). Proposals to increase tourism by constructing new hotels, airstrips, and other land-based support facilities have been circulated. `Project Oasis´ is one such

proposition by Helmut Rhode and Partners, which suggests the development, operation and environmental monitoring of a year-round accessible 2,800 metre airport, visitor education and research centres, accommodation, hospital, search and rescue and Antarctic Treaty related organisation facilities near Davis Base, Australian Antarctic Territory (HRSCERA 1989:24). The proposed facilities would provide for 344 visitors, 70 researchers, and 174 staff, up to 16,000 people per year could use the facilities. It is proposed that two Boeing flights per week would operate between Davis Base and Australia. The proposal is opposed by scientists and conservation groups, because such projects compete with fauna and flora for the available ice-free land in Antarctica (HRSCERA 1989:25; Hall 1992a:6).

The impact of concentrated development can be clearly seen on King George Island where there are 17 major constructions including a Chilean air facility and the stations of 8 nations. The impacts of station construction and siting of the stations has led to the revocation of Specially Protected Areas status on two occasions (Hall 1992a:6). So far, however, tourist operations have been conducted in a responsible manner and undesirable impacts have not been severe, especially compared to environmental impacts of scientific and associated logistical activity (Dingwall 1990:10; IUCN 1991:56).

Scientific/Social/Cultural Consequences:

Impacts of tourism in Antarctica are generally considered in view of environmental degradation, but despite the lack of indigenous population, there are also effects on people. To control the impacts of land-based tourism operations, Hall (1992a:6) has suggested that tourism facilities could be located near Antarctic bases. However, while the impacts on the environment may be minimised when situating the tourist infrastructure near existing bases, this may have negative impacts on scientific research. As mentioned above, scientific bases may have to provide costly search and rescue services, which can greatly reduce their ability to perform research, and disruption to the work of scientists. It can even cause social stress to the people who are based for a season or even a whole year in Antarctica (Sage 1985:362). The sudden appearance of new faces ashore often proves unsettling for otherwise isolated research stations, and visits tend to be followed by outbreaks of minor infections among base personnel (Wace 1990:339).

The impacts on the Antarctic environment and on scientific research are of major concern, but tourism can also affect the cultural heritage of Antarctica (HRSCERA 1989:7). A number of cultural and industrial (sealing and whaling) sites exist in the Antarctic Peninsula and several early exploration bases are of substantial historic significance. Much of this cultural heritage is of interest to tour operators (Hall 1992a:7), and can easily be destroyed by souvenir-taking, damage, or fire.

Tourism can have an impact on itself as well, "Since enjoyment of the nature travel experience may largely depend on the purity of the visited environment, nature tourism may reduce if the environment becomes degraded as a result of tourism" (Boo 1991a:12). Ryan (1991:101) also believes that tourism is an ally of the environment, "tourism is not the slow cause of environmental change upon the environment. It, too, is adversely affected by the threats to the environment caused by pollution". If tourism is allowed to continue without regulation, restriction and guidance on conduct, the Antarctic environment may become degraded to the extent that it no longer has appeal for visitation.

Summary:

The overall Antarctic visitor impact is influenced by tour operator policies. Enzenbacher (1991) believes that when operators strictly follow the current guidelines created within the industry the potential for environmental impacts is greatly reduced. Tourists aboard self-contained vessels following responsible management practices may have minimal impact on Antarctica's environment. Lecture series aboard tourist ships and guides at landing sites are some efforts used by conscientious operators. Less dedicated tour operators do not provide guides at landing sites, informative lectures, or behavioural guidelines for tourists, which was the case of Marinsular operating *Pomaire* during the 1990-91 austral summer (Enzenbacher 1991). It is however, not only important that passengers are aware, but that staff and crew members are also educated about the effects Antarctic tourism can have.

The number of passengers landed at a particular site varies among tour operators. This may depend on the nature of permission granted for tourist visits by Antarctic research station officials (Enzenbacher 1991). The behaviour of Antarctic visitors and consequent environmental impact is affected by their knowledge of the Antarctic environment. The distribution of

informative booklets, pamphlets and guidelines describing tourist behaviour and the fragile environment may increase tourist awareness.

Boo (1991a:15) argues that "the impact ... of tourism on an area is the result of the scale of the tourism". Reich (1980:203) affirms this, "Antarctic tourism is not evenly spread and the question of the scale of the activity may well arise if it continues to be concentrated in a few relatively small areas", despite the enormous size of the Antarctic continent. The scale of activities is of course relative, and its question highlights the need for detailed environmental impact assessments (Nicholson 1986:2). The scale of Antarctic tourism needs to be carefully identified as well as the varying impacts relating to the tourist activity.

For some impacts, such as disturbance of animals, the impact of tourism may not be different to that of state-sponsored activities. However, the impact may differ in its intensity or pattern of incidence. Thus, although staff from national Antarctic programmes and tourists are both just as likely to disturb skua breeding colonies, disturbance by tourists may be compressed into a much shorter period and involve more people. Hemming, Cuthbert and Dalziell (1991:5) assert that it is the "placement of large numbers of people (perhaps 100) in environmentally sensitive locations (eg. alongside a penguin colony) for short periods (a matter of hours)" which is characteristic of commercial Antarctic tourist visits. Although most tourists are genuinely concerned about protecting Antarctica, their visits are often localised due to limited access to areas, these are repetitive and frequently occur at breeding grounds for seals, penguins, and other seabirds placing additional stress on these species (Manheim 1990:1). This can result in a concentration of visitors which may be above the carrying capacity of the site.

Bonner (1984:840), however, has suggested that by focussing on one particular area, and by further concentrating on the relatively few locations that afford safe landing sites, these features tend to make it easier to control tourist impact. The issue of the benefits of concentrating visitors or dispersing tourist numbers will be discussed further in Chapter 6.

Visitors to Antarctica do generally become advocates of its preservation. This is not only due to the splendour of the continent, but also through the rigorous education by the tour operators. Increased environmental awareness may not occur when Antarctic tour operators are only influenced by profit making. To

prevent environmental degradation and to maintain a high standard of tourist operation there have to be comprehensive and international regulations. To date, no comprehensive tourism impact assessment has been undertaken in Antarctica that enables policy makers to identify specific problems requiring further attention. Indeed, Enzenbacher (1993:145) states that Antarctic policy makers and tour operators are regulating a commercial industry whose effects are not yet fully understood.

The above discussed factors of tourist numbers, mode of transportation and visitor impact have been analysed in separation from each other. To establish a complete description of Antarctic tourism, all components need to be considered together to form a complete management plan. Enzenbacher (1991) notes that analysis of the mode of transportation; the length and type of tourist stay; behaviour patterns and number of tourists aboard each vessel; and tour operator policies are essential. The Antarctic ecology and the types of tourism will determine what is a sustainable level of tourism (Boo 1990:7) However, any Antarctic tourism management regime can only be proposed once the unique political system in Antarctica is understood. Following is a description of the Antarctic Treaty System which administers Antarctica in relationship to Antarctic tourism.

2.4 MANAGEMENT:

As long as tourists continue to desire to visit the far South, certain constraints are necessary, but should occur in such a manner that the visitor does not lose the sense of adventure for which he/she came to Antarctica by making the controls too obvious. Presently, the regulatory framework for Antarctic tourism consists of the Antarctic Treaty System, several visitor guidelines established by different organisations including the tour operators, and Antarctic Treaty Parties' national legislation. The majority of the Antarctic tour operators make their passengers aware of the uniqueness of the continent, giving the visitor a special sense of achievement and consideration of this `last wilderness´. However, despite the efforts by the tour operators, tourist visitation requires a coherent and controllable management scheme, which encompasses all the factors involved in Antarctica, that is, the current political system, the environment, international politics, the tour operators and the visitors.

The following section will provide a critique of the Antarctic Treaty in general, and an examination of its effect on tourism, as well as a brief discussion of other management proposals that have been put forward. Upon these findings, it will be decided whether the Antarctic Treaty System is the most effective system to control Antarctic tourism, or whether additional or entirely new measures are necessary.

Antarctic Treaty System:

The Antarctic Treaty (AT) is the principal international agreement that has established a legal framework for regulating relationships among states in the Antarctic (Barnes 1982:22). The notion for an international Antarctic Treaty arose from the highly successful international cooperation associated with research in the Antarctic during the International Geophysical Year in 1957-58. Following a conference on Antarctica in Washington in 1959, the twelve participating nations (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, The United Kingdom, the United States of America, and the USSR) agreed to the Antarctic Treaty. This Treaty was subsequently ratified and came into force in 1961. The Treaty covers all the entire area south of 60° South, including all ice shelves, but excluding all of the rights under international law in the high seas (Article VI) (Kriwoken and Keage

1989a:3). This encompasses 1/10th of the world's land surface and 1/10th of its oceans (Beck 1990a:248; DSIR 1990).

The primary purpose of the Treaty is to ensure that Antarctica shall continue forever to be used exclusively for peaceful use and shall not become the scene of international discord. The Treaty has 14 articles which, in summary, froze contentious sovereignty claims, demilitarised the area, guarantied free access and established science as the foundation of national Antarctic interest (Hemmings 1991a:8; Beck 1990a:253). Subsequent agreements under what became known as the Antarctic Treaty System (ATS), comprise the Antarctic Treaty and the recommendations of the Consultative Meeting and several Special Meetings; the Convention for the Conservation of Antarctic Seals (CCAS), 1972; the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), 1980; the Agreed Measures for the Conservation of Antarctic Fauna and Flora, 1964; and liaison with outside bodies, especially the Scientific Committee for Antarctic Research (SCAR), thereby seeking to protect terrestrial fauna and flora, seals and marine living resources (Kriwoken and Keage 1989a:3; Hemmings 1991a:8). In 1991, a new form of protection for the Antarctic environment was decided, which significantly affects the deliberation of Antarctic tourism management. This is the *Protocol on Environmental Protection*, which will be discussed in greater detail below. Table 2.4 summarises the Antarctic Treaty System.

Membership and Procedure:

There are two forms of membership. First, any member of the United Nations (UN) may accede to the Treaty. Presently, forty countries have signed the Antarctic Treaty representing some 80 percent of the world's population (NZAS 1992c:276) (for list of members refer to Appendix 2.2). Any nation that signs the Antarctic Treaty is recognised as an Acceding State (AS). This means that the country agrees to abide by the articles of the Treaty but cannot vote (DSIR 1990). The second category is that of Consultative Party (CP). Hereby the state has to demonstrate its interest in Antarctica by "conducting substantial research activity there, such as establishing a scientific station or despatching a scientific expedition" (Article IX of the Treaty). This status gives the country voting rights at an Antarctic Treaty Consultative Meeting (ATCM) (Barnes 1982:22; DSIR 1990; Enzenbacher 1991). Currently there are 26 countries with consultative status (NZAS 1992b:239).

Table 2.4 The Elements of the Antarctic Treaty System:

Elements	Characteristics	Geographical Parameters
Antarctic Treaty 1961	Provides for the management of Antarctic resources. Established Agreed Measures, Sites of Special Scientific Interest (SSSI), and other measures for the management of Antarctic resources.	North to 60° S latitude
Agreed Measures for the Conservation of Antarctic Fauna and Flora 1964	Plants, land-breeding seals, and invertebrates are protected. Established the Agreed Measures, Sites of Special Scientific Interest, and other measures. Revoked by Protocol.	North to 60° S latitude
Scientific Committee on Antarctic Research (SCAR) in Antarctica	Coordinates, initiates and promotes scientific activity.	North to the Antarctic Convergence and the sub-Antarctic islands
Convention for the Conservation of Antarctic Seals (CCAS) 1972	Protects Ross and Fur Seals. Established seal reserves and sealing zones.	Covers area from the sea ice zone north to 60° S latitude
Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) 1980	Applies to all marine organisms except whales, which are covered by the International Convention for the Regulation of Whaling. Provides for the establishment of marine sanctuaries.	Covers area from the sea ice zone north to the Antarctic Convergence
Protocol on Environmental Protection to the Antarctic Treaty 1991	Builds on Antarctic Treaty to extend and improve Treaty's effectiveness as mechanism for ensuring the protection of Antarctic environment. Designates Antarctica as a natural reserve, devoted to peace and science and sets forth environmental protection principles for all human activities. Priority to scientific research. Mineral activity prohibited. Revoked Agreed Measures.	North to 60° S latitude
Annexes to Protocol	Environmental Impact Assessment. Conservation Antarctic Fauna and Flora. Waste Disposal and Waste Management. Prevention of Marine Pollution. Area Protection Management.	North to 60° S latitude

Sources: Hall 1992a:3; United States Working Paper 1992:1-7

The Treaty provides for consultative meetings which were generally held every two years (Kriwoken and Keage 1989a:4), but the Antarctic Treaty Parties now convene annually (Hemmings 1992:14; NZAS 1992b:240). At these meetings recommendations are considered and adopted which provide for further regulation of human activity on the continent. Each member will decide whether to adopt each particular recommendation, but once adopted, they are binding on the nationals of that country (DSIR 1990).

Treaty Review:

At the ratification of the Treaty in 1961 it was decided that a major review could be undertaken thirty years after its implementation if a consultative member of the Treaty so wished. In June 1991, at the sixteenth consultative meeting in Bonn, the Treaty nations recognised the thirtieth anniversary of the Antarctic Treaty by reaffirming the objective of the Treaty to ensure that Antarctica should continue for ever to be used exclusively for peaceful purposes and should not become the object of international discord. They also declared that in this regard they would dedicate themselves to enhancing further their record of collaboration in a decade of international Antarctic scientific cooperation, 1991 to 2000 (NZAS 1992c:274).

Effectiveness of the Antarctic Treaty System:

The ATS has been hailed as successful to date as it is claimed that the Treaty has encouraged international cooperation while guaranteeing peace and stability in the region (Blay, Piotrowicz and Tsamenyi 1989:19; Hearder 1989:9). However, despite its apparent success, the Treaty has showed signs of strain which is in the large part due to the prospect of future resource exploitation (Hearder 1989:10), the existence of commercial resources were not covered expressly by the Treaty (Barnes 1982:23). At the moment there is a strong perception of inequity in the influence of different nations and organisations on Antarctic affairs (Blay *et al.* 1989:20; IUCN 1991:23). For non-governmental organisations, access to Treaty meetings is generally more restrictive than is current practice in other inter governmental forums. With the acquisition of Consultative Party status by prominent Third World states such as India, Brazil, and The People's Republic of China, the Antarctic Treaty Parties have become a more composite group (Blay *et al.* 1989:2).

Although the Treaty is open to accession by any member of the United Nations or which is invited to accede by unanimous consent of the Antarctic Treaty Consultative Parties (ATCPs) (Enzenbacher 1991), the influence of nations is to a large extent based on a scientific `entry price´. This is required before consultative status can be approved under the Treaty (IUCN 1991:23), furthering the perception of exclusiveness of the Antarctic Treaty members by non-member states and groups. Nevertheless, the marked increase in ATS participation indicates support of the system. Moreover, Beck (1990a:259)

asserts that the ATS does form linkages with other international bodies such as the specialised agencies of the UN, such as, the World Meteorological Organisation (WMO).

As a functional system the ATS has many impracticalities which often result in the delayed implementation of measures. The destruction of several protected areas has demonstrated that `on the ground activities´ in Antarctica move more quickly than Treaty negotiations. The decision process is fragmented and several years may be required to implement measures or to make amendments to those already in place. Existing measures have evolved in a piecemeal fashion over the last twenty years, and are now often regarded as inadequate (IUCN 1991:56). In addition there is the difficulty of accessing Antarctic Treaty information (Kriwoken and Keage 1989a:5). This complicates the regulation of tourism, as for effective management the free flow of information about tourist activity is fundamental. Beck (1990b:348) notes that,

> The effective management of any activity is primarily a function of information, and recent ATCMs have noted the manner in which advance details about tourism and private expeditions have been supplied either inconsistently or not at all.

The increasing numbers of acceding states also places greater pressure on the existing rather informal arrangements (Woolcott 1990:23). However, Beck (1990a:256) believes that the ATS has

> evolved in a flexible, pragmatic and cooperative manner, designed to accommodate new circumstances and demands as well as to fill perceived gaps in the Treaty regime through the adoption by consensus of recommendations at ATCMs and of the conclusion of additional conventions on specific issues.

Currently, self-restraint, and diplomatic persuasion is practised rather than compulsive action (Kriwoken and Keage 1989a:4; Beck 1990b:348). In addition, it is unclear whether recommendations under the Treaty are legally binding, even when approved by governments (Scully 1990:99; IUCN 1991:28). Various self-policing aspects of the Antarctic Treaty have not been working well, and there is no single body to investigate problems and enforce policies (Janiskee 1991:6). Decision making within the ATS is based on

consensus rather than majority vote. Once consensus has been reached, there is no direct means of enforcing ATS decisions (Harris 1991:314). If legal controls are to be effective, they must be enforceable by a competent authority (Kriwoken and Keage 1989a:4).

The Antarctic Treaty can only be enforced against its members. The Treaty does not create obligations or rights for any third party without that party's consent (Mussack 1988). Article VI recorded the parties' assurance that they had no intention of curtailing other states' rights on the high seas. The traditional rule that ships sailing on or aircraft flying over the high seas are under the jurisdiction of their flag state continues to apply in the Southern Ocean because of article VI (Peterson 1986:141). This poses problems for the management of cruise ships which are often registered outside Antarctic Treaty countries, but may carry nationals from Treaty nations. As Nicholson (1986:6) has so eloquently argued,

> ...but what is the responsible flag state in the case of an incident involving a Panamian registered vessel with a Greek captain, a Philippine crew, carrying a party of tourists on a charter tour organised by a travel agent in the United States under a joint arrangement with travel agents in Britain, France and Germany, and departing from New Zealand for the Ross Sea and Antarctic Peninsula?

The Antarctic Treaty would therefore appear to require the development of an infrastructural framework, in the form of a Secretariat to serve its data and information needs. This should be a mechanism that will allow data being generated by science undertaken in Antarctica to be properly applied to management of activities there, toward assessing needs for management measures, to review effectiveness of existing management measures and to serve as an early warning system to detect when additional measures must be applied (Murray-Smith 1988:47; Kriwoken & Keage 1989b:46; Scully 1990:99; Woolcott 1990:24). The Antarctic Treaty Parties have recently committed themselves to the need for a Secretariat,

> widespread agreement exists for the concept of a Secretariat but its location was still a matter of debate; its early establishment is however a priority for the successful implementation of the Protocol which will depend on the coordination of information and advice and

recommendations which would be provided by such a body (NZAS 1992b:240).

Treaty Parties agreed at the 1993 ATCM that an informal meeting of the consultative parties should be held in Italy before the Eighteenth meeting in order to reach a consensus on all the issues involved in setting up the Secretariat (Antarctic Journal 1993:5).

Any form of management in Antarctica is complicated by the issue of territorial sovereignty. Antarctica is subject to seven claims of territorial sovereignty, of these, the claims of the United Kingdom, Chile and Argentina overlap to some extent. This is convoluted by the fact that those parties which have not made any claims are divided between those which do not recognise any claims and those which, while also not recognising claims, reserve the right to make them in the future (Murray-Smith 1988:43; Blay *et al.* 1989:2). Despite these claims of sovereignty, Antarctica is an area under no state's sovereignty, and thereby is outside the jurisdiction of any state. The Antarctic Treaty countries have no formally agreed approach to the exertion of jurisdiction over tourist expeditions. The parties have until now been operating their official expeditions under an unwritten understanding that flag jurisdiction will apply (Mussack 1988; Beck 1990b:351). The enforcement of rules, in domestic and international terms, and in tourist regulation, is a major problem. In theory, each ATCP is responsible for the actions of its nationals in Antarctica, but the practical position is rather different. Heavy-handed enforcement by a claimant state of territorial jurisdiction or application of national laws might prompt complications with non-claimants (Beck 1990b:351). Nevertheless, Brewster (1982:110) believes that the success of the ATS, relative to other international arrangements elsewhere in the world, "has rested on its avoidance of confrontation on the complicated sovereignty issue", enabling a spirit of cooperation.

To summarise, although the ATS to date appears to be the most effective regime to manage activities in Antarctica, several areas are inadequate for the administration of the increasing demands on the continent. Due to the *ad hoc* process of implementing measures, gaps have occurred which need strengthening. A mechanism should be developed to enhance compliance with Antarctic conservation measures and to enhance public perception of compliance. The establishment of the Secretariat, in principle, by the ATCPs

should be encouraged as it would provide institutional support for the direction of research, environmental monitoring, data management, information flow, and implementation and enforcement of any measures introduced. Such a Secretariat would also serve as a point of contact for public information about Antarctica and the ATS (Kimball 1990b:81-82). With the implementation of a Secretariat, the ATS will be an even stronger system for Antarctic management.

The Antarctic Treaty and Tourism:

Under the Treaty, tourism is an accepted activity in the Antarctic region, and is not completely unregulated (Beck 1990b:344). The ATCPs, guided by SCAR have established a framework of regulations and guidelines through a series of recommendations adopted at ATCMs (Figure 2.3). Antarctic tourism is treated as a legitimate, peaceful use of the area as long as it is properly organised and controlled (Beck 1990b:345). The ATCPs have acknowledged that the growth of tourism is a "natural development" (ATCM recommendation VIII-9/1975) arising out of the legitimate use of Antarctica "for peaceful purposes only" (Article 1 of the Antarctic Treaty), and that this activity requires regulation (recommendation VIII-9/1975) because of the region's "many unique features of historical, scenic and general scientific interest" (recommendation VII-4/1972) (Beck 1990b:344). The Consultative Parties are required to ensure that its nationals, who may be part of a tourist expedition, obey the Agreed Measures (Recommendation III-VIII) and respect measures relating to protected areas and historic monuments (Mussack 1988).

Tourism was first considered by the Treaty members at the Fourth Consultative Meeting in 1966. Recommendations from this and from several subsequent biennial meetings sought generally to protect other activities from what were feared would be harmful effects of the new industry. Stonehouse (1992a:213) quotes the preamble to Recommendation IV-27, "Recognising that the effects of tourist activities may prejudice the conduct of scientific research, conservation of flora and fauna and the operation of Antarctic stations...", and Recommendation VI-7 of the Sixth Meeting (1970) which considered that the activities of increasing numbers of tourists could have "harmful effects on scientific programmes on the Antarctic environment, particularly in Specially Protected Areas, and on historic monuments", as exemplifying the Party members' overriding emphasis on science. This last recommendation

stipulated that between 24 and 72 hours advance notice be given by non-governmental parties before arriving at a research station, and that the party must abide by any conditions or restrictions made by the station commander to promote safety and protect scientific experiments (Enzenbacher 1991).

Figure 2.3 Consultative Meetings Tourism Issues and Measures Adopted:

The main concerns of the Consultative Parties have been to ensure that:

a) information about tourist and non-governmental expeditions is provided in advance (IV-27(1));
b) conditions for visits to stations may be made known (IV-27(2), VI-7(2) and VIII-9(2)(a));
c) scientific research activities are not prejudiced (IV-27 and VI-7);
d) visitors to the Antarctic not sponsored by a Consultative Party are aware of the relevant provisions of the Treaty, Recommendations and accepted practices (VII-4(2), VII-9 and X-8 Part I);
e) the environmental effects of tourism can be monitored (VII-4(3) and VIII-9(3));
f) provision exists to concentrate the impact of tourism if this should be considered environmentally prudent (VII-4(3) and VIII-9(2)(b);
g) tour operators are encouraged to carry experienced guides (X-8, Part III);
h) Consultative Parties consult each other about non-governmental expeditions organised in one country and requesting assistance from another (X-8, Part II);
i) non-governmental expeditions are encouraged to be self-sufficient and to carry adequate insurance (X-8, Part II).

Source: Antarctic Treaty 1990:2601; Norway Submission 1992:1

Furthermore, notice of any tourist party organised in, proceeding from or calling at a contracting party's territory should be provided to all treaty parties. This recommendation supplements Recommendation IV-27 which required notification to be given only to ATPs which would be visited (Enzenbacher 1991). Most tourists are perceived as a threat to the cause of science (Beck 1990b:350). Tour operators have often advertised base visits as a highlight of any visit, whereas scientists have referred increasingly to the disruptive effects of tourism. As a result, certain stations (such as Palmer, BAS's Faraday) limit the number of visitors within any time period, while others (such as Arctowski) allow only afternoon visits.

Stonehouse (1992a:214) further refers to Recommendation VII-4 of the Seventh meeting (1972) which made some effort by suggesting the future designation of "an adequate number of areas of interest to which tourists could be encouraged to go". But, while Recommendation VIII-9 of the Eighth meeting (1974) acknowledged that "tourism is a natural development in this

area", it specified only "the necessity to restrict the number of places where large numbers of tourists may land so that the ecological effects may be monitored". Under this recommendation provision was made for `Areas of Special Tourist Interest´, although none were actually designated (Stonehouse 1992a:214).

Stonehouse (1992a:214) determines that the suggestion to restrict landings to facilitate monitoring has never been taken up, but that restrictions were imposed on tourism through the establishment of more scientific reserves (Sites of Special Scientific Interest and Specially Protected Areas) which effectively excluded tourists from interesting and instructive areas of Antarctica. Although several designations covered areas that were regularly visited by tourist parties, neither tourists nor tour operators were invited to express views on their selection.

In 1979, the Consultative Parties recommended a Statement of Accepted Practices and Relevant Provisions of the Antarctic Treaty (X-8) which was inserted into Annex A of Recommendation VIII-9. This statement provided guidance to non-official visitors on appropriate conduct in Antarctica. Consultative Parties are required to provide copies of this statement to visitors to the Antarctic (Mussack 1988; Antarctic Treaty 1990:2603-2604). It recommended that tour operators carry guides with Antarctic experience, and non-governmental expeditions were urged to carry adequate insurance. This recommendation reinforces the need for tour operators to remain self-sufficient as ATPs wish to avoid to become entangled in avoidable situations. In particular as lawsuits filed in United States courts after the Mount Erebus crash have increased fears of legal implications resulting from tourist activities (Enzenbacher 1991). Annex C of Recommendation VIII-9 stipulates the matters which should be reported by tour organisers operating in the Antarctic Treaty Area at the end of each season. These reports should be made to the Consultative Parties whose stations have been visited and include details on the ship and captain, itinerary and tourist numbers of each cruise, and places and dates at which landings were made in the Antarctic Treaty Area, with the number of persons landed on each occasion (Enzenbacher 1991). Few, if any, ATPs comply in full with this recommendation. In 1993, a multi-national Antarctic Treaty inspection team for the first time inspected tourist vessels (NZAS 1993b:20). These were the *Explorer*, *Akademic Sergei*, *Vavilov* and *Europa*.

Under the ATS, Antarctic Treaty Parties contribute to discussions on Antarctic tourism, but external groups also try to exert influence on the policy process (Enzenbacher 1991). For example, in addition to the ATS, several other Antarctic visitor guidelines have been created. One of the most influential bodies, the Scientific Committee on Antarctic Research (SCAR), has published a helpful introduction to the Antarctic and its environment, with the hope that by giving visitors some simple advice, damage to the fragile region can be avoided (British Antarctic Survey (BAS) 1984). SCAR's A visitor's introduction to the Antarctic and its environment (1980) was designed to inform all Antarctic visitors, scientists and tourists alike, about Antarctica's environment and life forms on land and at sea (Enzenbacher 1991). Australia, Brazil, Japan and the United Kingdom have each published their own version of the publication. Nevertheless, neither ATS nor SCAR publications setting out the appropriate advisory and regulatory framework are readily accessible, and most governments "experience difficulty in ensuring that any tour or expedition provides adequate information, seeks expert advice, adheres to prior commitments and respects the provisions of the ATS" (Beck 1990b:348).

Stonehouse (1990:56) has provided a private suggestion for an appropriate code of conduct in the Antarctic for all who visit there (Figure 2.4). This code applies to ships' crew, as well as to tourists, guides, scientists and all other visitors, and aims to be accessible and easily understood. The Council of Managers of National Antarctic Programs (COMNAP) has also produced a 'Visitor's Guide to the Antarctic', which has been translated into several languages (COMNAP 1992:14).

Concern has been expressed on the impact yachts and their crew can have on the environment, while information on Antarctic Treaty-related matters is not readily available to yacht crews intending to visit Antarctica (UK Submission 1992). In response to this a Southern Ocean Cruising Handbook has been written by Poncet and Poncet (1991). This Handbook contains advice for yachts on boat equipment and preparation for cruising in Antarctica. It contains a list of environmental guidelines, as well as a detailed description of all current Antarctic Protection Areas, accompanied with maps and the regulations which limit access to these areas. The book is aimed primarily at the crews of yachts, but it is also relevant to expedition and research vessels and larger commercial ships operating in Antarctica. The Handbook is

particularly useful as it also applies to the sub-Antarctic islands, containing descriptions and guidelines.

Figure 2.4 Antarctic Traveller's Code:

Antarctic Visitors

- Must *NOT* leave footprints in fragile mosses, lichens or grasses.
- Must *NOT* dump plastic or other, non-biodegradable garbage overboard or onto the Continent.
- Must *NOT* violate the seals', penguins', or sea-birds' Personal Space
  - start with a `baseline´ distance of 5 meters from penguins, sea-birds, and true seals and 18 meters from fur seals
  - give animals the right-of-way
  - stay on the edge of, and don't walk through, animal groups
  - back-off if necessary
  - never touch the animals.
- Must *NOT* interfere with protected areas or scientific research.
- Must *NOT* take souvenirs.

Antarctic Tour Companies

- SHOULD apply the Antarctic Traveller's Code to all officers, crew, staff and passengers
- SHOULD utilise one (1) guide or leader for every twenty (20) passengers.
- SHOULD employ experienced and sensitive on-board leadership.
- SHOULD use vessels that are safe for Antarctic ice conditions.
- SHOULD adopt a shipwide anti-dumping pledge.

This code is based on basic conservation principles, the ethics underlying the Antarctic Treaty's *Agreed Measures for the Conservation of Antarctic Fauna and Flora*, prevailing international conservation treaties, and Stonehouse's collective experience as expedition leader and naturalist in the field. It was developed in response to the growing tourism industry in Antarctica, and the lack of coherent information on appropriate behaviour and guidance.

Source: Stonehouse 1990:57

Although there are major differences between the jurisdictional, political and physical conditions of the northern and southern polar areas, the development of an Antarctic visitor code of conduct, and management regime, may benefit from a comparative study of Arctic tourism (Norway Submission 1992:1-2). The Arctic is also a region with fragile ecosystems, which similar to Antarctica is experiencing increased visitor growth. Increased consideration is being given to the development of a general Arctic visitor code for the whole region (Mason 1992:3), which is very similar to the current concern in Antarctic tourism management, that is, the establishment of visitor guidelines which are applicable throughout the Antarctic.

In summary, the development of Antarctic tourist regulations has been *ad hoc*, and has resulted in a rather disjointed and inconsistent accumulation of agreements. Although the various measures relating to tourism and non-governmental activities have been assembled in the Handbook of the Antarctic Treaty System, there is still no systematic and comprehensive legal regime in place to manage Antarctic tourism (IUCN Submission 1992:3). The developments of Antarctic visitor codes can be seen as filling a perceived gap in the Treaty and in inadequacies in the existing regime of regulating visitors which make no specific reference to tourism (Beck 1990b:343), but there is a need for greater efforts to disseminate visitor information (Enzenbacher 1991) and establish a coherent tourism management system.

Environmental Protection, the Environmental Protocol, and Antarctic Tourism:

In the Antarctic Treaty as it was ratified in 1961 no mention was made of the preservation of the environment as an ecological system. The nearest notion to it was the desire to preserve its living resources (Woolcott 1990:24). On 4 October 1991, the Treaty parties adopted the *Protocol on Environmental Protection* to the Antarctic Treaty (henceforth referred to as the Protocol). The Protocol builds upon the Antarctic Treaty to extend and improve the Treaty's effectiveness as a mechanism for ensuring the protection of the Antarctic environment (US Working Paper 1992:1). It established a comprehensive legally binding regime to ensure that activities which parties undertake in Antarctica are consistent with protection of the Antarctic environment and its dependent and associated ecosystems (NZAS 1992b:239). Since 1991, thirty-six of the forty contracting nations, including all twenty-six Consultative Parties have signed the Protocol (Antarctic Journal 1993:4).

The Protocol designates Antarctica as a natural reserve, devoted to peace and science, setting forth environmental protection principles applicable to human activities in Antarctica that will be binding under international law. These include obligations to accord priority to scientific research and a prohibition of Antarctic mineral resource activities. The Protocol is intended to replace existing Treaty recommendations addressing the protection of the Antarctic environment, including the *Agreed Measures for the Conservation of Antarctic Fauna and Flora*. It does not affect other Treaties in force in the Antarctic Treaty area, including the Convention on the Conservation of Antarctic Marine

Living Resources, and the Convention on the Conservation of Antarctic Seals (US Working Paper 1992:1).

The fear that non-governmental activities, in particular tourism in its various forms, could threaten science in Antarctica has found expression in the Protocol, where the priority of science is now explicitly stated. Article 2 (Objective and Designation) declares Antarctica a "...natural reserve, devoted to peace and science". Paragraph 3 of Article 3 states that human activities "shall be planned and conducted in Antarctica so as to accord priority to scientific research and to preserve the value of Antarctica as an area for the conduct of such research, including research essential to understanding the global environment". Any compromising of scientific values in Antarctica appears to be prevented by the Protocol (Hemmings, Cuthbert and Dalziell 1991:7).

The Protocol comprises a body of 27 articles, plus technical annexes, which apply to all human activities in Antarctica. The Preamble to the Protocol refers to the "...responsibility of the ATCPs to ensure that all activities in Antarctica are consistent with the purposes and principles of the Antarctic Treaty". Article 3 (Environmental Principles) states that human activities "shall be planned and conducted so as to limit/avoid various impacts or effects without any qualification of the sorts of activities it applies to" (Hemmings, Cuthbert, Dalziell 1991:6). Article 8 (Environmental Impact Assessment) makes assessments subject to procedures laid out in Annex I. Parties are required to ensure that assessment procedures are applied to any activities "pursuant to scientific research programmes and other governmental operations in Antarctica, tourism and all other activities ... for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities" (Hemmings, Cuthbert, Dalziell 1991:6). Assessments are to take full account of cumulative impacts by themselves and in combination with other activities and whether any activity in Antarctica will detrimentally affect any other activity.

The system of Annexes which forms an integral part of the Protocol provides for more detailed mandatory rules for environmental protection and are applicable to all human activity in Antarctica, including tourism. Specific annexes on environmental impact assessment, conservation of Antarctic fauna and flora, waste disposal and waste management, and the prevention of

marine pollution were adopted with the Protocol. A fifth annex on area protection and management was adopted subsequently by the Antarctic Treaty Consultative Parties (US Working Paper 1992:1). The Protocol (Article 9) provides for the adoption and entry into effect of annexes in which more specific and detailed measures and rules for environmental protection are to be incorporated (US Working Paper 1992:3)[1]. Further annexes can be added, and updated more easily than the main body, to keep abreast of technical advances (Hemmings 1991a:8).

As a Protocol to the Antarctic Treaty, it has the same area of application: the land and fast ice areas south of 60°S latitude. The Protocol established a Committee for Environmental Protection to provide advice and recommendations to the Antarctic Treaty Consultative Meetings on the implementation of the Protocol (Hemmings 1992:14; US Working Paper 1992:1). Hemmings, Cuthbert and Dalziell (1991:7) believe that the Committee is a mechanism which will subsequently elaborate further rules if these prove necessary. Non-government organisations will have observer status on the Committee (NZAS 1992b:239)

All activities, from science to tourism, are now subject to prior environmental evaluation. Various institutions have a role in ensuring environmental values are secured, notably the Committee for Environmental Protection. Compliance, emergency response action, liability and dispute settlement are also addressed (or will be) in the main body of the protocol (US Working Paper 1992:1). Liability is one complex issue of the Protocol still to be resolved. Beyond completing the protocol and ensuring it enters into force, there remain the critical tasks of developing strong precedents in its application and ensuring faithful compliance. The Protocol can not be reviewed for 50 years. Thereafter, any nation may call for a review (Hemmings 1991a:8).

The Parties to the Protocol are required to apply the obligations contained in the articles of the Protocol to

> activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities for which advance notice is required in

[1] Article IX provides for measures to be adopted by consensus of the Antarctic Treaty Consultative Parties and to become effective when the Depository has been notified of their approval by all such Parties.

accordance with Article VII (5) of the Antarctic Treaty, including associated logistic support activities[1] (US Working Paper 1992:2).

Each Party is required to take measures within its competence to ensure compliance by all tourist expeditions to Antarctica involving its ships and aircraft or nationals, as well as all expeditions to Antarctica organised or proceeding from its territory (US Working Paper 1992:1). In addition, each Party is required to take measures within its competence to ensure compliance by all individuals present in Antarctica to Annexes 2 and 5 (see figure 2.3, page 55). Third, each Party is required to take measures within its competence to ensure compliance with the provisions of Annex 4 (prevention of marine pollution) by all ships entitled to fly its flag and all ships engaged in or supporting its Antarctic operations, while operating in the Antarctic Treaty area. This would include any such ship undertaking tourist activities or carrying tourists on board.

Annex 1 stipulates that an environmental impact assessment (EIA) is required for any proposed activity projected as having at least a minor or transitory impact on the environment. An Initial Environmental Evaluation (IEE) is to be prepared in sufficient detail to indicate whether the proposed activity will have more than such a minor or transitory impact. If so, preparation of a Comprehensive Environmental Evaluation (CEE) of the proposed activity is required (US Working Paper 1992:3). This applies equally to all activities, including tourism.

Annex 2 sets forth detailed rules on the conservation of Antarctic Fauna and Flora. This Annex prohibits tourists from taking or wilfully disturbing native mammals or birds, walking on or otherwise damaging concentrations of native terrestrial plants, or carrying out any activity that results in significant modification of the habitat of any species or population of native mammal, bird, plant or invertebrate. The provisions on the introduction of non-native species apply to all individuals, including tourists, present in Antarctica (US Working Paper 1992:4).

[1] Article VII (5) of the Antarctic Treaty requires each Party to give advance notice to all other Parties of the following governmental and non-governmental activities: a) all expeditions to and within Antarctica, on the part of its ships and aircraft or nationals, and all expeditions to Antarctic organised or proceeding from it territory; b) all stations in Antarctica occupied by its nationals; and c) any military personnel or equipment intended to be introduced by it into Antarctica (subject to the peaceful purposes conditions of Article I of the Antarctic Treaty) (US Working Paper 1992:2).

Earlier in this chapter concern was expressed about the impacts caused by marine pollution. Annex 3 provides detailed requirements relating to the generation and disposal of wastes in the Antarctic Treaty area, and it identifies wastes that must be removed from this area. These requirements apply to all activities in Antarctica. Annex 4 on the prevention of marine pollution obligates each Party to apply strict controls on ships entitled to fly its flag and to any other ship engaged in or supporting its Antarctic operations while operating in the Antarctic Treaty area. This includes any such ship undertaking tourist activities or carrying tourists on board. This Annex is designed to accord Antarctic waters at least the maximum degree of protection afforded by the International Convention for the Prevention of Pollution from Ships (1973), as amended by the Protocol of 1978 relating thereto (US Working Paper 1992:6). Annex 4 includes a provision on sovereign immunity that exempts from its application "any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service". This specific reiteration of sovereign immunity entails that non-governmental vessels will operate under stricter rules than governmental vessels, which are used to support most national Antarctic programmes (Hemmings, Cuthbert and Dalziell 1991:7).

Annex 5 provides for the designation of two categories of protected area: Antarctic Specially Protected Areas (ASPA) and Antarctic Specially Managed Areas (ASMA) (Table 2.5). Any area, including any marine area, may be designated as an ASPA to protect outstanding environmental, scientific, historic, aesthetic or wilderness values, any combination of those values, or ongoing or planned scientific research. Detailed management plans are required for each ASPA and entry into such areas is prohibited except in accordance with a permit. Specially Protected Areas (SPAs) and Sites of Special Scientific Interest (SSSI) designated by past Antarctic Treaty Consultative Meetings are to be redesignated as ASPAs (Antarctic Treaty 1991:35; Harris 1991:320; US Working Paper 1992:7). This Annex would prohibit tourists from entering ASPAs, unless tourist visits are specifically provided for in the Agreed Management Plan for the area. It would allow designation of areas as ASPAs to ensure that research, related support operations, or other activities do not damage or destroy areas of special historic, aesthetic, or wilderness value (US Working Paper 1992:7).

Table 2.5 Categories of Antarctic Protected Areas:

Designation	Objectives	Management Plan	Entry Permit
Specially Protected Area (SPAs)	To preserve eco-systems that are unique or of outstanding scientific interest	Mandatory	Not Mandatory
Sites of Special Scientific Interest (SSSI)	To protect areas where scientific investigations are at risk of interference or where sites are of exceptional scientific interest and therefore require long-term protection.	Mandatory	Mandatory
Antarctic Specially Protected Areas (SPAs) 1991	To protect areas of outstanding environmental, scientific, historic, aesthetic or wilderness values, any combination of those values, or on-going or planned scientific research	Mandatory	Mandatory
Antarctic Specially Managed Areas (ASMA) 1991	To assist in the planning and coordination of activities, avoid possible conflicts, improve cooperation between Parties or minimise environmental impacts.	Mandatory	Not Mandatory
Area of Special Tourist Interest (ASTI) 1975	To direct operators towards areas considered most appropriate for tourism.	None desingated	

Source: Harris 1991:320

Any area, including any marine area, where activities are being conducted, may be designated as a ASMA to assist in the planning and coordination of activities, avoid possible conflicts, improve cooperation between Parties or minimise environmental impacts (Antarctic Treaty 1991:35). Such zones may include areas where activities pose risks of mutual interference or cumulative environmental impacts and sites or monuments of recognised historic value. Management plans are required for each ASMA, though entry into such areas does not require a permit. The provisions of management plans for ASMAs apply to all individuals, including tourists, present in Antarctica. ASMAs could be established to regulate tourist activities and activities related to research and logistic support operations so as to avoid or minimise possible interference and conflicts in high-use areas (US Working Paper 1992:7) by writing policies on tourism into the management plans. It is intended that the management plans be developed by ATCPs working in such areas, and be approved by all ATCPs. The number and size are to be kept to the minimum required to meet identified needs (Harris 1991:314). The Annex requires that

each Party takes steps to ensure that all persons visiting or proposing to visit Antarctica be informed of the locations of ASPAs and ASMAs and the special provisions applying in those areas. ASPAs and ASMAs should not automatically be assumed to exclude tourists, but policies on tourism should be written into management plans of both, removing the need for ASTIs.

The Protocol obligates the Parties to take appropriate measures within their competence, including the adoption of laws and regulations, administrative actions and enforcement measures, to ensure compliance with the Protocol. The measures to ensure compliance with the Protocol and its Annexes include compliance with those provisions applicable to tourism. Each Party is required to notify all other Parties of the measures it takes to ensure compliance with the Protocol. Each Party is to draw the attention of all other Parties to any activity which in its opinion affect the implementation of the Protocol and to exert appropriate efforts, consistent with the United Nations Charter, to the end that no one engages in any activity contrary to the Protocol. Antarctic Treaty Consultative Meetings are to draw the attention of any State which is not a Party to the Protocol to any activity undertaken by that State or those subject to its jurisdiction that affects the implementation of the Protocol. The reference to any activity which could affect the implementation of the Protocol clearly includes tourism (US Working Paper 1992:8). Inspections under Article 14 are not confined to state-operated facilities, and Hemmings, Cuthbert and Dalziell (1991:7) believe that there is no reason why parties could not exercise their inspection rights to assess compliance with the Protocol by non-governmental operators.

At the Fifteenth ATCM in 1989 it was decided that a comprehensive review of Antarctic tourism was required (Antarctic Treaty 1990:2608; IUCN Submission 1992:3). Although Stonehouse (1992a:214) suggests that the Treaty Parties intend to deal with tourism not as a special concern, but as one of several environmental challenges under the Protocol, the issue of tourism was nevertheless heavily debated at the 1991 ATCM in Bonn which passed the Protocol, principally whether tourism should be annexed. France, in particular, demanded that in conjunction with accepting an Annex on Protected Areas (also discussed), an Annex on Tourism should be forwarded. The main reasons for this were that while the Protocol covers all human activities, extra regulations were needed to supplement the Protocol to control tourist activities (although it was not specified what these were); an Annex has greater

jurisdictional power, greater legal status than a Recommendation; and it could also provide a core for further regulations to be added (Cuthbert 1991).

The USA was completely opposed to a Tourism Annex, as they believed no further regulations were required in addition to the Protocol. Whereas France focussed on regulating activities, the USA concentrated on regulating the impacts of the activities, which they stated are adequately covered in the Protocol. Most other countries did not indicate a preference for an Annex or not. There was generally no real objection to an Annex providing there would be clear consensus on what ought to be included (Cuthbert 1991). This led to the decision to convene an informal meeting of the Parties on the question of tourism in association with the 1992 Seventeenth ATCM. The Treaty Parties agreed to invite the IAATO to attend the 1992 meeting as an observer, along with representatives of the World Tourism Organisation (WTO) and IUCN among others (Enzenbacher 1993:145).

Prior to the opening of the Seventeenth ATCM, a special meeting on tourism was held. This meeting was attended by all of the Treaty Parties, ASOC, SCAR, COMNAP, and several tourist organisations (IAATO, PATA and WTO). The French, supported by Germany, Italy, Spain and Chile, introduced a proposed Annex on Tourism. Belgium and the Netherlands also expressed support for this proposal. The US, UK, Australia and New Zealand were opposed to an Annex (ASOC 1992). ASOC believes that such an Annex would place extra, more burdensome, rules on tourism and non-governmental activities, and that it would reverse the present presumption that these activities are legitimate peaceful uses of Antarctica, regulated by the Protocol. They state that the proposed annex would have required any non-governmental expedition travelling to non-designated areas to go through CEE procedures, however small the likely impact, and so would have given all ATCPs a veto over such expeditions. ASOC maintained that separating out non-governmental activities, and hence basing decisions on the nature of the operator rather than on the expected environmental impact of the operator, would set up double standards in environmental matters (ASOC Submission 1992).

The primary concern of the Antarctic Treaty Parties is to ratify the Protocol, and establish the Secretariat (Hemmings pers comm). The seventeenth ATCM

saw very little progress, with Parties still divided, on the issue of Antarctic tourism management (Secretariat Working Paper 1992:17).

The Protocol on Environmental Protection appears to establish a necessary baseline for appropriate human conduct in Antarctica. However, there are several insufficiencies. First, although the Protocol already refers to `tourism', this should be included in Article 1 (Definitions). Hemmings, Cuthbert and Dalziell (1991:8) state that it does not appear in this article, and that "if references are to be made to `non-governmental activities´, (which we see no reason for), then rigorous definition is also required, reflecting the diverse nature of such activities". Liability is one of the major contentious issues in Antarctic management, and also affects the regulation of Antarctic tourism. Liability for any operator in Antarctica has not been considered in the Protocol, and should be addressed with priority. Due to the differing legal status of state and non-state operators, separate treatment may be necessary. The IUCN (Submission 1992:4) believes that "it is vitally important to complete these outstanding matters, and to find ways of placing legally binding obligations on all who conduct and participate in tourist ventures in the Antarctic".

Heritage of Mankind and World Park Proposals:

Related to the discussion about the type of management which should be in place in Antarctica is the debate whether Antarctica in international law is *terra nullius*, that is, territory open to claim by interested parties, or *res communis*, which means that like the high seas and outer space, Antarctica belongs to the international community (Murray-Smith 1988:43). This has led to a number of alternative administrative suggestions for the continent of which two, the notions of `Common Heritage of Mankind´ and `World Park´, have been advocated most frequently.

In recent times there have been demands from third world countries for a new international order on Antarctica, preferably under the auspices of the United Nations (UN) (Blay *et al.* 1989:1). A number of developing countries have criticised the Antarctic Treaty as being "anachronistic, exclusive maintenance of territorial claims (claiming that they were a potential source of international instability), and argued that Antarctica should be declared the `Common Heritage of Mankind´" (Australian Foreign Affairs Record (AFAR) 1986:96). The thrust of this contention is that any benefits derived from both living and

non-living resource extraction should be utilised for the benefits of all states on an equitable basis (Murray-Smith 1988; Blay *et al.* 1989). From the conception of the Antarctic Treaty System, the UN has attempted to gain a more active role in the management of Antarctica, and promoted the merits of an alternative UN-based mechanism as compared to the existing ATS, but to date, the UN has failed to make any impression on the Antarctic Treaty Parties (Beck 1992:307-308).

The `Common Heritage of Mankind´ concept appears applaudible in that all nations would be able to benefit from the possible resources the continent may contain. As the proposition for the Common Heritage of Mankind method seems to advocate utilisation of the continent's resources, tourism would be an acceptable activity. However, it would be difficult to control the potential increase in all types of activity that may occur, and tourism would thus also not be controlled effectively. This concept appears to put exploitation ahead of preservation, and this notion would not be to the benefit of the protection of the world's last unspoilt continent. The United Nations is also too broad and too divergent a constitution to govern Antarctica effectively (Brewster 1982).

Antarctica is not an area which could fall within the common heritage for mankind concept developed for outer space and the deep seabed beyond national jurisdiction due to the existence of sovereignty and sovereign rights over parts of the continent and its adjacent off-shore areas (AFAR 1986:96). Eighty-five percent of Antarctica is subject to long-standing claims (Walton 1987:259). Furthermore, the Antarctic Treaty does exist, and it runs Antarctica reasonably efficiently. It also does not exclude any nation to join, and in fact, as noted above, the consultative members alone represent 80 percent of the world's population (Murray-Smith 1988:49-50). Peterson (1986:137) believes that as long as the Antarctic Treaty participants remain united they will determine Antarctica's future, because the third world coalition lacks the power to dislodge them.

Alternatively, a number of conservationist groups have called for Antarctica to be declared a `World Park´. In 1981, the International Union for Conservation of Nature and Natural Resources (IUCN) passed a resolution at its General Assembly recommending the establishment of a world park. Herber (1992:293) defines a world park as a "regime that preserves the natural resources, wildlife, and environment of Antarctica in a generally undeveloped

state". Advocates of the World Park option wish to declare it `off-limits to mankind´ except for certain very restricted non-consumptive purposes (Janiskee 1991:6). These generally do include science and tourism, however, both these activities should be subject to censure. Johnson (1985:191) argues that,

> wildlife tourism, landscape and seascape tourism, within the context of a `hands off Antarctica´ policy, seems to be an effective riposte to those who argue that in a world where `millions are starving´, it is wrong to let any resources which are available remain unused. Tourism should not be encouraged, but as a gesture towards `internationalisation´, this is probably the least harmful to take.

Greenpeace supports the belief that Antarctica should be nominated a World Park with the designation also of World Heritage Site. According to May (1988:158), Antarctica fulfils all the World Heritage Site requirements, strengthening the argument for its designation as a World Park. This designation does not impinge on issues of sovereignty (Brewster 1982). A World Park concept would work, but only if there is an adequate enforcement agency to uphold its rules. Although greater cooperation and information sharing is necessary, Greenpeace believes that a World Park structure can be maintained under the ATS.

Doyle (1989:51) has proposed a World Park Treaty as an amendment to the current Treaty System, incorporating the Antarctic Treaty principles with the philosophy that Antarctica should be designated a World Park. He suggest that under this new treaty, Antarctica is defined as a World Park, an area where non-renewable resources remain intact and where humanity's impact on the natural environment is kept to the minimum compatible with controlled tourism, scientific research, and the collection of environmental data. To make this Treaty effective he suggest that decisions are no longer taken by consensus, but by majority. This would be in effect similar to the proposal suggested by Greenpeace.

It is doubtful that Antarctica will ever be declared a World Park. It has been supported by Australia, New Zealand, France, Belgium and Italy (among others), but the United States And Great Britain are ideologically opposed to the concept and other key nations - especially Argentina, Chile, [West]

Germany, and Norway - are waiting on the American lead (Janiskee 1991:6). Acceptance would mean that the Antarctic Treaty powers will have to give up their privileged position and forego the right to exploit the Antarctic continent. This would also mean that the nations who are not members of the Antarctic Treaty but who are attracted to the possible riches of the continent accept the notion that Antarctica should be off-limits except for certain restricted purposes. With the pressure of their own growing populations and low living standards, this will be difficult indeed for the developing nations of Asia, Africa and Latin America (Johnson 1985:192). Moreover, the Protocol appears to fulfil many of the concerns about mineral exploitation, as it places a fifty year moratorium on mining.

Antarctic Tour Operators:

Any regulations that the Antarctic Treaty Parties may initiate are only effective with the cooperation of the Antarctic tourist industry. It is thus important to consider the position of the Antarctic tour operator. The majority of Antarctic tourists travel with American-based tour operators (Enzenbacher 1991). These include: Abercrombie and Kent, Adventure Network International (ANI), Clipper Cruise Lines, International Cruise Centre, Mountain Travel Sobek, Ocean Cruise Lines, Quark Expeditions, Seaquest Cruises, Society Expeditions, TRAVCOA, Travel Dynamics, and Zeghram Expeditions (Enzenbacher 1993:144). Currently, two United States companies, Society Expeditions and Travel Dynamics are dominant. Each offer several cruises of two to three weeks per season (Enzenbacher 1992a:18).

Tour operators may charter or own and operate the vessels used on their cruises or contract services (government or private) in order to conduct cruise operations. The Argentine government has offered Antarctic cruises aboard its ships since 1958; two of its ships being naval auxiliary transport. One of these, the *Bahia Paraiso* was chartable by organisations and had been used for tourist trips since 1986 until it ran aground two miles from Palmer Station (Anvers Island) in 1989. The ship was carrying more than 300 passengers and crew at the time (Enzenbacher 1991). Enzenbacher (1991) asserts that the *Bahia Paraiso* incident has become a focal point for discussion of Antarctic tourism issues, of which the effects on government, tour industry and general public perceptions of Antarctic tourism are not yet fully understood. Chile has employed government vessels for Antarctic tourist operations since 1959.

Both Argentina and Chile have combined supply operations with tourism in order to defray the cost of their Antarctic programmes (Enzenbacher 1991). Overflights are not a common form of transport offered by Antarctic tour operators.

Most of the tourist cruises working in this region have been self-policing, as the Antarctic Treaty System does not detail adequate regulation for Antarctic tourism. To formalise existing shipboard practices, three North American Antarctic ship tour operators issued joint environmental guidelines for their cruising expeditions in 1989 (IAATO 1991; IAATO Submission 1992a). These companies (Mountain Travel, Society Expeditions, Travel Dynamics) introduced environmental guidelines for both passengers and tour operators. These have become widely used in the industry, and address traveller conduct around wildlife, respect of historic relics and sites, and the unauthorised removal of keepsakes. In addition, the guidelines explain the *Antarctic Conservation Act*, 1978, which governs the actions of all US citizens in the Antarctic as far as protection and preservation of the ecosystem, flora and fauna are concerned.

International Association Antarctic Tour Operators (IAATO):

In 1991, the six active United States tour operators and Adventure Network International of Canada, formed the *International Association of Antarctica Tour Operators* (IAATO), in order to further the objectives of the above Guide-lines, act as a single unified organisation for encouraging wise management of tourism practices in Antarctica and offer its pooled experience to Antarctic Treaty and other legislative bodies for regulatory purposes (IAATO 1991; IAATO Submission 1992a). IAATO's members are all experienced Antarctic tour operators, who have worked closely together with scientists, environmental groups and the National Science Foundation at educating and informing the visitors they bring to Antarctica (IAATO 1991). Members pledge to abide by the US *Antarctic Conservation Act* of 1978, or its equivalent in the newly signed 1991 Environmental Protocol and Annexes and to adhere to the industry-generated Guidelines of Conduct for Antarctica Visitors and Tour Operators (IAATO Submission 1992a). The objectives of the IAATO are given in figure 2.5.

The original guidelines were implemented in the 1989-1990 austral summer, with briefings given to all passengers on each cruise in order to explain their importance. The visitor guidelines were designed for distribution among all tourists, crew and staff members bound for Antarctica. The tour operator guidelines are intended for crew and staff members of Antarctic tour companies (Enzenbacher 1991). The IAATO believes that it is significant that these self-imposed guidelines were widely adopted by other tour operators before the Antarctic Treaty System introduced comparable regulations (IAATO Submission 1992a). The original guidelines were modified slightly in 1992 and are included in Appendix 2.3 (Visitor Guidelines) and Appendix 2.4 (Tour Operator Guidelines).

Figure 2.5 IAATO Objectives:

ARTICLE II	OBJECTIVES
Section A	To represent the ship and airborne tour operators and charter companies providing Antarctic travel opportunities, to the Antarctic Treaty Organisation, member countries and the public at large.
Section B	To advocate, promote and practice safe and environmentally responsible, private sector travel programmes, including tourism to Antarctica.
Section C	To develop, and encourage international acceptance of: ♦ Guidelines of Conduct for Tour Operators ♦ Guidelines of Conduct for Visitors ♦ Certification/Accreditation for field personnel ♦ Education programmes linked to the certification programme
Section D	To operate within the parameters of the Antarctic Treaty and the Environmental Protocol with Annexes, MARPOL, SOLAS, and similar international agreements, as amended.
Section E	To foster cooperation between tour operators in the coordination of their itineraries so that overlapping site visits are avoided.
Section F	To provide a forum for the international, private sector travel industry involved in Antarctica to share expertise and opinions among members themselves and with prospective members.
Section G	To enhance public awareness and concern for the conservation of the Antarctic environment and ecosystem, and to better inform media, governments, politicians and environmental organisations about private sector travel to that region.
Section H	To foster cooperation between private sector visitors and the international scientific community active in Antarctica.
Section I	To support science in Antarctica through cooperation with Antarctic National Programmes and to provide logistical support for science.
Section J	To create ambassadors for the continued protection of Antarctica through offering the opportunity to experience this continent first hand.

Source: IAATO Submission 1992a

Charter members include: Adventure Network International, Mountain Travel/Sobek, Ocean Cruise Lines, Salen Lindblad Cruising, Society Expeditions, Travel Dynamics, and Zegrahm Expeditions. These IAATO members have carried a substantial majority of tourists to Antarctica over the past 25 years (Enzenbacher 1992a:21). New members joined in 1992, raising the total membership to 13 (Enzenbacher 1992c:261; IAATO Submission 1992a). Adventure Network International is the only IAATO member that does not conduct tourism by ship, but instead provides air support and logistics for individuals in the interior of Antarctica. A comparable set of Guidelines for their operations parallels those for tour ship operators (IAATO Submission 1992a).

Conservation is an important element in cruise ship lecture programmes and landing parties are accompanied by experienced guides instructed to ensure that tourists adhere to the environmental guide-lines.

> A key ingredient of tour-ship cruises to Antarctica is an educational program that is designed to inform passengers as fully as possible of the abundance and vulnerability of wildlife and other physical aspects of the tours. The widely publicised Guidelines for Visitors are repeatedly referred to in briefings during the cruises, and experienced naturalists/lecturers provide onboard lectures and guided tours ashore (IAATO Submission 1992b).

Most operators firmly uphold the ethic, `leave nothing behind you except footprints´ and `only take photographs and litter away with you´. This message is strongly stressed to their clients (Wace 1990:336; IAATO 1991). A set of coloured slides that illustrate the guidelines is available to IAATO members for use in briefing passengers on tour ships to Antarctica. Printed guidelines are available in the four official languages of the Antarctic Treaty (English, French, Russian, Spanish), in addition German and other languages are under consideration (IAATO Submission 1992a). Many ships also carry experts who lecture on ornithology, oceanography, and Antarctic history, for example Sir Peter Scott (Adams and Lockley 1982:23).

IAATO's members strongly believe that environmentally conscious tourism to Antarctica will benefit the continent's future preservation. Its members have carried the large majority of all visitors who have travelled to Antarctica over

the last 25 years. Peter Cox, director, planning and operations, Society Expeditions (pers comm), believes that their passengers, "after having been indoctrinated, prior to their trip through the literature they receive and during their trip through lectures on board and experience in the field, become staunch ambassadors for Antarctica". Therefore, IAATO (1991) believes that :

> Environmentally-sound and educational travel to Antarctica will continue to be an essential element in creating public support for protective legislation and in guarding against future attempts to exploit the mineral wealth and the rich wildlife of this continent and the surrounding seas

Paradoxically, it may thus be ecotourism which will ensure the continued protection of Antarctica and the sub-Antarctic islands. This can be illustrated by a personal account of a passenger on one cruise, emphasising the operator's perseverance with educating its guests,

> Tourists, coached unremittingly by their tour leaders and wildlife lecturers, are obsessively careful to leave nothing but footprints. Most of them have made the long and expensive journey to enjoy and appreciate the pristine environment. At least 3000 people cruised the Antarctic Peninsula the summer before our visit, yet we saw not one piece of rubbish which could be attributed to them (Raymond 1990:33).

The industry is committed to Environmentally Sound Tourism, and believes that to achieve this an agreed policy framework for tourism is necessary. The tourism industry believes that such a framework exists in the Protocol and its Annexes, together with existing regulations (IAATO Submission 1992c). The Protocol reflects many of the guidelines already adopted, and the tourist industry believes that it "will thus provide standardised regulations for all visitors to Antarctica" (IAATO Submission 1992a). The Antarctic tourism industry believes that rules and regulations applying to tourism should be the same as those applying to other human activities in Antarctica, as stated in the Protocol. The industry supports the concept that "such rules should relate to the potential impact of activities, and therefore be non-discriminatory" (IAATO Submission 1992c). The tourism industry believes it has relevant knowledge and experience which should be recognised on a continuing basis by the Antarctic Treaty System. The Pacific Asia Travel Association (PATA) and the IAATO were the two industry representatives invited as observers to the

informal Antarctic Treaty meeting on tourism in November 1992 (IAATO Submission 1992a). PATA and IAATO have proposed that they are invited as observers at future ATCMs and related meetings on tourism, such as that accorded to the World Tourism Organisation (WTO).

The IAATO is concerned that sheer profit driven opportunist tour operators might come in with inadequate ships, inexperienced staff and unprepared passengers. This may put Antarctica as well as the visitors at risk (Peter Cox pers comm). ANI, for instance, stresses that all their Antarctic operations are completely self-sufficient, dependent on none of the Antarctic Treaty nations (ANI 1992-93). In order to achieve the highest quality of environmental practices among tour operators, IAATO invites new operators to become members and thus adopt the Guidelines so that all are conducting tourism in an equivalent and environmentally responsible manner (IAATO Submission 1992a).

Commercial operators undoubtedly have a responsibility to protect the Antarctic environment, and therefore tourist operators need to have an input into the Antarctic policy making process. In particular resolving the issue of official assistance to tourist and non-governmental expeditions will require far greater involvement from operators than has hitherto been the case (Nicholson 1986:4-5; Hall 1992a:7). Tourist operators must be encouraged to feel a degree of `ownership´ over Antarctic resources in order to assist their resolve to manage and protect them. As Codling (1982:9) observed,

> It is in the interest of tour operators, who intend to return to the continent, to cooperate with the Treaty nations, and they should be closely involved in any action taken to resolve pressures or conflict. Their own commercial interests are best served if their clients are satisfied, and there is value in seeking to understand and respond to visitor' requirements.

Members of IAATO have the opportunity to exert appropriate pressures and influence on most tourists travelling to Antarctica (Enzenbacher 1993:145).

The review of current tourist operators indicate that they apply stringent rules to themselves and have education of their passengers as one of their primary goals. However, even these good-willed operators are aware that other, solely

profit-oriented operators may begin operations in Antarctica. Clark & Bamford (1987:158-159) support this, as they believe that pioneer tourist operators are more likely to be sympathetic with environmental matters than those who follow. The operators who promote a `wilderness experience´ generally come first. They argue that the sequence of change in the style of tourism is generally towards increased sophistication and development. It rarely trends `backwards´ towards a low key and low impact style. The pioneers of Antarctic tourism are most likely to be more sympathetic to setting high standards then those who follow, and they also have a vested interest in ensuring that future competitors must at least meet their own standards. This requires urgent planning before patterns of operations are firmly set.

The major tour operators report their activities, but the information provided about their visits is often not specific enough or easily comparable (Manheim 1990:11; Enzenbacher 1992c:261). For example, for the 1988-89 season, Mountain Travel only stated it visited the Antarctic Peninsula, while Society Expeditions identified sites visited, number of passengers off-loaded and duration of stay. In several cases different companies used different placenames for the same sites visited (Manheim 1990:11). To conduct monitoring of tourist impacts, each operator should be required to provide specific annual information in the same format.

Although the self-policing by Antarctic operators has only been to the benefit of the Antarctic environment, it is not enough as tourism demands continual monitoring of its environmental impacts (Wace 1990:337; Sanson 1992:149). The members of the IAATO are strongly aware that the ultimate protection and conservation of Antarctica will depend largely on a sound tourism policy adhered to by all Treaty Nations. In the IAATO release statement (IAATO 1991), it was stated that the IAATO members have testified at hearings regarding such legislation and pursue active participation in their government's Antarctic Advisory Committees.

As has become apparent, the IAATO anticipates an educational role for its members, by increasing public awareness of Antarctic issues and in rectifying misapprehensions about the nature of Antarctic tourism. However, Stonehouse (1992a:215) is doubtful about how the day-to-day activities of a well-disciplined and clearly well intentioned industry can be brought into

accord with the requirements of the 1991 Protocol and of legislation deriving from it, to the future benefits of both tourists and the Antarctic environment.

Self-regulation of the Antarctic tourism industry may be the most appropriate form of management. At the same time, the commercial and competitive nature of the tourist industry may result in a conflict of interest, as the desire to serve the operator's own interest may be to the detriment of the environment. Currently, self-regulation in the form of visitor and tour operator guidelines is coupled to the more formal Antarctic Treaty recommendations and various national legislation. Enzenbacher (1991) believes that industry guidelines may have an advantage over Treaty recommendations, although these are also important, as the tourist guidelines are practical and offer guidance in a simple form.

Antarctic tour operators are required to be self-sufficient under the Antarctic Treaty. However, the current self-regulatory nature of Antarctic tourism does not require tour operators to meet defined minimum standards (Enzenbacher 1991). Companies that insure their operations and provide for emergency back up do so of their own volition. Generally, companies establish safety standards to comply with insurance requirements rather than because regulatory provisions require so. Tour operators maintain that current guidelines are adequate, yet it is not clear that self-regulation is sufficient to address all issues arising from tourist activity (Enzenbacher 1992c:261).

The present system of self-regulation appears to be effective to manage the current activities of major Antarctic cruise operators and the ANI flight operations. However, this system may not be so effective to regulate private yachts, adventure expeditions and other tourists travelling to and in Antarctica (Enzenbacher 1991). These efforts are voluntary and will only succeed with voluntary compliance. The present spirit of cooperation amongst the major tour operators should be encouraged, but may need to be supplemented by more formal measures which also provide an enforcement mechanism.

National Legislation:

A third component that is currently associated with the management of Antarctic tourism is the national legislation enacted by Antarctic Treaty Parties. Frequently, individual ATCPs supplement the ATS framework with national

legislation to regulate the tourist activities of their nationals (Beck 1990b:346). As became apparent above, recommendations and other measures taken by the Antarctic Treaty System are binding on the nationals of the members to the Antarctic Treaty. Provided there is domestic legislation, citizens of Antarctic Treaty Parties will have to be accountable for their actions in Antarctica. National legislation therefore provides a direct means to assert authority. In fact, Enzenbacher (1991:57) asserts that, "Antarctica relies on national legislation to provide the muscle the existing regulatory framework for Antarctic tourism needs", at least until an international enforcement mechanism is established. National legislation may thus be the strongest factor in enforcing legislation to regulate Antarctic tourist activities. However, this form is restricted to nationals of a state only.

The national dimension might prove more significant in the future, given the greater political interest shown in the matter at both the ATS and national levels, as well as the emerging tendencies of certain ATCPs to formulate national policies towards Antarctic tourism (Beck 1990b:347). Several ATCPs have advanced a standard position on the subject, such as Britain. Other governments, most notably those located relatively near Antarctica, have gone further. During 1986, the New Zealand government outlined the basic elements of its policy towards Antarctic tourism, which included the need for prior notice of visits and the use of expert observers by vessels visiting New Zealand's Ross Dependency (Beck 1990b:347).

As the majority of Antarctic tour operators are based in the United States, legislation enacted in the United States can contribute greatly to the regulation of Antarctic tourism, in particular as the majority of Antarctic tourists are presently American (Beck 1990b:346; Manheim 1990:2; Enzenbacher 1991). The United States *Antarctic Conservation Act*, 1978, has extended the rules governing the behaviour of US personnel participating in the US Antarctic programme to all American nationals in Antarctica. The United States also places trained professional observers aboard Antarctic tour ships who have the authority to report behaviour which is detrimental to the Antarctic environment (Enzenbacher 1991). It is thus possible for nations to establish measures which, whilst not preventing tourism, do protect the Antarctic environment, and augment existing tourism guidelines and recommendations.

The United States solicits information from the travel industry in the United States, and from any other institution or organisation in the US whose plans to travel are brought to the department's attention, in order to notify parties to the Antarctic Treaty of US-sponsored non-governmental expeditions to Antarctica. The expeditions listed are those organised in or proceeding from the territory of the United States, regardless of the registry of vessels or the nationality of the participants (US Submission 1992).

Beck (1990b:346) suggests that the national dimension might prove more significant in the future, "given the greater political interest shown in the matter at both the ATS and national levels, as well as the emerging tendency of certain ATCPs to formulate national policies towards Antarctic tourism". However, this process often involves little more than the acceptance of Antarctic tourism conducted within the parameters of the ATS. Nations active in Antarctica generally share the management philosophy of the ATS, but Harris (1991:314) believes that different groups (claimants and non-claimants) differ in approach. National priorities influence perceptions of management needs, and differences can result in uncoordinated planning. This affects management, as can be clearly seen on King George Island. The Protocol emphasises environmental management, but has some weakness. It leaves individual states as the final judges of their own activities (Hemmings 1991b:7; Hemmings 1992:15).

The IUCN (IUCN Submission 1992:4) asserts that agreement on consistent management policies and practices is likely to be easier than achieving unanimity in law. Many national Antarctic authorities already implement procedures and operational codes of practice to encourage environmentally sensitive tourist operations, although these vary considerably in scope and detail. Unfortunately, both ATS procedure and national legislation to manage Antarctic tourism are inconsistent, emphasising the necessity to establish a more coherent and universal tourism management regime. An agreed series of guidelines should thus be developed for setting performance standards that can be uniformly applied to all tourist operations throughout the region. Development of these guidelines should take advantage of experience gained both in Antarctica and elsewhere, such as from the current approaches to tourism management in the sub-Antarctic island reserves (IUCN Submission 1992:4). This will considered in greater detail in Chapter 6.

2.5 CONCLUSION:

The investment of time and money involved in travelling to Antarctica as a tourist will continue to limit the growth of tourism. Hart (1988:98) argues that present levels of Antarctic tourism fall well below the full potential, requiring appropriate measures to regulate tourism. Tourist activity presents special challenges to Antarctic Treaty Parties, especially as tourists are beginning to outnumber scientists and support staff in Antarctica. Continued growth will pose a threat to the Antarctic environment and the science conducted there, while at the same time, tourism is a recognised activity (Hart 1988:93). Tourism has indeed become an integral part of life in Antarctica (Dingwall 1990:9) and is not completely unregulated (Nicholson 1986:3). Currently, the regulatory framework for Antarctic tourism consists of Treaty recommendations backed by national legislation and guidelines, such as those for tourists and tour operators endorsed by the IAATO. The Protocol which details environmental management provisions applicable to all forms of human activity will only enter into force once ratified by all ATCPs (Enzenbacher 1992c:260).

The Antarctic Treaty System provides a forum to develop strategies to protect Antarctica from the effects of tourist activity. The recent Protocol is an important advancement in the regulation of human activity in Antarctica. The comprehensive review of Antarctic tourism proposed by Treaty members provides a starting point for discussion of existing tourism policy in view of current levels and forms of tourist activity. This requires extensive research into the tourism impact assessments, such as is currently being undertaken by Stonehouse.

The enforcement of legislation accepted by the Antarctic Treaty Consultative Parties concerning any type of activity, including tourism, is difficult. Claimant and signatory national legislation may cover a broad range of tourism-related areas, including conservation, communication, and transportation. However, under the Antarctic Treaty, the application of domestic legislation to other nationalities is somewhat problematic. As the regulation of tourism under domestic law would be regarded as an exercise of sovereignty by that nation, it is highly likely that this would be challenged by other signatories to the Antarctic Treaty. In turn, any moves towards an international tourism regime would require claimants like New Zealand to accept some derogation of their sovereignty rights (Beck 1990b:351). Tourist ventures such as encouraged by

the Chilean government to strengthen its territorial claim complicate the issue (ECO 1985:1).

The major Antarctic tour operators, in forming the IAATO, have consolidated their efforts to self-regulate the Antarctic tourism industry. Members of the IAATO have the opportunity to exert appropriate pressures and influence on most tourists travelling to Antarctica, in keeping with the established guidelines for Antarctic visitors. By encouraging other non-associated Antarctic tour operators to comply to the IAATO guidelines for operators, members can also influence operator standards. However, the lack of a mechanism for international legal enforcement of environmental measures is a major barrier to Antarctic management. The existing inspection system provides means to monitor ATS measure, but not enforce them. Inspection teams are usually nationally based which may reduce their effectiveness as there has been apparent reluctance to make in-depth criticisms. This may be due to political sensitivities (Harris 1991:315).

Cooperation between tour operators and the Antarctic Treaty Parties will remain integral to the development of appropriate measures to develop the Antarctic tourism industry. The activities of tourism should not be separated from all other activities. All activities should be covered under a set of regulations. But specific management may regulate more specific explanation on type of activities. Therefore, regulating Antarctic tourism may well require the establishment of an international convention or a similar international regulatory setting.

CHAPTER 3 SUB-ANTARCTIC TOURISM: GROWTH, IMPACTS AND MANAGEMENT:

> **Experience reveals that the natural environments of these southern oceanic islands are readily disturbed and destroyed but virtually impossible to rehabilitate or replace. ... managers have an awesome responsibility to secure island protected areas against the deleterious influences of man. In recent years the expansion of commercial interests in fishing, mineral exploration and tourism, and increased scientific activity, are inexorably eroding the isolation of the southern islands and pose problems for their effective management as protected areas.**
> (Clark and Dingwall 1985:4)

3.1 INTRODUCTION:

Increasing visitation is occurring in the sub-Antarctic island groups which surround the Antarctic continent. Consisting of 22 major islands or island groups, the sub-Antarctic islands number over 800 individual islands and have an area double that of the Hawaiian Islands group (Clark and Dingwall 1985:168). All are oceanic, mostly small, far from continental land masses and each other, and their climates are strongly influenced by the Southern Ocean[1] which surrounds them (Walton 1985:293; Selkirk, Seppelt and Selkirk 1990). The sub-Antarctic islands are rich in plant life, marine mammals, and avifauna and are among the last "bastions of nature in a world beset by massive and rapid change through human activity" (Higham 1991:58). The islands are characterised by limitations of space, restricted habitats, impoverished floras and faunas compared to continental areas of similar ecological diversity, and a high degree of species endemism which is due to their geographical and ecological isolation (Clark and Dingwall 1985:3). The sub-Antarctic island ecosystem are substantially different from those of continental areas (Hall 1992b).

---

[1] The area between the Antarctic continent and the Subtropical Convergence (Clark and Dingwall 1985:4)

These distinguishing characteristics also emphasise the intrinsic values of the islands. Foremost among these values is the uniqueness of the flora and fauna. Their isolation means that they are ideally suited as refugia for threatened plants and animals, however, as the island biota is often specialised, it is consequently highly vulnerable to external disturbance, especially human-induced impacts. They also offer opportunity for the study, understanding and appreciation of intact and holistic natural ecosystems (Clark and Dingwall 1985:3). Higham (1991:10) asserts that

> the islands' biota is a culmination of a long history of geographical isolation, species dispersal, climatic factors, and community interaction - until very recently without human interference. The evolution of the island biota is of great international taxonomic and ecological interest, and the islands are of immense value for scientific study.

Maintenance of these island ecosystems in their natural state is of immense value to global conservation and science. Because the islands are unique, there are considerable difficulties in managing them to preserve their uniqueness (Selkirk *et al.* 1990). Their isolation was their best protection for many millennia, however, their remoteness and wildlife is making them increasingly attractive for nature-based tours. This chapter examines the nature of sub-Antarctic tourism and its impacts. The national management regimes will be examined before discussing the development of sustainable Antarctic and sub-Antarctic tourism strategies in the context of the New Zealand situation in Chapters 4 and 5.

3.2 DEFINITION AND LOCATION:

The definition of tourism in the sub-Antarctic follows closely that of tourism in Antarctica. Visitors to the sub-Antarctic islands are generally propelled by the same motivations as visitors to the Antarctic, that is the wilderness and isolation of the sub-Antarctic islands, their wildlife and brief, but highly exploitive, human history (Clark and Dingwall 1985:179). Sub-Antarctic tourism has additional components which do not occur in Antarctic tourism management. The major difference between Antarctica and the sub-Antarctic islands is the notion of jurisdiction. Whereas Antarctica is administered by the Antarctic Treaty System which has frozen all claims of sovereignty, the sub-

Antarctic islands are administered by individual nations, which may result in nationals visiting their country's sub-Antarctic islands. In the sub-Antarctic islands there may be an additional component in relation to the participants in tourism. Some of the islands in the sub-Antarctic have a human population aside from research staff, for example, on Tristan da Cunha and South Georgia. These inhabitants may also partake in tourist activities. Another difference between Antarctica and the sub-Antarctic islands is the history of economic exploitation that has affected the sub-Antarctic islands. The history of human occupation and visitation has moreover resulted in the introduction of foreign species, with the consequence that most of the islands are no longer pure wilderness.

The sub-Antarctic islands are close to the Antarctic convergence, which is an important oceanographic boundary where cold water from the ocean to the south meets warmer water from the north (Selkirk *et al.* 1990). They lie in the open expanse of the Southern Ocean which encircles the Antarctic continent. The northern boundary of the sub-Antarctic region is known as the Subtropical Convergence, where the surface waters of the Southern Ocean meet the warmer subtropical waters of the Pacific, Indian, and South Atlantic Oceans. The southern boundary is known as the Antarctic Convergence (Fraser 1986). Various systems of classifying these southern islands have been used, some based on latitudinal, some on climatic, some on vegetational criteria. The island areas researched in this thesis are based on the analysis by Clark and Dingwall (1985), which uses the term Insulantarctica, comprising the sub-Antarctic, maritime Antarctic and cool temperate islands (Table 3.1). This thesis employs the term sub-Antarctic to embrace all these island groups. However, this classification is very general, and in fact encompasses islands which have different biogeographical identifications. This concept of grouping the world's southern islands is useful for defining ecologically-based conservation regions, but is too broad in terms of the wide-ranging climate, oceanographic, and biological factors classifying these islands. However, this characterisation facilitates the analysis and discussion of management, in particular for tourism, of the islands in the Southern Ocean.

Table 3.1 Classification of the Sub-Antarctic Islands:

Classification	Location	Island Groups
Cool Temperate	Northern limit approximately the sub-Tropical Convergence, southern limit north of the Antarctic Convergence	• Tristan da Cunha Islands, Iles Amsterdam, Iles Saint-Paul • New Zealand shelf islands: Antipodes Islands, Auckland Islands, Bounty Islands, Campbell islands, Snares Islands • Falkland Islands
Sub-Antarctic	Islands in the vicinity of the Antarctic Convergence	• Iles Kerguelen, Iles Crozet, Heard Islands, MacDonald Islands, Macquarie Island, Marion Island, Prince Edward Island, South Georgia
Maritime Antarctic	Islands appreciably south of the Antarctic Convergence, but outside the Antarctic Treaty Area	• South Sandwich Islands, Bouvetøya

Source: Clark and Dingwall 1985:186-187

The sub-Antarctic islands generally include Iles Crozet, Macquarie Island, Marion Island and Prince Edward Island which lie to the north of the Antarctic convergence. Heard Island, MacDonald Island and South Georgia are sub-Antarctic islands which lie to the south, while Iles Kerguelen straddle it. These islands experience cool, wet, windy conditions, with considerable variation in daylight hours between summer and winter. North of these sub-Antarctic islands lie the cool temperate islands; Antipodes, Auckland, Bounty, Campbell, and Snares Islands in the New Zealand region; Gough, Inaccessible, Nightingale, and Tristan da Cunha Islands in the southern Atlantic Ocean; Iles Amsterdam and Iles St Paul in the southern Indian Ocean. The South Sandwich Islands and Bouvetøya are maritime Antarctic islands (Walton 1985:294; Fraser 1986; Selkirk *et al.* 1990).

The islands range widely in their latitudinal extent, from the Tristan da Cunha group at latitude 37°S and north of the sub-Tropical convergence, to the South Shetland Islands, at latitude 62°S and enclosed by pack-ice for much of the year (Clark & Dingwall 1985:186). For location map refer to Figure 2.1, page 18. The sub-Antarctic islands are mostly small, far from each other and from any continental land and surrounded by cold seas. The Southern Ocean has a strong influence on their ecosystems. The remoteness of the islands, the often limited areas available for establishment and the cold summers have all tended

to limit biodiversity in both the flora and fauna (Walton 1985:294-297). Consequently, the islands have extremely important conservation values, particularly as refuges for rare and threatened species. But the islands are also very vulnerable to disturbance to loss and they are difficult to restore (Molloy & Dingwall 1990:196). Table 3.2 provides an analysis of the islands' characteristics.

Table 3.2 Sub-Antarctic Island Characteristics:

Island Group	Sovereignty	Total Area km²	Snow-free Area km²	Maximum Elevation m	Latitude ° South
South Georgia	UK	3755	1500	2934	54
South Sandwich	UK	618	85	1370	56-59
Tristan da Cunha	UK	111		2060	37
Falkland	UK	13000		705	51-52
Bouvetøya	Norway	50	4	780	54
Prince Edward & Marion	South Africa	335	335	1230	46
Iles Amsterdam	France	55		911	37
Iles Saint-Paul	France	7		272	38
Iles Crozet	France	233	233	934	46
Iles Kerguelen	France	3626	2900	1960	49
Heard & MacDonald	Australia	380+	70	2745	53
Macquarie	Australia	118	118	433	54

Source: Clark and Dingwall 1985:170; Walton 1985:294

3.3 SUB-ANTARCTIC TOURISM:

Trends:

Tourist visitation to the sub-Antarctic has been less frequent than the Antarctic and is limited to private expeditions and commercial educational cruises (Booth 1990:278; Hall 1992b). Tourist vessels such as *World Discoverer* and *Lindblad Explorer* have visited many of the islands, including Falkland, South Georgia, South Sandwich, and Macquarie Islands as well as the southern islands of New Zealand (Clark and Dingwall 1985:179). Tourism at Prince Edward and Marion Islands has not been encouraged by the South African Government, nor at the Iles Kerguelen by the French, possibly because of the islands' use as weapons testing facilities (Hall, McArthur and Spoelder 1992;

Hall 1993:118). The rate of visitation to the Australian, British and New Zealand sub-Antarctic islands has increased considerably in recent years (Hall 1992b). No facilities for tourism exist on the Australian, French, New Zealand, Norwegian and South African Islands, perhaps because scientists have been keen to minimise the potential disturbance by tourists of scientific research (*ibid.*).

Despite the growing interest by operators in visiting the islands, specific data on tourist numbers to the sub-Antarctic islands is generally not available. Macquarie Island was visited by 564 people in the 1990-91 summer. There were no tours in 1991-92 (Hall 1992b). However, several tours for the 1991-92 season have included Macquarie island in their itinerary (Quark Expedition 1992-93; Seaquest Cruises 1992:22). More specific data on sub-Antarctic island visits may possibly become available with more rigorous reporting by commercial Antarctic tour operators who include sub-Antarctic island visits in their itineraries.

The growth in sub-Antarctic tourism may be due to several factors. First, an increase in public awareness of remote tourism destinations through increased public exposure to wildlife documentaries, membership of conservation organisations, and advertising. In addition, the relative tourist overcrowding of the Antarctic Peninsula is leading some operators to search for other remote destinations which can convey an Antarctic experience for visitors without other tourists being seen. Furthermore, improved transport technology makes ship travel through the Southern Ocean smoother and safer for tourists. The overall expansion of the Antarctic and sub-Antarctic tourist market may also generate growth.

A contributing factor to visitor growth may be the growth in private boat ownership. The emerging and increasing popularity of nature tourism highlights the trend for recreationists to seek new experiences, enjoy themselves and enrich their knowledge at the same time (Booth 1990:278). The exact numbers and destinations of these tourists are difficult to determine, because, similar to yacht visits in Antarctica, sub-Antarctic tourists are able to visit a wide range of localities.

Yacht-based cruises have also grown substantially. In the 1970s only one or two yachts were operating in the Southern Ocean, this figure had grown from

six in the early 1980s to over 20 in the 1990/91 season (Poncet and Poncet 1991:6). Yachts are generally not well-received in either the Antarctic or sub-Antarctic, "the proliferation of private yachts in the Southern Ocean has added a new and largely unwelcome element to the tourist problem. The activities of these yachts seem at the moment, to be beyond any general control" (Bonner and Walton (1984) in Poncet and Poncet 1991:6).

Airborne tourism does not appear to exist in a commercial nature, because landing is extremely difficult at most of the sub-Antarctic islands, although overflights would be possible. The use of planes may not be commercially viable as the islands are at great distances from each other, however, some Antarctic cruise ships carry helicopters which could be used for aerial sightseeing and landing passengers at more remote locations.

Tourism Impacts:

Sub-Antarctic tourism is a relatively recent phenomena, and there is little information on the actual impacts tourism has had on the sub-Antarctic islands. The most serious concern surrounding tourism in these islands is the potential adverse impacts tourism may have on the physical environment. Many of the sub-Antarctic islands have already suffered marked human impact (Clark and Dingwall 1985:4). Generally, however, the islands of the Southern Ocean have not been permanently inhabited and exploitation periods have been short. Several southern island groups have not been modified by humans at all. Clark and Dingwall (1985:4) believe that, "indeed they are among the few remaining terrestrial areas of the world unaffected by man - and hence are of great importance". The sub-Antarctic islands contain some of the world's least human impacted biotas, and their relative isolation has been their greatest conservation asset, but it is these same harsh conditions which is now attracting visitors in increasing numbers. Their fragility however means that even minute changes brought about by human impacts, such as tourist activity, may have long-term impacts on ecosystem stability (Hall 1992b).

Types of impact by visitors on and around the islands include inadequate waste disposal, litter, vegetation trampling, disturbance to wildlife, and the potential threats of fire and pests, particularly rodents (Booth 1990:280). But similar to Antarctic tourism, environmental impacts on the islands depend again on the nature of the activity. Overflights generally provide minimal

disturbance of the environment, although low overflights of wildlife colonies may panic the birds or marine animals. For example, in June 1990, around 7000 King penguins stampeded, piled up on top of each other and died from suffocation when an Australian Air Force Hercules circumnavigated Macquarie Island at an altitude of 250 metres (Swithinbank 1993:108). The impacts of ship-based tourism are more controversial. Cruise travel occurs in the Austral summer, coinciding with the peak breeding periods of many species, and may disturb breeding sites. Another similarity with Antarctic cruise tourism is that ships can pollute over a large area through oil spill, and indiscriminate disposal of waste and sewage (Hall 1992b). Due to lack of data, the length of time that ship-based visitors spend on shore requires further study.

The islands are highly vulnerable to external disturbance and environmental change due to the specialisation of the island biota, especially human-induced impacts (Hall 1992b). The extinction of species is particularly common on islands when new competitors or physical conditions are introduced (Clark and Dingwall 1985:175). One of the greatest threats to island biota is therefore the introduction, accidental or deliberate, of alien plants and animals (Clark and Dingwall 1985:3), in particular through seed dispersal or the transfer of mammals such as rats and mice. Careless behaviour by tourists would certainly increase this threat, and excessive disturbance of plants and animals by tourist visits, as occurred in areas of the Falkland Islands must be avoided (Clark and Dingwall 1985:179). Areas of tourist interest often coincide with areas of scientific interest and activity, which is also a feature of Antarctic tourism. It is important to minimise the impacts of considerable numbers of people in one place.

Islands of the Southern Ocean have few inhabitants, and there is currently little pollution. However, an increase in the level of ship movement associated with mineral exploration, commercial fishing and tourism, or in the extent of research activities, will entail greater risks of pollution on and near the islands (Clark and Dingwall 1985:180). Measures to reduce such risks need to be taken in the operation of vessels near the islands.

Impacts of tourism in the sub-Antarctic are mainly associated with the physical environment, but there is also concern over the conservation of cultural heritage. A number of early European sites associated with farming, sealing, and whaling, exist on the islands, and some early exploration bases are of

substantial historic significance (Hall 1992b). The cultural history is in fact a large attraction of the islands, which is used by tour operators as a major drawcard.

Tourism Policies:

All of the sub-Antarctic islands fall outside the Antarctic Treaty area, and are therefore not subject to any of its provisions. Each island or archipelago is subject to national sovereignty, therefore, legislation is exercised in different ways (Walton 1985:314). South Georgia and the South Sandwich Islands are British, Prince Edward and Marion Islands are South African, Macquarie, Heard and MacDonald Islands are Australian, Bouvetøya is Norwegian, and Iles Kerguelen, Crozet, Amsterdam and Saint-Paul are French The New Zealand sub-Antarctic islands which are the Antipodes, Auckland, Bounty, Campbell, and Snares Island groups, will be discussed in Chapter 5.

Historically, South Georgia has had a resident population for longer than any of the other islands, and industrial waste in the form of abandoned whaling stations still litter the island (Walton 1985:315). Heard, MacDonald, Prince Edward and Marion Islands are covered by specific conservation legislation. The French however, have continually and deliberately introduced a wide range of herbivores into Kerguelen, resulting in major degradation of large areas of vegetation, so that there is little on the main island sufficiently undamaged to be worth protecting (*ibid*).

National jurisdiction can be advantageous to the management of the islands, but at the same time can be detrimental. For example, if the islands are inhabited, then provision for the island's people by using its resources may be more important than the preservation of the island for its unique features. If the islands are not inhabited, then national agencies responsible can easily forget the existence of the islands, and not include specific management plans for the protection and preservation of the islands, for example, by attempting to control access to the islands. This can pose problems for the effective management of tourism. The following section will discuss the varying management policies by other nations, and New Zealand's sub-Antarctic tourism policy will be reviewed in chapter 5.

Tristan da Cunha Islands:

The Tristan island group includes Tristan da Cunha, Inaccessible, Nightingale and Gough Islands (Clark and Dingwall 1985:115; Johnson pers comm). Tristan da Cunha is British Territory and is a Dependency of St. Helena (Clark and Dingwall 1985:125). Apart from a seven-man South African meteorological team on Gough Island, these last three islands are uninhabited and uninhabitable (Johnson pers comm). Essentially, they are nature reserves for sea birds, seals and penguins. The entire population of 300 people lives on Tristan da Cunha in a village called Edinburgh.

The *Tristan da Cunha Conservation Ordinance* 1976 is the basis of conservation on the islands, which are the responsibility of the Administrator of Tristan da Cunha. The entire groups is protected but the degree of protection varies from island to island. A formal management plan does not exist (Clark and Dingwall 1985:118-120). The Administrator advises that Tristan da Cunha has no tourist industry and none of the facilities such an industry would demand (Johnson pers comm). The *RMS St. Helena* is the only regular passenger ship, calling at the island en route from England to Cape Town just once a year. The occasional cargo or naval ship may call, but these are infrequent, and depend upon special cargoes. Fishing boats are the normal method of getting to the island, but they carry only eight to ten passengers and priority is given to islanders and those travelling on government business. There does not appear to be a tourism management policy.

Falkland Islands:

The Falkland Islands is an archipelago of over 300 islands, inhabited by 2200 residents of predominantly British origin. Sovereignty is claimed by both the United Kingdom and Argentina (Clark and Dingwall 1985:129), although Poncet and Poncet (1991:43) believe that the Islands remain British in their administration, population and way of life.

Tourism is established with visits having frequently been made to the Falklands by cruise ships such as the *Lindblad Explorer*. Landings, although controlled, appear to have caused some localised disturbance to seabird colonies (Clark and Dingwall 1985:136). There is currently no legislation which controls the movement of tourists within the islands, other than with

regard to access to Government owned nature reserves (Bound pers comm). The Falkland Islands Tourism Board encourages "responsible development of tourism" and produces a number of publications which recommend appropriate behaviour when in areas of environmental importance and sensitivity. The Falkland Islands Tourism Office in Stanley retails several tourist booklets, including a Country Code of recommended environmental `Dos and Donts´ (Poncet and Poncet 1991:44). As tourism is based on wildlife attractions, and the impact of tourists in localised areas, efforts should be made to carefully control tourism (Clark and Dingwall 1985:137).

The number of cruise ship visits is increasing quite radically, and as many of the islands visited are privately owned, the owners use their own judgement on the controls which need to be applied (Bound pers comm). In June 1992, the owners of Bleaker and Sea Lion Islands, wholly owned Government subsidiaries, decided to restrict cruise ship access to ships carrying no more than 130 passengers, and that only one ship per day visit the locations. In addition, there must be a ratio of one trained guide to every 35 clients, and clients must not stray further than 100 metres from the guide. Walking routes have to be agreed in advance (Bound pers comm).

Iles Amsterdam, Iles Saint-Paul, Iles Crozet and Iles Kerguelen:

The islands form part of a `Parc national antarctique français´. Management details are not fully known. The islands are state-owned territories, part of the Territoire des Terres Australes et Antarctiques Françaises (TAAF) (Walton 1985:314). The majority of the islands have been declared a `Parc national de refuge dans les possessions australes françaises´, and a *National Park Act* protects marine mammals, some bird species, and plants (Poncet and Poncet 1991:33). The *Antarctic and sub-Antarctic Lands Act* (decree 1966) covers human activities on the islands (Clark & Dingwall 1985). Commercial tourist interest in these islands is low (Clark and Dingwall 1985:34). Vessels are requested to ensure that their first port of call is at the TAAF station of each island group, where the `Chef de District´ can be contacted. There are several Specially Protected Areas (SPA) and Sites of Special Scientific Interest (SSSI). Access to these is restricted and by permit only, issued by the Chef de District (Poncet and Poncet 1991:34).

Heard and MacDonald Islands:

Heard Island is close to its natural state and the MacDonald Islands are in pristine state (Bonner and Lewis Smith 1985), and were proposed for World Heritage listing in 1990 (Poncet and Poncet 1991:37). There are no introduced mammals or plants on either of these islands and their natural state contrasts markedly with most other sub-Antarctic islands, which make them extremely important areas for conservation and science (Poncet and Poncet 1991:37). Although a manned station was run for a short time by Australia on Heard Island this was abandoned in 1955 and both Heard and the uninhabited MacDonald islands are now very rarely visited (Clark and Dingwall 1985:15; Walton 1985:314).

Heard and MacDonald Islands are Australian Federal government responsibilities and as external territories are subject to the same legislation as the Australian Capital Territory (ACT). The various Heard Island and MacDonald Islands Acts (1957-73) give power to the Governor General to make ordinances for the peace, order and the good government of the Territory. A number of ordinances of the ACT apply some limited nature conservation measures. These include the *National Parks and Wildlife Conservation Act* 1975, *Wildlife Protection (Regulation of Exports and Imports) Act* 1982, *Environment Protection (Impact of Proposals) Act* 1974 (Hall 1992b), but there is no specific management plan although guidelines for visits have been produced (Clark and Dingwall 1985:16,20). A new conservation ordinance is being drafted (Bonner and Lewis Smith 1985).

Under the *Australian Heritage Commission Act* 1975, Federal ministers and authorities are required to refer to the Commission for comment any action which will affect a place in the `Register of the National Estate´ to a significant extent. Both the Heard and MacDonald Islands, and Macquarie Island are listed on the register. Although not subject to cruise ship visits, there have been a number of private expeditions to the Heard and MacDonald Islands. Furthermore, the proposed nomination of the islands to the World Heritage List may well encourage visitor interest. Therefore, Hall (1992b) believes that it would seem imperative that the Commonwealth develop a management plan for the islands.

Macquarie Island:

Macquarie Island is one of eight islands or groups of islands which is truly sub-Antarctic. It is the only of these eight islands or groups which is wholly protected, comprising twenty-eight percent of the protected area found on these islands (Department of Parks, Wildlife and Heritage (DPWH) 1990:1). Macquarie Island is administered by the Tasmanian Department of Parks, Wildlife and Heritage, and is subject to Tasmanian State legislation on park use and protection. Overall administration of the island is carried out by the Tasmanian Department of Parks, Wildlife and Heritage through the *National Parks and Wildlife Act* 1970 and subsequent regulations (DPWH 1990:35).

Initially protected as a sanctuary under the *Animals and Birds Protection Act,* 1928 (Clark and Dingwall 1985:25; Selkirk *et al.* 1990), it was proclaimed a wildlife sanctuary in 1933 (Brewster 1982, DPWH 1990:2). Macquarie Island became a Conservation Area in 1971, and in 1972 it became a State Reserve (Clark and Dingwall 1985:25; DPWH 1990:2,8). The Tasmanian National Parks and Wildlife Service declared Macquarie Island a Nature Reserve in 1978 equivalent in status to Australia's national parks (Bonner and Lewis Smith 1985; Rounsevell & Copson 1985:9), and renamed it Macquarie Island Nature Reserve (DPWH 1990:2). The island is permanently occupied by scientists at the meteorological and research station (Clark and Dingwall 1985:24; DPWH 1990:2).

In 1977, UNESCO accepted this sub-Antarctic island as a biosphere reserve in the `Man and the Biosphere´ programme (Davis and Drake 1983:26-28; Clark and Dingwall 1985:27; DPWH 1990:2; Selkirk *et al.* 1990). A biosphere reserve is an area set aside so that human impact on the environment as compared with unaltered ecosystem can be monitored. It differs from a national park in that it is a representative example of a particular terrain and species, whereas a national park is intended to conserve unique or spectacular sites and species (Davis 1983; Bonner and Lewis Smith 1985; Rounsevell and Copson 1985:12). It is the only island in the Southern Ocean to have been declared a Biosphere Reserve (Clark and Dingwall 1985:27; Hall 1992b).

The Tasmanian Department of Parks, Wildlife and Heritage has prepared a management plan for Macquarie Island. Hall (1992b) has provided a detailed

discussion of this plan. One of the plan's objects is "to permit tourist visits under strictly controlled conditions which allow visitors to experience the natural values of the island without compromising them". However, while the plan recognises that "in the long term it is only with public understanding and support that the world's wildlife, habitats and natural ecosystems can be protected", tourism should only be encouraged in so far as it does not conflict with the Objects of Management, first of which is "to protect and manage the reserve as a natural habitat for its indigenous flora and fauna and in order to achieve ecosystem conservation". In order to achieve these goals the Prescription for Management states: "Tourist visits will be ship-based but limited facilities such as walkways, viewing platforms and interpretation material may be provided in selected areas to protect the wildlife, environment, historical and/or scientific values of the reserve". In addition to setting guidelines for the protection of scientific programmes and the safety of visitors and personnel, the Guidelines for Tourism Operations at Macquarie Island Nature Reserve set nine directives for the protection of the environment (Hall 1992b; Hall 1993) as shown in Figure 3.1.

Figure 3.1 Directives for the Protection of the Environment, Macquarie Island Nature Reserve:

- All tourist operations will be ship-based with no overnight stay on the island except in an emergency. Shore visits will only be permitted between the hours of 0700 and 1900 local station time.
- The landing and pickup of personnel will only be at beaches designated by the Department.
- The areas which may be accessed on foot will be designated by the Department and all shore parties are to be in two-way radio communication with the ship and must not be more than one hour walking time from the beach where they are to be picked up.
- Shore parties to be organised in groups of no more than ten people including one leader/guide with each party.
- Strict quarantine procedures will be enforced to prevent exotic species being taken ashore in equipment or clothing.
- Any food and drink items to be consumed during visits ashore are to be unopened, pre-packed, processed food or drinks, previously approved by the Department.
- No food items are to be given to wildlife.
- All rubbish and unused food items are to be returned to the ship. No shipborne rubbish, including food items, are to be disposed of in Tasmanian territorial waters.
- No collecting of flora, fauna, historical sites or artefacts, geological specimens or objects is permitted.

Source: Hall 1993:121

There is no airstrip; the only access to the island is by sea. Entry to the reserve is by permit (Clark and Dingwall 1985:25; DPWH 1990:2). Visitors are landed on the Isthmus and at Sandy Bay between 7 am and 7 pm and are met by staff of the Department of Parks, Wildlife and Heritage. There are wooden walkways and viewing platforms to make both places easily accessible for visitors (DPWH 1990:2). Information for the visitor to Macquarie Island provided by the Department of Parks, Wildlife and Heritage is presented in an attractive folder detailing visitor regulations, history, flora and fauna, with excellent photos to aid the identification of wildlife. Indeed, the abundant and spectacular wildlife is one of the most appealing features to Macquarie Island visitors, as it is one of the richest wildlife sanctuaries in the world (DPWH 1990:25).

The New Zealand sub-Antarctic island management plans (see Chapter 5) have greatly influenced the management of Macquarie island by the Tasmanian Department of Parks, Wildlife and Heritage, which has adopted similar costing and management strategies, and guide-lines for tourism operations (Hall 1992b). Hall (1993:121) believes that the success of the Guidelines in meeting both the conservation objectives and providing a satisfying tourist experience is still to be examined. The Aus$100 charge per visitor under the Management Plan may place substantial economic burdens on smaller tourist operations and thereby further restrict tourist access. The current limit on ships is 4 ships and approximately 600 people per Austral summer (Hall 1992b). However, this may lead to some ambiguity in implementation, as four ships with 250 passengers each will of course produce more revenue than four ships of the private adventure type with only 25 people each.

From a bio-physical perspective, the Guidelines may well be extremely appropriate for the management of visitation to sub-Antarctic islands and may also meet the requirements of the proposed World Heritage listing for Macquarie island (Hall 1992b). However, the assessment of tourist activities would require a far more thorough consideration of sub-Antarctic ecology and the relation to human impacts than has hitherto been the case. A survey carried out during the 1992-93 summer season by the Department of Parks, Wildlife and Heritage of visitor attitudes to Macquarie Island, may assist in improving current management practices.

Marion and Prince Edward Islands:

These two islands are administered by the Department of Environment Affairs of South Africa (Van Rensburg pers comm), although legislated for separately in the national parliament (Walton 1985:315). They are managed as a nature reserve (Clark and Dingwall 1985:104; Poncet and Poncet 1991:32) and are covered by specific conservation legislation (Walton 1985:315). The Department is currently in the process of drawing up a management plan concerning South Africa's sub-Antarctic islands, which is not yet available (Van Rensburg pers comm).

Conditions imposed by the South African authorities on people visiting the islands are stringent (Poncet and Poncet 1991:33). The current policy on Tourism and Private Expeditions' to Marion and Prince Edward islands states that tourism and private expeditions are not encouraged and will not be supported by the South African government (Clark and Dingwall 1985:105; Department of Environment Affairs). Tourism to the islands will only be authorised under permit of the Department, and visitors are only allowed on Marion Island (Clark and Dingwall 1985:113). Several reasons are given for this; all available resources (including domestic facilities and search and rescue services) are used mainly for the conduct of official meteorological and research activities; the domestic facilities available at the base station are sufficient only for those engaged in official activities, and the fragility of the island ecosystems necessitates a limitation on the number of persons present on the island (Department of Environment Affairs).

South Georgia and the South Sandwich Islands:

Britain is the responsible authority for the islands of South Georgia and South Sandwich (Walton 1985:314). The South Sandwich Islands are very rarely visited by tourists, as they are remote and very inaccessible. Landing is extremely difficult without helicopters and since they are volcanic, they are largely barren (Walton pers comm). On the other hand, South Georgia has been frequently visited by tourists since 1970, and interest is increasing (Walton 1985:316). The tourists come principally in organised cruise ships, although there have been a considerable number of yacht visits. South Georgia is a Crown Colony, administered by a Commissioner and organised by the Foreign Commonwealth Office in London (Walton pers comm). It the sub-

Antarctic island with the longest period of continuous habitation and economic history, but it has now no permanent inhabitants, although there is a station at Husvik and a small year-round British Antarctic Survey (BAS) biological base at Bird Island (Bonner and Lewis Smith 1985; Walton pers comm).

South Georgia has no management plan, but it does have wildlife protection ordinances. There are three forms of designated area for conservation: Specially Protected Areas (SPA) are designated to preserve their natural ecological systems from any interference; Sites of Special Scientific Interest (SSSI) are designated to prevent scientific investigations being jeopardised by disturbance. Permits to enter these areas are issued only for compelling scientific reasons which can not be served elsewhere (Bonner and Lewis Smith 1985). There is no published tourist management scheme (Walton pers comm), although a third category of protected area, Areas of Special Tourist Interest (ASTI), has been designated, which are selected areas that are representative of wildlife and scenic beauty where the effects of tourist activity may be systematically assessed (Bonner and Lewis Smith 1985; Walton pers comm). Tourism is limited to ASTIs and is well regulated (Clark and Dingwall 1985:145). It is prohibited to land on South Georgia for mountaineering or other `recreational´ purposes except in ASTIs, unless granted a special permit to visit other places. This is in addition to the normal entry formalities required at Grytviken (Bonner and Lewis Smith 1985:273). ASTIs which have been designated are:

- Grytviken: the area bounded by Moraine Fjord, Hamburg Glacier, Mt. Sugartop and Lyell Glacier. This area covers the port of entry and principal settlement, the remains of the oldest whaling station, Sir Ernest Shackleton's grave and examples of almost all the plant communities found in South Georgia.

- Bay of Isles: the area between Cape Buller and Cape Wilson inland to the height of land, together with all the islands and rocks in the bay. This area covers king penguin and gentoo penguin rookeries, wandering albatross colonies and many other bird species, as well as substantial glaciers and fine scenery (Bonner and Lewis Smith 1985:282).

Tour ships normally clear through the magistrate at Grytviken, visit the whaling station where there is now a small museum, and the cemetery where Sir Ernest Shackleton is buried, before proceeding on to other stops to view wildlife. Some consideration has been given to a small tourist tax of $10 per person. Visitors to the island may replenish their supplies of fresh water (Levich and Fal'kovich 1987:97). Clark and Dingwall (1985:150) believe that designation of areas of `Special Tourist Interest´ appears to be an effective method to control small numbers of tourists as long as adequate supervision exists.

Bouvet (Bouvetøya) Island:

Bouvetøya has never been inhabited (Walton 1985:314). The island and its surrounding waters is a Nature Reserve administered by the Norwegian Ministry of Environment (Ising pers comm). The primary aim of the management regulations appear to be concerned with the protection of the flora and fauna, although there is allowance for scientific research (Walton 1985:314; Poncet and Poncet 1991:32; Ising pers comm). Activities on the island are governed by permit (Clark and Dingwall 1985:99), and the use of vehicles or the landing of aircraft is forbidden except by permit (Poncet and Poncet 1991:32). It would appear that due to its remoteness and inaccessibility, Bouvetøya has not been visited by tourists (Ising pers comm).

3.4 SUB-ANTARCTIC ISLAND MANAGEMENT REGIME:

It has become apparent from the above analysis that there is a wide variation in the administration of tourism to the sub-Antarctic islands. In general terms, the above legislations attempt to restrict the introduction of alien species, prohibit the harvesting of any living resources except under special license, and protect the native flora and fauna from interference and disturbance (Walton 1985:315). However, the Australian sub-Antarctic islands are subject to a more stringent management regime, which has been developed in close relation to the policies developed by New Zealand for its sub-Antarctic islands. A summary of the policies is provided in Table 3.3.

Table 3.3 Summary of Sub-Antarctic Island Tourism Policies:

Island (Group)	Tourism Policy	Details
Tristan da Cunha	No	No tourist industry
Falkland Islands	Yes	Government-owned nature reserves: legislation controlling tourist movements Several privately-owned islands: owners have placed restrictions on cruise ship access to ships carrying no more than 130 pax. Only 1 ship per day allowed to visit. Ratio of 1 guide per 35 clients required. Clients must not stray more than 100m. from guide. Walking routes have to be agreed in advance
Iles Amsterdam, Iles Crozet, Iles Kerguelen, Iles St Paul	Unknown	Low tourist interest
Heard and McDonald	No	Guidelines for visits only
Macquarie	Yes	To permit tourist visits under strictly controlled conditions which allow visitors to experience the natural values of the island without compromising them.
Marion and Prince Edward	Yes	Tourism and private expeditions are not encouraged and will not be supported By permit to Marion Island only
South Georgia and South Sandwich	No	Designation of ASTI: selected areas which are representative of wildlife and scenic beauty where effects of tourist activity may be systematically assessed
Bouvetøya	No	No tourist visits

Although there are national provisions for conservation on the islands not all are comprehensive and their enforcement is fragmentary. Increasing interest in these islands, in particular South Georgia, from a tourist's point of view will require more vigorous prosecution of the laws if they are to be of any use. The proliferation of private yachts in the Southern Ocean has added a new element (Walton 1985:316). The activities of these yachts seem, at the moment, to be beyond any general control.

The sub-Antarctic islands have already suffered from human exploitation. Regimes to reduce this impact are necessary, but whereas in the Antarctic implementation of such a regime was difficult due to its unique political system, it is complex in the sub-Antarctic due to the number of sovereign nations, and lack of a single enforcement agency. A joint SCAR/IUCN Report (Walton 1986:107) encouraged national authorities to develop and implement conservation policies and plans, devised specifically for each island or island group, and incorporating a full consideration of the control of human impact on

the natural ecosystem. It further stated that "although achievement of the objectives of conservation plans will be subject mainly to self-assessment, the use of independent observers appointed by each national authority is likely to contribute greater success". The Report (Walton 1986:107) further states that national authorities are encouraged to consider which areas might be proposed for international designation as World Heritage site or Biosphere Reserve.

Booth (1990:280) believes that the challenge to island managers is to maximise the benefits from recreation and minimise the detrimental impacts. Resembling current Antarctic tourist operators, sub-Antarctic commercial operators and private recreation entrepreneurs may also become conservation advocates. Impacts of considerable numbers of people in one place must be minimised. Clark and Dingwall (1985:179) believe that "managing authorities need to ensure appropriate supervision of visits, to provide detailed information of the islands and their conservation needs". In addition, they state that designation of areas of Special Tourist Interest such as on South Georgia should be considered. International cooperation to allow a wide range of islands to be visited would enhance the viability of tourist operations. Moreover, if sufficient numbers of sites were available, areas could be rested periodically from tourist schedules, especially if adverse effects became evident.

The exchange of information is as much a problem in the administration of sub-Antarctic tourism, as in Antarctica. Management must be based on adequate knowledge if its is to be truly effective. Ecological studies and long-term monitoring are required, in particular interaction of humans activities with the sub-Antarctic ecosystems. Activities must be regulated to avoid unnecessary disturbance to wildlife and the environment. This requires active and extensive research (Clark and Dingwall 1985:176). Information flow can be improved when national authorities, operating agencies and scientists promote free and full exchange of all information and data, especially on those aspects which concern conservation and environmental protection of these unique islands (Walton 1986:109). To encourage responsible and controlled tourism, both scientists and administrators should provide public education on the significance and value of the sub-Antarctic islands. Each nation should encourage both scientists and administrators to provide public education on

the significance and value of the sub-Antarctic islands; and to encourage responsible tourism.

In 1992, the first international symposium on polar tourism was held in France and attended by representatives involved in Antarctic and Arctic tourism. The majority of participants were interested in Antarctic tourism, thus dominating discussion (Enzenbacher 1992b:246). Issues covered were the present state of tourism in the Arctic and Antarctic, development and problems, national policies, ecological issues, logistics, visitor information among others. The main achievement of the symposium was the recognition by participants that increased cooperation is needed to advance tourism management in polar areas. Conferences of this form are certainly a move towards increased cooperation and flow of information.

The sub-Antarctic islands have high conservation significance, and Holdgate (1970 in Clark and Dingwall 1985:168) has identified three principal objectives to aid their management:

i. The general protection of scenic beauty and the biota of the Antarctic region south of 60°S latitude.
ii. The protection of remaining undisturbed ecosystems of oceanic islands north of 60° south, and as far as possible the restoration or stabilisation of those ecosystems that have been disrupted by actions of man.
iii. The wise management of the biological resources of the Southern Ocean, to enable a sustainable harvest to be taken.

The first two objectives are particularly important for the management of tourism in Antarctica and the sub-Antarctic islands (Hall 1992b). The isolation of the islands can no longer be regarded as adequate protection for the islands. Tourism has become a reality in the management of the island ecosystems.

"With adequate precautions and international cooperation in regulating tourist operations, tourism should be compatible with scientific and conservation objectives in protected areas on islands of the Southern Ocean" (Clark and Dingwall 1985:179).

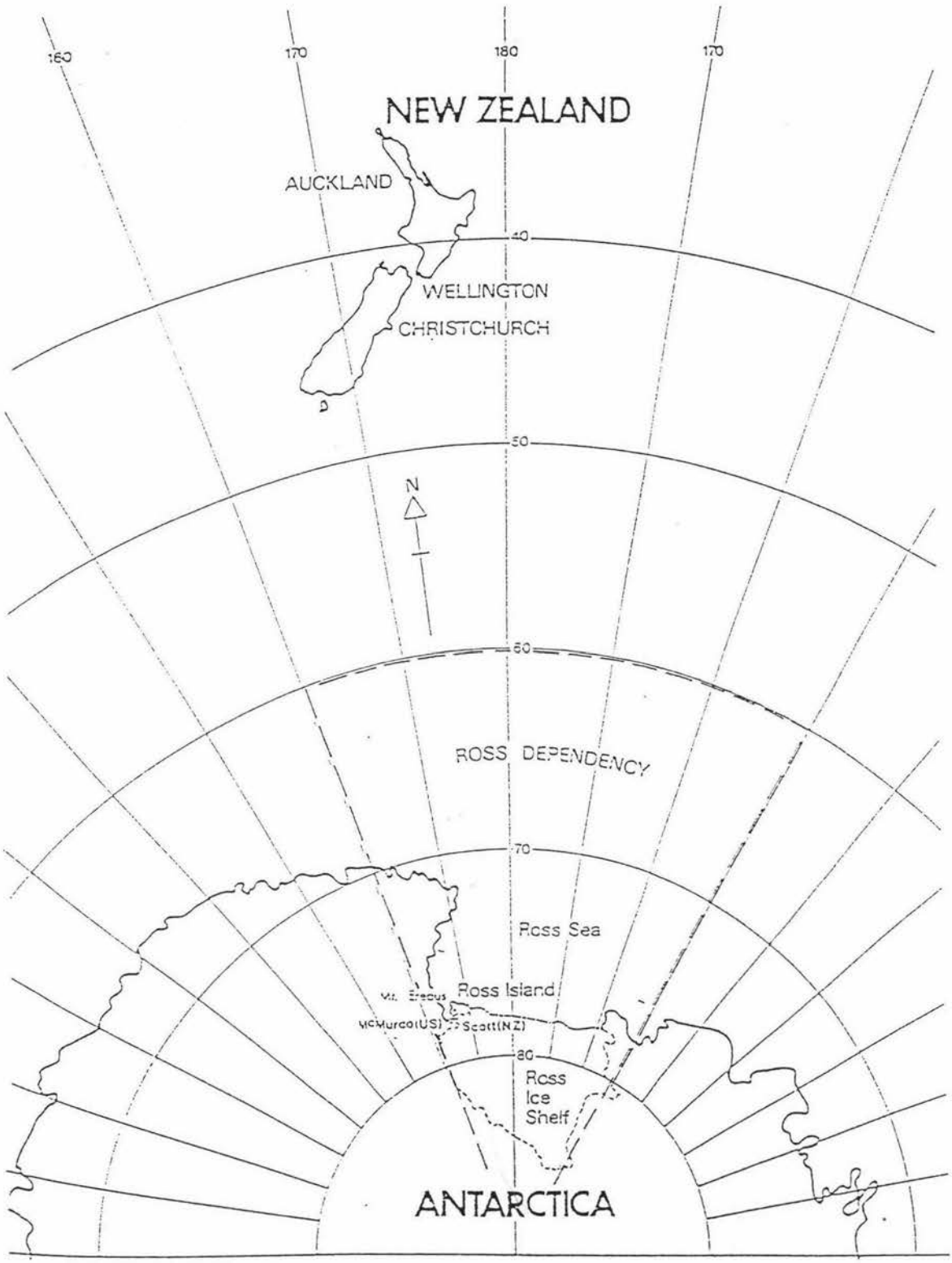
3.5 CONCLUSION:

"In itself, the image of the last islands of nature in a spoiled world promotes a nature tourism use" (O'Connor and Simmons 1990:192). Conservation standards for the islands in the Southern Ocean are thus likely to be but tenuously maintained. The management of tourism in Antarctica poses special challenges and this is also relevant to the islands of the Southern Ocean. There will be no more second chances, mistakes will be paid for in accelerated loss of species.

The sub-Antarctic islands are not isolated independent units. Marine Mammals and seabirds migrate over large distances between the islands and numerous animal and plant species are endemic to island groups or to the whole Southern Ocean region (Clark and Dingwall 1985:176). Many cruise ships visit a number of sub-Antarctic islands during one voyage, as well as visiting Antarctica. Management of tourism to Antarctica and the sub-Antarctic islands should thus be considered as an entity. Despite the variations of sovereignty, Antarctic and sub-Antarctic tourism are invariably linked. Present management programmes vary among different nations, and international cooperation and coordination will be required to produce a regulatory system for tourism operations encompassing both the sub-Antarctic and the Antarctic.

The following two chapters will study the nature of ecotourism to Antarctica and the sub-Antarctic Islands from a New Zealand perspective. These chapters will especially focus on the issues associated with developing a sustainable tourist management regime for Antarctic and sub-Antarctic tourism. Upon these findings, Chapter 6 will consider the effectiveness of the current management instruments and make recommendations for a more comprehensive Antarctic and sub-Antarctic management mechanism.

Figure 4.1 New Zealand Ross Dependency:



Source: Ministry of Foreign Affairs 1984:5

CHAPTER 4 NEW ZEALAND'S ANTARCTIC TOURISM POLICY:

4.1 INTRODUCTION:

> **The risk one runs in exploring a coast in these unknown and icy seas is so very great that I can be so bold to say no man will ever venture farther than I have done and that the lands that may lie to the South will never be explored.**
> (Captain James Cook 1774 in Quark Expeditions 1992-93)

Since Captain Cook wrote the above words, many people have reached, explored, and wintered over on the Antarctic continent. Today, not only explorers, but scientists, adventurers, as well as tourists venture to this `last wilderness´ on earth. New Zealand is among the seven nations which have laid claim to a part of Antarctica; a region known as the Ross Dependency. Tourism to the Ross Dependency is not as frequent or of such high numbers as the Antarctic Peninsula, nevertheless, the New Zealand government is concerned about the adequate management of tourist visits in its Dependency, as well as the Antarctic continent in general. New Zealand was indeed one of the first countries to recognise the need to minimise any adverse effects arising from tourist activity in Antarctica.

Discussion of the New Zealand tourism policies for Antarctic tourism is of international significance. New Zealand claims both Antarctic territory and five sub-Antarctic island groups, all of which are subject to ecotourism. New Zealand's approach to Antarctic tourism management is affected by the restrictions placed on national sovereignty under the Antarctic Treaty. At the same time, management of the sub-Antarctic islands is subject only to national jurisdiction. Thus New Zealand provides an excellent case-study of a national response to the regulation of Antarctic and sub-Antarctic tourism.

The following chapter will briefly describe New Zealand's Antarctic involvement and discuss the policy process it applies to its Antarctic operations. In particular, its response to tourism on the Antarctic continent and the New Zealand Antarctic territory will be analysed. Although tourism to the Ross Dependency is still insignificant in terms of total visitation to Antarctica, New Zealand has put forward certain approaches to visitor management, which will

be discussed further in this chapter. Chapter 5 examines the methods used by the New Zealand Department of Conservation to regulate tourism in the sub-Antarctic. Within the two chapters, comparisons will be made where ever possible.

4.2 NEW ZEALAND AND ANTARCTICA:

New Zealand Antarctic Territory - Ross Dependency:

When New Zealand sovereignty was established over the Ross Dependency in 1923, its boundaries were defined as all the islands and territories in Antarctica between the 160th degree of east longitude and the 150th degree of west longitude, and south of 60° latitude. The New Zealand Antarctic Territory, therefore, comprises the Ross Ice Shelf, the Balleny Islands, Scott Island and adjacent islands and the landmass within these longitudes to the point of their convergence at the south pole, and measures 770,000 km^2 (DSIR 1982; Barber and Selby 1983:466; Ministry of Foreign Affairs (MoFA) 1984:8). For map refer to Figure 4.1, page 104.

A major feature of the Ross Dependency is the Ross Ice Shelf, which is a flat-topped body of snow-covered glacier ice floating over most of its area, but grounded along coastlines and over other shallow parts of the sea floor. It is the largest ice shelf on earth, covering 532,000 km^2 (twice the area of New Zealand) and with a volume of 23,000 km^3. It influences the marine ecosystem, sea currents, and sea ice distribution in the Ross Sea and is a major source of icebergs. The shelf is logistically convenient for over-snow transport and landing aircraft (Hatherton 1990:122) and is one of the most important access points to the continent (Scott 1991:54).

New Zealand's Antarctic involvement:

New Zealand has strong links with Antarctica, because of its geographical proximity, history of exploration, and longstanding strong national interest in the continent (MoFA 1984:3; Ministry for Environment (MfE) 1989:3). New Zealand's southern-most islands are about 1600 kilometres from the nearest point in the Ross Dependency, making Antarctica the closest landmass to New Zealand. The history of Antarctic discovery is concurrent with New Zealand's

own exploration. Since James Cook sailed from New Zealand in search of the southern continent, New Zealand has been a natural base for both exploration and scientific investigation in Antarctica (McPherson 1975; Minister External Relations and Trade 1990). In addition, for more than a century, New Zealand has been used by many Antarctic expeditions as a staging point *en route* to the continent, currently in particular by the United States, on which New Zealand's own Antarctic programme is almost entirely dependent (Quartermain 1971; DSIR 1982; MoFA 1984:3,8; Hatherton 1983:67; Roberts 1983:7; McLauchlan 1987; Hemmings and Towle 1990:283).

In 1908, Britain claimed the Antarctic Peninsula as British Territory. As it hoped to extend this claim to all of Antarctica, the British authorities approached its Dominions such as New Zealand and Australia to assist. Based on British discoveries between 1841 and 1914, the Ross Dependency was placed under New Zealand's jurisdiction by an Order in Council of 30 July 1923 (Quartermain 1971; Barber and Selby 1983:467; MoFA 1984:8; Hatherton 1990). New Zealand established Scott Base in 1956, and since then has maintained a continuous Antarctic scientific presence (DSIR 1982; MoFA 1984:9; McLauchlan 1987).

New Zealand was one of the original signatories to the Antarctic Treaty, and has consultative status which gives it voting rights, but also requires New Zealand to undertake scientific research in Antarctica (DSIR 1990). It is a strong supporter of the Antarctic Treaty, and has participated in all Treaty meetings. Woollaston (1990:3), 1990 Minister of Conservation, demonstrated this commitment by asserting, "... the instrument for the further protection of the Antarctic environment must be the Antarctic Treaty, not another agency or instrument".

New Zealand's objectives and policy towards the Antarctic Treaty have been outlined in the White Paper on Antarctic Environment (MfE 1989), and are still current. The principles of New Zealand's approach are:

- Preservation and strengthening of peace in the region.
- The maintenance of the Antarctic Treaty as the cornerstone of New Zealand's Antarctic policy.
- Safeguarding the Antarctic environment.
- Maintaining New Zealand's claim to the Ross Dependency.

- Continuing international collaboration in scientific research (MfE 1989:7; DSIR 1990).

The principal means New Zealand applies to achieve these interests are through its scientific bases, and by being active in the Antarctic Treaty System and other Antarctic forums, such as the Scientific Committee of Antarctic Research (SCAR).

Continued international support for the Treaty also provides New Zealand with a protected zone on its south border. "We have an effective guarantee that, to our south, peace and security are assured. We will support the Antarctic Treaty and continue to resist moves from whatever quarter that may have the effect of undermining it" (MfE 1989:5). Therefore, the provision under the Antarctic Treaty that Antarctica is to be used for peaceful purposes only, is of immense significance to New Zealand (Roberts 1983:6).

New Zealand has domestic legislation concerning Antarctica and the Ross Dependency, the principal acts being the *Antarctica Act* 1960 and the *Antarctica Amendment Act* 1970. The *Antarctica Act* (1960) confers jurisdiction on the Courts of New Zealand to "deal with crimes committed in the Ross Dependency and certain other parts of Antarctica, and to restrict the jurisdiction of the Courts in respect of acts or omissions in Antarctica of certain nationals of other countries". The Ministry of External Relations and Trade (MERT), from 1 July 1993 called the Ministry of Foreign Affairs and Trade (MFAT), believes this is a significant indication of the high priority that New Zealand places on Antarctic issues. It alleges that many countries do not have specific national Antarctic legislation (Wong pers comm). However, it can be argued that under the sovereignty claims general national law would have to apply. Specific laws may therefore have been developed just to meet the requirements of accession to the Antarctic Treaty.

The New Zealand parliament is currently considering the *Antarctica (Environmental Protection) Bill* 1993, which will ratify the Protocol on Environmental Protection (The Dominion 1993a). This Bill will "provide for the comprehensive protection of the Antarctic environment and to recognise Antarctica as a natural reserve devoted to peace and science and to implement the Protocol on Environmental Protection to the Antarctic Treaty". In addition, under New Zealand citizenship law, any person born in the Ross

Dependency is a New Zealand citizen. There is also provision in New Zealand law for the establishment of an Exclusive Economic Zone beyond the outer limit of the territorial sea of the Ross Dependency (MoFA 1984:9). Nevertheless, all personnel returning to New Zealand from the Ross Dependency are treated as `Returning Overseas Visitors´ and undergo inspection by New Zealand Customs officers. This includes New Zealand citizens (NZAP 1993b:10).

New Zealand accordingly appears to be committed to its involvement in Antarctica and the Antarctic Treaty System. However, despite this dedication, the policy process seems to be somewhat unfocussed. Furthermore, there are few published resources giving a clear picture of New Zealand policy at an official level regarding Antarctica (Alley 1987:6). Following will be a description of the policy process New Zealand applies to Antarctica.

New Zealand Antarctic Policy Process:

New Zealand does not have a single Minister or Cabinet committee solely responsible for Antarctica or Antarctic environmental policy. Ministerial responsibility extends over several portfolios - Foreign Affairs and Trade, Environment, Defence, Science, Fisheries and Tourism. Input over Antarctic issues is basically dependent on approaches to individual Ministers at present (Hemmings and Towle 1990:278). Each government department obviously has its own explicit interest in Antarctic affairs. For example, for the Tourism Ministry the imperative is to secure New Zealand's share in the benefits of Antarctic tourism (Hemmings and Towle 1990:280). Figure 4.2 summarises the different groups interested in Antarctica.

The management of Antarctic policy is the responsibility of the Antarctic Policy Division of the Ministry of Foreign Affairs and Trade (MFAT). The main functions of this Department are to coordinate the Division and the New Zealand Antarctic Programme in Christchurch and to provide a central point for policy-making (NZAS 1992e:334-335; Prior pers comm). MFAT also audits New Zealand science proposals. The New Zealand Antarctic Programme (NZAP) (formerly DSIR Antarctic) based in Christchurch is the logistics arm of the New Zealand Antarctic operations, and manages and implements the New Zealand Antarctic activities. New Zealand legislation empowers the NZAP to exercise controls for environmental protection of Antarctic flora, fauna, and

tourism. In association with the Antarctic Heritage Trust[1], the NZAP is involved with the protection of historic sites and resources. The NZAP also provides advice on the formulation of policy governing New Zealand activities in the Antarctic. Within Antarctica, the NZAP administers Scott Base, Vanda Station, Cape Bird Station, and a number of out stations in the western Ross Sea region (DSIR 1982; DSIR 1990; Prior pers comm).

Another component of the Antarctic policy process is the Ross Dependency Research Committee (RDRC) which was conceived in 1958 to advise the New Zealand government on the scientific component of its Antarctic Programme. Its functions were extensively revised in 1992 (in response to government restructuring of its research institutes). The RDRC is responsible to the Minister of Foreign Affairs and Trade and the Minister of Research Science and Technology. The committee comprises representatives of the various government research organisations (NZAP 1993-94:8). Primarily, the RDRC compiles the research component programme for each season (NZAP 1993b:4) and is an advisory body to the government on long-term priorities and directions for new Zealand's scientific effort in Antarctica as well as assessing and reviewing projects to be undertaken as part of the NZAP (NZAS 1992e:334-335; NZAS 1993a:8; Hemmings pers comm; Prior pers comm).

The Ministry of Tourism does not have a fixed policy for Antarctic tourism, but believes that tourists should be able to visit Antarctica like anybody else (Costello pers comm). The Ministry of Tourism is involved in international Antarctic negotiations, together with the Ministry of Foreign Affairs and Trade and the Pacific Asia Travel Association (PATA) and the IAATO (Costello 1993:7).

The Ministry for the Environment (MfE) and the Department of Conservation (DoC) are the government departments with primary responsibility for protecting the Antarctic environment. The Ministry for the Environment develops policy and gives advice on the management of natural and physical resources. It aims to ensure that other government departments and local authorities have the information and guidance they need to assess environmental impacts of proposed actions (Blakeley 1987:9-10; MfE 1990; Dixon 1993:241). Hemmings and Towle (1990:281) summarise the

[1] The RDRC established a Historic Sites Management Committee in 1980 to protect sites from the Antarctic climate and visitation. This led to the formation of the Antarctic Heritage Trust in 1987. This Trust is responsible for the overall management of the historic sites in the Ross Dependency (Harrowfield 1990:55-62).

responsibilities of the Ministry for the Environment in regard to Antarctica as ensuring that "full and balanced" account is taken of intrinsic values of ecosystems, the sustainability of resources, the needs of future generations and ensuring that there are "effective opportunities for taking account of the values that different individuals and groups place on the quality of the Antarctic environment in formulating advice to government".

Figure 4.2 Principal Participants in the New Zealand Antarctic Policy Process:

Organisation	Responsibilities
• Ministry of Foreign Affairs and Trade (MFAT) - Antarctic Policy Division	To coordinate Division and New Zealand Antarctic Programme. Central point for policy making. To preserve national interests through Antarctic Treaty System.
• New Zealand Antarctic Programme (NZAP)	Logistics arm of New Zealand Antarctic Operations. Manages and implements New Zealand Antarctic activities. Empowered to exercise controls for environmental protection Antarctic flora, fauna and tourism. Administers New Zealand Antarctic bases.
• Antarctic Heritage Trust	In association with NZAP protects historic sites and resources in Ross Dependency.
• Ross Dependency Research Committee (RDRC)	Advisory body setting directions for New Zealand scientific activities in Antarctica.
• Ministry for the Environment (MfE)	To ensure full account is taken of intrinsic values of the ecosystem, sustainability of resources, needs of future generations and to ensure values that different individuals and groups place on quality of Antarctic environment, are taken into account in formulating advice to government.
• Department of Conservation (DoC)	To advocate for the conservation of natural and historic resources in the Ross Dependency.
• Ministry of Tourism (MoT)	To secure New Zealand's share in the benefits of Antarctic tourism.
• Non-governmental Organisations (NGO). In particular, Antarctic and Southern Ocean Coalition (ASOC), Greenpeace, Antarctic Society.	To keep policy process open. To enhance interest of respective organisation.

Under the *Conservation Act* (1987), the Department of Conservation is given the role of acting as advocate for the "conservation of natural and historic resources generally" in the Ross Dependency as in New Zealand (Hemmings and Towle 1990:280). DoC appears to have given the Antarctic low priority,

although this is may be changing. An example is the involvement of the Conservation Director General in the 1989 White Paper on Antarctic Environment. The Department of Conservation instigates regular liaison meetings with non-governmental organisations, one of the few government agencies to do so (Hemmings and Towle 1990:280-281).

Several non-governmental organisations are also interested in Antarctic issues, ranging from protecting the Antarctic environment to Antarctic exploration. However, a major concern expressed by Hemmings and Towle (1990:283) is the limited access persons and agencies outside the government bureaucracy have to the policy development process. During 1990, MERT (now MFAT) was obliged by the Prime Minister to share this responsibility with the Ministry for the Environment, Department of Conservation, the Prime Minister's Department and the then Department of Scientific and Industrial Research. However, Hemmings (1991b:7) asserts that these other departments are no longer key players in Antarctic policy. Hemmings and Towle (1990:283) further state that MFAT sees Antarctic policy in conventional terms due to the foreign policy component. Hemmings (pers comm) believes that in a small country such as New Zealand, the Antarctic structure is too small to keep informed of the issues, if input is restricted, and asserts that due to changes in the structure of Antarctic policy making and funding, this limited access is getting worse. Whereas the international policy process is opening up more, New Zealand's domestic organisation is becoming much more exclusive.

MFAT has expressed commitment to the protection of Antarctica's natural environment, which is also of national interest. It does nevertheless appear that it is difficult for interest groups to be actively involved in Antarctic policy making. This of course has implications for New Zealand's Antarctic tourism policy, as a comprehensive system of regulation would require the input from the wide range of participants (ie. government, operators, tourists and non-governmental groups) (IUCN Submission 1992:7). The author personally found that information on Antarctica was disseminated and difficult to obtain. The New Zealand *Resource Management Act* (RMA) 1991 may provide useful guidance to improve liaison by the government with all interested parties (Hemmings and Towle 1990:284). Under the RMA, government and local bodies are required to consult parties directly involved, as well as allowing interested groups to comment. A more open policy process would result in

more comprehensive measures acceptable to a wide range of people, as well as enhance Antarctic education. Application of the fundamentals of the RMA to Antarctic tourism will be discussed later in this Chapter.

New Zealand's influence on International Policy:

New Zealand appears to be very active in the Antarctic convention negotiations and has acted as an intermediary between countries with more extreme positions (Brewster 1982:111). "New Zealand's early recognition of the likely impact of man on the Antarctic environment has enabled us to play a leading role amongst the international Antarctic community in formulating and implementing conservation measures" (DSIR 1982:5). New Zealand very early on introduced environmental protection controls on its scientific and other activities such as Environmental Impact Assessment (EIA) (Keys 1987:34), which implemented and in many cases exceeded the standards set out in the Antarctic Treaty `Code of Conduct for Antarctic Expeditions and Station Activities´ (MoFA 1984:12). Unfortunately, a major weakness of some EIA processes, including New Zealand, is the lack of effective monitoring (Keys 1987:35).

New Zealand has been seen as the least nationalistic of the seven claimant states in Antarctica. New Zealand went to Washington in 1959 to surrender its claim to the Ross Dependency (Roberts 1983:10), and again at the 1975 ATCM in Oslo, although this did not eventuate (Wallace 1987:16). In 1975, New Zealand also suggested that the Antarctic should be established as a World Park with a complete prohibition on commercial exploration and exploitation of the continent's possible mineral resources (MfE 1990). Brewster (1982:116) indeed called for the New Zealand government to promulgate the Ross Dependency as a World Heritage Site. These proposals received no support from any of the other Consultative Parties. However, support for a total ban on mining became apparent when both France and Australia rejected the Convention on the Regulation of Antarctic Minerals Resource Activities (CRAMRA) (which would have allowed for some mining), followed by New Zealand in 1990.

In its White Paper on Antarctic Environment (MfE 1989:7), the New Zealand government called again for Antarctica to become a `World Park´, "an integrating and binding environmental protection regime for Antarctica, a

regime in which all the acceptable uses of Antarctica are carefully regulated and controlled". This notion was to be implemented within the framework of the ATS. The report called for a number of conventions or other agreements to cover aspects such as tourism, environmental impact assessment procedures, monitoring and compliance, among others. For tourism it requested that,

> comprehensive rules to regulate the impacts of tourism are required. The Antarctic region holds a special fascination and challenge for people. Real benefits can flow from this. But tourism can also cause serious harm to Antarctic wildlife and sensitive areas. Sound policies and plans for tourism must be developed. Safety standards must be established for tourism in what is often a hostile environment (MfE 1989:7).

Since the rejection of the mineral's regime, New Zealand has played an active role in the negotiations on the Protocol (Minister of External Relations Trade 1991), and is currently drafting legislation to adopt this Protocol into New Zealand law (The Dominion 1993b; Hemmings pers comm; Wong pers comm). New Zealand no longer pushes the notion of an Antarctic World Park, as MFAT asserts there is not much practical difference between a World Park and the application of the Protocol, especially as the Protocol prohibits mining for fifty years, and all other activity including tourism is limited by its regulations (Wong pers comm). Nevertheless, although New Zealand appears to be influential internationally, its Antarctic policy is dependent on the government in power. This could influence the approach taken by respective governments towards Antarctic tourism.

In June 1993, New Zealand hosted the Council of Managers of National Antarctic Programmes (COMNAP) at the International Antarctic Centre in Christchurch. Representatives of 21 countries were present. The meeting primarily addressed operation issues of common interest to programme managers. The key topics were tourism, oil spill prevention and response, Antarctic aviation safety, information exchange among others. A working group on tourism agreed on recommendations for gathering information on Managers of National Antarctic Programmes tourism procedures, interaction with tour operators, and the development of an Antarctic tourism database (NZAP 1993a).

4.3 ANTARCTIC TOURISM AND NEW ZEALAND:

Barber and Selby (1983:469) stated that "New Zealand with its close proximity to Antarctica, must also consider the likelihood of a future tourist market to the Ross Dependency". Auburn (1972:79) indeed stated that,

> The emphasis on scientific research in its present form may be misplaced... It appears to be assumed that the primary object of Antarctic activity is scientific research, and all other plans must fit in with the needs of such research... It is suggested that strong official backing be given to tourism in the Dependency, provided that it is conducted under New Zealand auspices.

Auburn (1972:75-76) further suggests that if subsidies were given to New Zealand tourism, it may prove cheaper than paying for scientific research, and from the claims viewpoint perhaps more effective. This is unlikely to be embraced today, as New Zealand has committed itself to the Protocol, which has as primary objective scientific research in Antarctica. It will become apparent in this chapter that tourism to the Ross Dependency is restricted to non-New Zealand companies, although a number of companies travel to and from Antarctica via New Zealand ports.

Tourism in the Ross Dependency

The majority of tourists travel to Antarctica from South America (Chapter 2), as the distance to its closest point in Antarctica (the Antarctic Peninsula) is only about 1000 km. This compares with 3000 km from New Zealand to its closest Antarctic point, and to over 4000 km from South Africa. Departing from South America is also more popular as there are a much greater number of islands for visits en route. The Antarctic Peninsula is more attractive to visitors because temperatures are often above freezing point during the summer season. This feature occurs only for brief periods in the Ross Dependency or the adjacent Australian Antarctic Territory (AAT). Furthermore, pack ice restricts access to the Ross Dependency (Wace 1990:328). A comparative study of tourism resources in these areas is provided in Table 4.1 below.

Table 4.1 Antarctica's Tourism Potential by Sector:

	South America	New Zealand	Australia
Approx distance from Antarctica	1000 km	3000 km	≥3000 km
Antarctic climate	Mild, cloudy	Very cold	Very cold, windy
En route islands	South Georgia South Sandwich South Orkneys South Shetlands Falklands Bouvetøya	Snares Aucklands Campbell Macquarie Bounty Balleny Antipodes	Heard Kerguelen Crozet MacDonald Campbell Auckland Snares
Summer sea access	Open	Ross Sea pack ice	Offshore pack ice
Wildlife	Several species of penguins, birds and seals on islands and Antarctic coasts	Several species of penguins, birds and seals on islands and Antarctic coasts	Several species of penguins, birds and seals on islands and Antarctic coasts
Historic sites	Charcot, Falklands war, Nørdenskjöld, Rymill, Shackleton,	Borchgrevink, Scott, Byrd, Amundsen	Mawson Hut, Law
Scientific bases	Many	Few - mainly Scott and McMurdo	Few

Source: Wace 1990:329.

The majority of cruises travelling to the Ross Dependency depart from South American and New Zealand ports, or occasionally from Australia. Tourists first visited the Ross Sea in 1986 (Thomson 1987:39) Cruises travelling to the Ross Dependency usually visit en route sub-Antarctic islands (such as the Auckland Islands) as well as Victoria Land, the Ross Ice Barrier and McMurdo Sound. Pack ice and weather conditions may cause lengthy detours to the coast of Adelie Land and Commonwealth Bay (Wace 1990:335). Landing difficulties and the long sea voyage can also give problems. Generally, the route taken by ships travelling to the Ross Dependency is from New Zealand or Australia, and back to either of these countries. Only rarely has a tourist ship circumnavigated the Antarctic continent as these trips are very lengthy, generally about a month is spent aboard the cruise ship. Often the last cruise in the season will travel from South America via the Ross Sea to New Zealand to reposition the ships for use in the Australasian winter. These cruises are often advertised as `circumnavigations´, "in a manner displaying a curious disregard for geography" (Wace 1990:335). A `Grand Antarctic Circumnavigation Cruise´ is planned for January 1994 (Zwart pers comm), but like previous `circumnavigations´, this trip will also only travel from South

America to New Zealand. Appendix 4.1 shows the tour operators which `circumnavigated´ Antarctica.

Details of previous cruises to the Ross Dependency are also outlined in Appendix 4.1. Specific details of tourist cruises to New Zealand's Ross Dependency are difficult to obtain. This appears to be partly due to insufficient reporting by operators to the New Zealand Antarctic Programme, as well as inadequate compilation of data by the NZAP. However, information received from the NZAP indicates that in the future data will be compiled annually and reported by each operator (Sheppard pers comm). The projected number of cruise ships visiting the Dependency for the 1992-93 season was four, carrying an estimated total number of 882 passengers (Naveen 1992), as portrayed in table 4.2.

Table 4.2 Proposed Shipboard Tours to the Ross Dependency 1992-1993

Operator/Ship	Advertised Trips	Capacity	Potential No Pax
Seaquest Cruises (US) *Frontier Spirit*	3	164	492
Quark Expeditions (US) Mountain Travel (US) (& separate charters) *Kapitan Khlebnikov*	3	130	390
		Total	882

Source: Naveen 1992

The actual visitor figures to the Ross Dependency for the 1992-93 season were slightly different than projected. The *Frontier Spirit* did not land on the first trip; its second cruise carried 108 passengers and its third 118 passengers. Both voyages carried a crew of 84. The *Kapitan Khlebnikov* only made one trip to the Ross Dependency, carrying 85 passengers and a crew of 76 (Sheppard pers comm) with approximately 36 percent being Australian, 34 percent USA, 10 percent German and the remainder from Great Britain and South Africa (Sanson 1993:1). The figures for yachts and other independent travellers are unknown.

Tourism to the Ross Dependency occurs regularly, although in lesser numbers than in the Antarctic Peninsula. The Ross Dependency has less bases then can be visited in the Antarctic Peninsula region, but the United States and the

New Zealand bases in McMurdo Sound are popular visitation sites. The Ross Sea area has been described as being a "representative slice" of Antarctica (McPherson 1975:7). There are a number of historic sites, such as Scott's Discovery Expedition Hut and the site of Sir Ernest Shackleton's hut (Neider 1974:15; Hatherton 1990:270). The history of exploration is an important attraction of the Ross Dependency as many early explorers used the Ross Ice Shelf to gain access to the South Pole. According to Neider (1974:16), "the visitor to Ross Island is fortunate to be intimately exposed to a profound sense of the Antarctic past and to the influence of heroic times and men". Visitors are also captivated by the beautiful scenery such as the mountains, glaciers, ice-free dry valleys, the active volcano of Mt Erebus and the Ross Barrier, the wildlife in the area, and the Ross Ice Shelf which is the largest ice shelf in Antarctica (Wace 1990:331; Quark Expeditions 1992-93; Seaquest Cruises 1992:22-24).

Indeed, Quark Expeditions (1992-93) promotes its voyage to the Ross Dependency as an escape from the `crowdedness´ of the Antarctic Peninsula,

> as beautiful as the Antarctic Peninsula is, it is these days becoming overcrowded with ship traffic. It is a rare day during the height of the Antarctic tourist season on which a passenger does not at least see one other vessel... So it is away from the crowds of the Antarctic Peninsula and off to the spectacular `Far Side´ of Antarctica!

Visitors on cruise ships to the Ross Dependency will generally sight-see from zodiacs. Passengers on the cruise ship *Kapitan Khlebnikov* are able to travel on the ice and further inland (Andy Cox pers comm) at the discretion of the New Zealand government representative as their ship carries two helicopters (HNZ Squirrel - 5 pax; Russian - 8 pax) (Sanson 1993:6). These were used to make visits to Cape Royds, where 94 passengers and crew were landed for a visit to Shackletons hut. Eighty-five passengers were landed for a champagne party on the Ross Ice Shelf, and eleven flights of ten minutes duration were made over Coulman Island while the ship was travelling through the Ross Sea (Sanson 1993:2). The use of helicopters by cruise operators extends the range of options visitors have to view the continent. At the same time, it poses a new problem in the management of Antarctic tourism, with the added difficulty of search and rescue, and liability. The danger of airborne tourism was demonstrated in 1979 by the Mount Erebus disaster. Increased helicopter

operations call for clear guidelines on safety of operation and designated landing sites or restrictions in relation to wildlife (Sanson 1993:6).

Mount Erebus Disaster:

In 1979, New Zealand was at the forefront of airborne Antarctic tourism, when Air New Zealand (and Qantas) offered aerial sightseeing flights in long-range passenger aircraft to the continent carrying up to 400 people per flight. During the 11-12-hour non-stop flights the passengers were shown the spectacular scenery and wildlife along the edge of the Ross Barrier and the Trans-Antarctic Mountains on the west coast of the Ross Sea. The appeal of these flights derived especially from the views of ice scenery, including mountains, glaciers, ice-free dry valleys, the active volcano of Mount Erebus, and the Ross Barrier, as well as having a strong novelty element. Despite the popularity of these overflights, neither environmental nor search and rescue difficulties were considered. Unfortunately, on 28 November 1979, an Air New Zealand DC-10 crashed into Mount Erebus with the loss of all its occupants (Wace 1990:331). "Thus in one blow, several times as many people lost their lives than had perished in the 80 years of arduous exploration and scientific study of the continent" (Hatherton 1990:84), exemplifying that Antarctic tourism can be hazardous, and the subsequent need for its management.

It will be discussed below that the New Zealand government does not prohibit tourism to the continent, however, neither does it actively support Antarctic tourism activity. In the past, tourists or anyone who was not with a government connection, were discouraged. This was mainly as governments would be expected to give aid in an emergency. All tourism is viewed to affect scientific bases, as normal activities are interrupted during visits (Enzenbacher 1991:87). The 1979 Air New Zealand crash on Mt Erebus severely disrupted the Scott Base science programme, which may have underlined this view. Moreover, it also demonstrated the inadequacy of search and rescue facilities for airborne tourism in the Antarctic (Wace 1990:334). Since this disastrous accident, "aerial sightseeing and airborne land-based tourism conducted from New Zealand have been in a state of limbo since the Erebus crash" (*ibid*). However, cruise vessels travelling to Antarctica frequently transit through New Zealand ports.

Antarctic Tourism Experiences Within New Zealand:

Education about the Antarctic continent, New Zealand's activities there, and the fragile environment is important, not only to inform Antarctic visitors, but also the general public in New Zealand. Within New Zealand, many people have little knowledge about New Zealand's Antarctic territory. "Although New Zealand's slice of the great white south is three times the size of the rest of the country, for most of us the Ross Dependency is an unknown - a blank space in the atlas of our images and experiences" (Scott 1991:52), although there have been some publications such as Antarctic Achievements 1957-1982: New Zealand's Role in the Antarctic (DSIR 1982).

However, people can now experience the excitement of the Antarctic environment within New Zealand (Norling 1992:56). In 1990, an `International Antarctic Centre´ was opened in Christchurch (which has been the gateway to Antarctica for many expeditions) to provide administrative and logistic support for the New Zealand and United States Antarctic Programmes which are based in the city (Harrowfield pers comm). Italy has since then also become a tenant of the Centre (New Zealand Submission 1992:4). A component of the complex is an Antarctic Visitor Centre which provides an `Antarctic Experience´ to those people who do not have the opportunity to visit Antarctica personally. The project has been the effort of the Christchurch International Airport Limited company, which is a private firm. The project has not been subsidised by the New Zealand government, although it is supported in principal (Prior pers comm). It features exhibitions on the Antarctic environment and scientific research, and tries to reproduce the natural environment such as a simulated ice cave. All the exhibits contain an education component and aim to involve the visitor in experiences and activity (Norling 1992:62; NZAS 1992d:323-324; International Antarctic Centre (IAC) 1993:1; Harrowfield pers comm). Its convenient location at Christchurch airport will ensure a continuous flow of visitors; by February 1993 over 100,000 people had visited the Centre (IAC 1993:1). This centre thus provides an excellent interpretation opportunity to the general public about the unique properties of the Antarctic environment, in particular as protection of the natural environment is enhanced by public education.

Informing the general public and Antarctic visitors about the Antarctic continent provides an important reason to establish Antarctic centres within New

Zealand. However, the attraction of tourist revenue by recreating Antarctic experiences in New Zealand, is also an important component. One of the most recent developments aims to establish an underground Antarctic experience in Auckland, to be completed by the end of 1993 (Evening Standard 1993; The Dominion 1993a). The project aims to simulate an ice cave, a whiteout, an encounter with a Killer Whale, and visits to Scott Base anno 1911 and 2000, whilst being transported in a snow-mobile.

During the 1993-93 Antarctic season, several visits will be made to Antarctica by groups to record New Zealand Antarctic activities. These include the filming of a one hour documentary based on New Zealanders working in Antarctica, and news and mini documentary programmes on scientific projects, the environment and wildlife in Antarctica by TV3. Photographs will be collected by Craig Potton for a major text on New Zealand's Wilderness Heritage and for use by NZAP; and several media visits will be made to provide media coverage of the NZAP (NZAP 1993-94:37-39).

The opportunity to visit education complexes as mentioned above, is a very important component in the education about conservation and visitation. However, it may simultaneously create a strong desire to visit Antarctica in person, thus in effect, contributing to the paradox between visitation and preservation. The Director of the 'Antarctic Experience Centre' in Christchurch is aware of this anomaly but believes that visitors to the Centre will become stronger advocates of Antarctic conservation, and that the high cost of Antarctic travel is a major deterrent to Antarctic tourism (Harrowfield pers comm).

New Zealand Antarctic Tourism Management Policy:

When the first tourist expeditions to McMurdo Sound in the Ross Dependency were organised in 1968, policy statements were formulated by the New Zealand and American governments to regulate numbers and the frequency of visits to their stations (Brewster 1982:64). New Zealand was indeed the first country to recognise the need to minimise any adverse effects arising from tourist activity (DSIR 1982; Thomson 1987:39). These initiatives became incorporated in an agreed Recommendation which applied to private expeditions as well as tourists at the 1970 Consultative Meeting (DSIR 1982; Hatherton 1990:270). In Antarctica, New Zealand considers a tourist anyone

who is not part of a government programme. However, there is no set definition in legislation, as it is deemed that this would be an impossible task (Wong pers comm). This argument was discussed in Chapter 2 and applies equally well to New Zealand's efforts to control Antarctic tourism, as without a definition it is very difficult to produce effective management controls. The position adopted by the Antarctic and Southern Ocean Coalition (NZ) (ASOC) that "non-governmental activities are a non-homogenous category" (Hemmings, Cuthbert and Dalziell 1991:3), has also been promoted by the New Zealand government.

In 1986, the New Zealand government reviewed its policy for private expeditions and tourists to Antarctica. It created a document called New Zealand Government Policy on Tourist and Private Antarctic Expeditions (DSIR 1986). Its main principles were concern for the safety of personnel and the protection of Antarctica from human impact. To regulate their impact on Antarctica, visitors are subject under the Antarctic Treaty and New Zealand law to requirements designed to protect the environment and promote their safety. The policy states that the government is willing to offer advice and information on operational matters to tourists and private expeditions. However, all visitors will be expected to provide advance notice of their visit with full details of their expedition's plans. The policy also states that normal courtesies will be extended to visitors. The New Zealand government will attempt to provide assistance to any visitor involved in a life-threatening emergency, although New Zealand abilities to assist in an emergency are limited. The government also allows access to communication facilities during normal operating hours.

> The New Zealand government is not opposed to private expeditions of tourist visits provided they are planned and conducted in accordance with the Antarctic Treaty (Ministry of Science and Technology (MoST) 1986).

The document emphasises that all visitors to Antarctica should be aware that New Zealand law applies to all persons in the Ross Dependency, and to all New Zealand citizens and permanent residents anywhere in Antarctica (DSIR 1986) as outlined under New Zealand's Antarctic involvement. However, Chapter 2 showed that enforcing domestic law on non-nationals in Antarctica is very difficult.

Figure 4.3 Guidance for Visitors to the Antarctic:

Antarctica and its surrounding islands are one of the few places in the world which are still relatively unchanged by man's activities. Scientists still know very little about the ecological situation in the Antarctic. At the present early stage in research on these matters, some restrictions and precautions may seem unnecessarily harsh, but preliminary studies indicate the need for great caution.

By following a few very simple requests, you can help preserve the unique environment of this region.

1. Avoid disturbing wildlife, in particular do not:
   - walk on vegetation
   - touch or handle birds or seals
   - startle or chase any bird from its nest
   - wander indiscriminately through penguin or other bird colonies
2. Litter of all types must be kept to a minimum. Retain all litter (film wrappers, tissue, food scraps, tins, lotion bottles, etc) in a bag or pocket to be disposed of on board your ship. Avoid throwing tin cans and other trash of the ship near land.
3. Do not use sporting guns.
4. Do not introduce plants or animals into the Antarctic.
5. Do not collect eggs or fossils.
6. Do not enter any of the Specially Protected Areas and avoid Sites of Special Scientific Interest.
7. In the vicinity of scientific stations avoid interference with scientific work and do not enter unoccupied buildings or refuges except in an emergency.
8. Do not paint names or graffiti on rocks or buildings.
9. Take care of Antarctic historic monuments.
10. When ashore, keep together with your party.

Source: Ministry External Relations and Trade 1990:8

The current New Zealand government policy on Antarctic tourism is contained in the 1990 New Zealand Government Policy on Tourist and Private Antarctic Expeditions (MERT 1990). This new document does not vary greatly from the 1986 policy, except the requirements on waste disposal are much more detailed, reflecting the government's growing concern with human impact on the environment. The policy requires written assurance that provisions set forth in Appendix 4.2 are met before permission is granted to visit New Zealand stations. The policy also obliges tourists and private expeditions to be completely self-supporting, and to give advance notification of their visit. Any vessel intending to land in the Ross Dependency must be accompanied by a representative of the New Zealand Government who serves as a guide and provides site interpretation. The representative also carries keys to historic huts and ensures compliance is met with issued permits. Tours of Scott Base may be arranged which last approximately 1.5 hours. Visitors are allowed to purchase souvenirs in the small base shop and are invited to take refreshment

in the canteen at the end of their tour (Enzenbacher 1991:87). Appendix 4.3 details the tourist procedures to the Ross Dependency while figure 4.3 details a code of conduct for Antarctic visitors.

New Zealand thus regulates tourism by requiring all ships that transit in New Zealand en route to the Ross Dependency carry a government official on board. Hatherton (1990:270) believes that "in this way adverse impact by tourists has been minimised and no major problems have been encountered". However, due to the ambiguity of national jurisdiction in Antarctica, New Zealand can not require a ship that departs from South America for instance to carry a New Zealand official, even if the ship will visit the Ross Dependency. The United States also requires ships travelling to its bases in Antarctica to carry an observer (Sanson 1993:1; Wong pers comm). This can lead to duplication of effort, as a ship that is going to the Ross Dependency via New Zealand to visit both the United States McMurdo Base and the New Zealand Scott Base, will end up carrying two observers. This may penalise the tour operator, as the ship will have two paying passengers less resulting in a loss of revenue.

It may also occur that a tourist ship travelling to both the Antarctic and New Zealand's sub-Antarctic islands via New Zealand, will be requested to carry an observer representing the Department of Conservation (DoC), and a Ministry of Foreign Affairs and Trade representative (Cox (a) pers comm; Sanson pers comm; Sheppard pers comm). Both MFAT and DoC advise that occasionally there is difficulty in finding a representative who has both Antarctic and sub-Antarctic experience (Andy Cox pers comm; Sheppard pers comm). However, should this situation arise, the respective representatives are trained in the new area. As the New Zealand government requests the tour operators to carry their representative(s), and the operator is thus obliged to provide space, the cost of providing an observer (ie. salary) is carried by the New Zealand government.

The Ministry has attempted to approach the issue of Antarctic tourism by concentrating on practical and enforceable ways in which the requirements for environmental protection can be met (Wong pers comm). It believes that a major way to regulate the impact of tourism in Antarctica is to promote a mandatory international on-board observer system, similar to that already applied by New Zealand. The Ministry considers that regulating tourist

numbers to a particular site will be too difficult to implement in national law. Instead, it wishes to place more emphasis on safeguarding the environment by laying for instance board-walks in a frequently visited site, and to devise means to recover the cost of construction. This, the Ministry envisages, can be done by charging tour operators, who it believes are willing to pay and all legal instruments are already there (Wong pers comm).

Code of Environmental Principles for Tourism in New Zealand:

Community awareness of the environment, and the possible threats to it have grown markedly in recent times. At the same time, there is a growing awareness of the interdependence between tourism in New Zealand and the country's natural and scenic assets. To respond to these concerns the New Zealand Tourist Industry Federation (NZTIF) is promoting a code of environmental principles for tourism. The two main principles of the Code are to promote "environmentally sustainable tourist development so as to ensure that the tourist industry can continue to be based upon the natural resources of New Zealand in the long term"; and to "recognise that both development and conservation can be valid and complementary uses of New Zealand's resources". It was initially discussed with members of the tourist industry, and further developed in consultation with industry representatives and other interested parties.

The NZTIF believes that adoption of this Code is "the first step in an education process designed to demonstrate the interdependence of tourism and the environment and to emphasise the advantages to both the industry and the environment if an effective working relationship is developed". The Code emphasises protection of the natural environment, minimisation of tourist impact, and assessment and monitoring of any tourist development. Furthermore, it encourages liaison with different groups as well as education of both staff and visitors. Appendix 4.4 describes the Code in more detail. The author believes that this is an important step towards managing tourism in New Zealand in a sustainable manner. It is suggested that this Code may also be adapted by Ministry of Foreign Affairs and Trade to develop a more detailed Antarctic Visitor Code.

New Zealand, the Protocol and Tourism:

In many countries, national legislation supplements the Antarctic Treaty System (ATS) for the regulation of the tourist activities of their respective nationals (Beck 1990b:346). As detailed above, the New Zealand government augments its *Antarctica Act* with its policy on Tourist and Private Antarctic Expeditions. The New Zealand government does not object to tourism, as long as the operators and their passengers comply with the provisions of the Antarctic Treaty, and the Protocol as soon as it is ratified (Prior pers comm).

As noted in Chapter 2, five countries (Chile, France, Germany, Italy, Spain) put forward drafts on a Tourism Annex to the Antarctic Treaty in addition to the Protocol, at the sixteenth ATCM. The 1992 informal meeting on tourism before the seventeenth ATCM received high attendance, and there was an attempt to have a draft tourism annex agreed to. However, at the seventeenth ATCM New Zealand announced its opposition to an Annex on Tourism, and declared that the Protocol applies to all activities, in response to the debate whether tourism requires any additional legal measures further to those set out in the Protocol (NZ Submission 1992:2-3). The Ministry of Foreign Affairs and Trade has expressed concern that among the five countries requesting an Annex on Tourism, only Chile is actively involved in Antarctic tourism. It believes as the other nations are too far removed geographically as well as having little participation in Antarctic tourism, it is difficult for those countries to form an experienced opinion (Wong pers comm).

At the same ATCM (17th), New Zealand declared explicit commitment to make the Protocol work in practice and to embody it in effective national legislation. It notified the meeting that the government has already implemented on a provisional basis an informal process to apply the Protocol standards of environmental assessment to all New Zealand's activities in Antarctica. The government accedes that there may be value in developing and consolidating practical guidance for tourist operators in the continent, and stated that it welcomes the participation of the tourist industry. It noted that it will work with the tourist industry and with others to develop consistent practices for their activities in the Ross Dependency (NZ Submission 1992:1). Prior (pers comm) emphasises that already there is cooperation between the New Zealand government and tour operators, as tour operators make agreements to land a specified number of people at certain places (eg. scientific bases).

To ratify the Protocol on Environmental Protection to the Antarctic Treaty, the Minister of Foreign Affairs and Trade has introduced the *Antarctica (Environmental Protection) Bill* to the New Zealand parliament, which is expected to come into force from 1 November 1993. The NZAP will be operating under the spirit of the new legislation during the 1993-94 season (NZAP 1993a). Should this Bill become law, it will mean that anyone travelling to Antarctica from New Zealand will have to notify the Minister of Foreign Affairs and Trade at least 20 days before departure of any proposed activity, and advise whether an environmental evaluation of the proposed activity has been carried out. It will then be decided to carry out an environmental impact assessment should the proposed activity have more than a minor or a transitory environmental effect. The Bill currently does not clearly define minor or transitory, and is in fact worded vaguely.

All decisions regarding proposed Antarctic activities are at the discretion of the Minister of Foreign Trade and Affairs, who will also determine any fees (Costello pers comm). Since the Minister is also responsible for New Zealand's Antarctic scientific activities, this may lead to preferential treatment of Antarctic science. The Bill will apply to both New Zealanders and non-New Zealanders in the Ross Dependency. Elsewhere in Antarctica the Bill will apply to New Zealand citizens and people ordinarily resident in New Zealand; to members of expeditions to Antarctica which are organised in New Zealand or for which New Zealand is the final point of departure for Antarctica; and to people on board New Zealand ships or aircraft, or other ships for which New Zealand is the final point of departure for Antarctica. Thus, any tourist ships which travel to Antarctica via New Zealand will have to inform the Minister in writing. Tourist expeditions already contact the New Zealand Antarctic Programme to arrange a government observer, so advising the Ministry will probably not create much animosity. However, due to the great emphasis placed on the Minister's discretion, it may occur that Antarctic tour operators are required to undergo lengthy environmental evaluation processes. The Bill also does not address the issue of monitoring and enforcement.

The Ministry of Foreign Affairs and Trade believes it is premature to distinguish between government and other non-government activities until the Protocol has been ratified. It wants to ensure the Protocol is workable before applying any other ideas (Wong pers comm). The New Zealand government places its

emphasis on practical issues rather than concentrating on theoretical discussions to further the management of Antarctic tourism (Wong pers comm). It believes that the Protocol is currently sufficient to provide the framework for such regulation.

The size of the Antarctic continent is another reason that the Ministry believes the Protocol will be effective to control tourism. Antarctica is the size of the United States and Mexico combined, so it believes that overall the effects will be limited, although it does accept that the major problem is the concentration of the tourist activities (Wong pers comm). However, Chapter 2 showed that the site requirements for human habitation and infrastructure is precisely that for Antarctic flora and fauna, so that human activities on the Antarctic continent are directly competing with the polar wildlife (Brewster 1982).

The Ministry of Tourism does not have a written policy on Antarctic tourism. Nevertheless, the Ministry believes that, if environmental protection is the aim, the Protocol's focus on impacts, irrespective of who causes the impact, is a sensible approach. However, the Ministry is somewhat doubtful whether this approach can be implemented successfully. The Ministry may reconsider their position should problems arise due to lack of compliance or enforcement difficulties. In the meantime, the Ministry believes that additional annexes to the Protocol or separate conventions on Antarctic tourism are unnecessary (Costello pers comm).

Resource Management Act:

Earlier in this chapter, there was a brief reference to the *Resource Management Act* (RMA) 1991. The RMA is an Act to "restate and reform the law relating to the use of land, air, and water". The central concept of the RMA is the sustainable management of New Zealand's natural and physical resources, and often is considered to be the first of its kind. The focus of the Act is on the "environmental effects of activities rather than the activities themselves" (Ministry of Tourism (MoT) 1991:1). This means that the Act aims to concentrate on adverse effects rather than on controlling the activities themselves. It requires environmental results to be anticipated in policies. The use of Environmental Impact Assessment is critical in the conceptual framework of the RMA (Dixon 1993:239,242). The RMA has strict enforcement provisions, and intends that fines will be a strong deterrent. The Act sets out

offence provisions and company officers are personally liable for offences they knew or ought to have known about. Imprisonment is an option for punishment (MoT 1991:6). A major obligation of the RMA is the requirement for public consultation and notification (Sections 93-116).

Endorsement of the RMA has placed New Zealand at the forefront internationally by promoting legislation that enshrines the sustainable development and use of natural resources (Dixon 1993:249). Subsequently, its fundamentals could be used as a guide to the further management of tourism in Antarctica and the sub-Antarctic islands in conjunction with the management regimes established by the Department of Conservation, which are designed to ensure the sustainable use of the sub-Antarctic islands as a tourist resource (Hall 1992b) and can provide a model for the management of tourism on other islands and on the Antarctic (National Radio 1992). Under the Antarctic Treaty System, management of Antarctic tourism has evolved in an ad-hoc manner (Chapter 2). As management of Antarctic visitation requires careful evaluation of sustainable tourism, New Zealand could apply the models provided by the RMA and DoC to devise and implement an ecologically sustainable tourism management plan for the Ross Dependency. The RMA and the Environmental Protocol thus appear to be based on the same principle, as both concentrate on managing the effect of an activity. As the RMA has been in effect since 1991, it may serve as a working example to the Protocol.

A guided policy and management regime for the Ross Dependency could be taken from the National Policy Statement provisions in the RMA. Section 45 allows for a National Policy Statement which has as purpose to state policies on matters of national significance that are relevant to achieving the purpose of sustainable management of New Zealand's natural and physical resources. National Policy Statements are to be issued by central government (Dixon 1993:242). Appendix 4.5 outlines the issues that the Minister (for the Environment) has to consider in the preparation of a National Policy Statement.

The points most applicable to the creation of a New Zealand national policy statement on tourism to the Ross Dependency, as well as its effective management of the Ross Dependency in general, include analysis of the actual or potential effects of the overall use and protection of a resource, as

well as outlining New Zealand's interests and obligations in maintaining or enhancing aspects of the national or global environment. The guidelines further consider the effects or potential effects of the introduction or use of new technology or processes which may affect the environment, and analyse the scale or degree of change to an area because of its uniqueness or irreversibility. There are also provisions in the sections to look at and identify practices which can lead to the enforcement of the policy statement.

Jurisdiction:

New Zealand received its claim to a section of the Antarctic continent not by discovery, but through benefaction of British claimancy which delegated the oversight of the Ross Dependency to the governor-general of New Zealand. New Zealand came to regard the Dependency as a New Zealand rather than a United Kingdom claim (Auburn 1972:50). Auburn (1972:5) in fact believes that "for most of the nations operating in Antarctica a major motive is to preserve national claims. For New Zealand it is submitted that this motive is, in fact, dominant". However, New Zealand's claim has been reputed to be invalid as "effective occupation should be the main basis for sovereignty claims" (Barber and Selby 1983:467).

In the international context, it is very difficult for New Zealand to assert jurisdiction over its Ross Dependency. The Antarctic Treaty has frozen national claims to Antarctica, which means that it is very difficult for New Zealand to apply domestic legislation covering activities by nationals of other countries in its Ross Dependency. The United States in particular does not recognise any claims to the continent. The United States has a large scientific presence in the Ross Dependency on which the NZAP relies for logistic assistance (Scott 1991:79). Thus it is very difficult for New Zealand to demonstratively exercise its authority. In terms of regulating tourism, New Zealand is unable to control who goes where in the Ross Dependency. Its influence is limited to recommendation only (Sheppard pers comm). Since New Zealand has taken responsibility for the historic huts in the Dependency, it is only here that they can regulate visitor flow.

4.4 SUMMARY AND CONCLUSION:

The potential benefits for New Zealand to stimulate ecotourism are significant; the New Zealand Tourism Board indicating this by identifying `interest in the environment as a major theme´ as one of their targets (New Zealand Tourism Board 1991:10). The New Zealand tourism industry indeed depends on the maintenance of environmental quality as a major drawcard for international visitors. The Ministry of Tourism believes that New Zealand's "`clean green´ image is fragile, only safeguarded by sustainable management of the natural and physical environment" (MoT 1991:1). The development of sustainable tourism is becoming increasingly important within New Zealand. The fundamentals of sustainable tourism also apply to tourism in Antarctica and the sub-Antarctic islands. The following chapter will provide an analysis of the application of sustainable tourism to Antarctic and sub-Antarctic tourism, and accentuates the significance of New Zealand as a case study in the management of sub-Antarctic and Antarctic tourism.

Antarctic tourism is part of the New Zealand ecotourism equation. Whereas Antarctic tourism is not generally conducted from New Zealand by New Zealand companies, New Zealand ports are visited by international cruise ships before departing to Antarctica, or as the final destination of an Antarctic cruise. The majority of Antarctic tourists travelling on cruise ships practise ecotourism. They are generally high-spending, and may take holidays in New Zealand before or after their tour. The ships themselves also provision in New Zealand (Costello 1993:7). Although the author believes it would not be advisable to encourage Antarctic tourism, it would be beneficial for New Zealand to ensure that it receives some of the Antarctic tourism dollar by encouraging cruise passengers to spend their holidays in New Zealand.

Costello (1993:7) believes that the development of the `Antarctic Experience´ by the Christchurch Airport Company reflects efforts to encourage Antarctic tourism via New Zealand. However, this development has been a private effort reflecting the overall New Zealand government attitude. The government does not explicitly refute Antarctic tourism, but neither has it encouraged tourism to Antarctica, whether via New Zealand or any other nation. Ironically, the City Council of Christchurch, gateway to Antarctica, has publicly opposed Antarctic tourism, although it has been willing to promote itself as a centre to experience Antarctica at a distance (Josefa 1990:16). In fact, the `Antarctic Experience´

has been constructed alongside the New Zealand Antarctic Programme facilities.

New Zealand has enjoyed a privileged position in the regulation of Antarctica's future. Its sovereignty claim, in effect inherited from the United Kingdom, allows New Zealand to be a Consultative Party to the Antarctic Treaty, giving it full opportunity to promote measures which will enhance the protection of Antarctica. To date, the New Zealand government has principally encouraged activities which are government controlled and promote research. Tourism (and other non-governmental activity) has not been encouraged.

Unfortunately, the promotion of government-based activities in Antarctica, is also reflected in the Antarctic policy process, which appears to be rather exclusive to a few government departments, mainly the Ministry of Foreign Affairs and Trade. Antarctic tourism is an international and multi-dimensional phenomena, adequate regulation will require input from as many sources as possible. It is thus recommended that the New Zealand government endeavours to allow greater participation in the Antarctic policy process. Many of the perils associated with unsuccessful ecotourism can be avoided by ensuring adequate cooperation between relevant ministries and departments Sawyer (1991:5).

> If environmental damage occurs, the product loses its attraction. If tourism earnings are weakened, then a positive force for sustaining and developing the community and the environment is lost. It is in the interests of all sectors to develop a mutually beneficial, positive relationship (MoT 1992:5).

Graham (1987:19) emphasises this point by stating that the political momentum gained by open and interactive processes results in change because the interests of the community are continually being put before the people who make decisions in a way in which everyone can debate issues on their merits. International cooperation and information exchange should be aided by the establishment of the International Centre for Antarctic Information and Research (ICAIR) established at the International Antarctic Centre in Christchurch. ICAIR received initial assistance from the New Zealand government, and has subsequently become a joint initiative between New Zealand, USA and Italy. The Centre is politically independent, operating under

the umbrella of The Royal Society of New Zealand (New Zealand's science academy), and directed by an International Board of Trustees. The Centre contains an Antarctic Scientific Directory; an Antarctic Environmental Database as well as a Ross Sea Region Logistical Information Database. ICAIR encourages the sharing of its information as required under the Antarctic Treaty and Protocol (ICAIR 1992).

Tourism to the Ross Dependency could be a channel to justify claims to New Zealand's Antarctic territory (Hall 1992:a7). "From the perspective of countries such as ... New Zealand, tourism in Antarctica offers a mechanism to justify territorial claims and a possible source of funds to subsidise stations and scientific research" (Hall 1993:121). Although this may be a consideration of Chile and Argentina, this does not appear to be a motive of the New Zealand government.

In fact, although New Zealand has put a claim to a section of Antarctica, this assertion does not give it more authority to regulate tourism, even in the Ross Dependency, than any non-claimant nation, as under the Antarctic Treaty sovereignty claims are neither confirmed nor denied. The application of New Zealand legislation to non-New Zealand citizens is difficult under the Antarctic Treaty legal regime. Regulation of tourism under New Zealand law would be regarded as an exercise of sovereignty, which would very likely be challenged by other parties to the Treaty. Nevertheless, there is a great dependency under the Antarctic Treaty System on national legislation to regulate Antarctic tourism, as was shown in Chapter 2. Therefore, a more effective mechanism for controlling tourist activities within the Ross Dependency and throughout Antarctica may be the establishment of an International Convention on Antarctic tourism or a similar international framework (Hall 1992a:7).

The New Zealand government emphasises practical issues and believes that the Protocol is currently sufficient to provide the framework for the management of Antarctic tourism. However, in the White Paper on Antarctic Environment (MfE 1989:9) the last Labour government called for the negotiation of a range of conventions or other agreement to cover aspects such as tourism, environmental impact assessment, waste disposal and compliance. The document called for the agreements to be integrated under the Antarctic Treaty, but not as "one total all-embracing convention", as this "would be likely to take many years". The Protocol is however one single

agreement, and although it is a major step towards the protection of the Antarctic environment, it appears to aim to regulate a very diverse range of issues, which may not be individually covered appropriately by the Protocol.

New Zealand's emphasis on the practical aspects in the management of Antarctic tourism is important, such as its suggestion to establish an international pool of Antarctic observers similar to New Zealand's system, and charging operators a fee, which can be used to recover costs of the observers as well as being used for protective measures such as board walks. Antarctic tourism is still relatively `pure´, and the operators are still willing to place great priority on protection of the environment, so that implementation of the above suggestions will most likely receive industry support.

Antarctic tourists to the Ross Dependency would benefit from improved information from the New Zealand government, in the form of a much better presented `Code of Conduct´. The New Zealand Department of Conservation (DoC) has produced a code of visitor conduct to New Zealand's sub-Antarctic islands, which is attractive, comprehensive and informative. The author believes that the New Zealand government should follow the example of DoC and the IAATO to produce a set of recommendations for the Ross Dependency detailing more attractively and effectively suggested behaviour and interesting historical and natural features of the region. Improved information for the visitor could also provide a brief discussion of New Zealand's domestic laws which apply to New Zealand citizens and a summary of the Antarctic Treaty and Protocol. This will be of interest to Antarctic visitors, as well as to the general New Zealand public who may wish to further their interest in this part of New Zealand.

New Zealand's role in managing ecotourism in Antarctic will also require it to consider Antarctic ecology and the relation between ecology and human impacts. To manage the activities of tourists in the Ross Dependency the New Zealand government will need to identify sites which are likely to be affected by tourists, and produce management plans as identified under the Protocol. Management plans would have to consider the number of tourists which can be sustained in the Ross Dependency; the carrying capacity of sites frequently visited; and whether to concentrate or disperse tourist activities. However, the New Zealand government believes that regulating tourist numbers to a particular site will be too difficult to implement in national law (Wong pers

comm). Another feature of tourism in the Ross Dependency is that the operators are now offering helicopter flights into the interior. It will be important to consider access to unexplored areas. This may be difficult to implement on a national level, regarding the ambiguous issue of sovereignty, thus requiring the need for a wider tourism regime. Improvement of information exchange, both at general policy level, and for Antarctic tourism is also suggested as well as greater liaison between the Department of Conservation and the Ministry of Foreign Affairs and Trade. As the Antarctic Treaty System prevents application of national jurisdiction, New Zealand will have to consider the need for specific kinds of control and monitoring.

In general, the New Zealand government has taken a protective attitude towards the Antarctic environment, which may be due to the proximity of Antarctica to New Zealand. New Zealand is actively involved in the Antarctic Treaty System, which gives it full opportunity to promote international measures for the protection of Antarctica. The New Zealand government appears to take this responsibility seriously, as is shown in the progress to ratify the Environmental Protocol.

The New Zealand government approach towards Antarctic tourism (and other non-governmental activity) is however reticent and unsupportive. This is unfortunate as Antarctic tourism is most likely to continue to grow. It would thus be important for New Zealand to ensure that it establishes an open process to regulate Antarctic tourism and that ecotourism continues to be the predominant for of tourism to the Antarctic continent, so that visitation has the least impact on the natural environment.

Figure 5.1 New Zealand and its Sub-Antarctic Islands:

Source: Southern Heritage Expeditions 1993

CHAPTER 5 ECOTOURISM TO NEW ZEALAND'S SUB-ANTARCTIC ISLANDS:

5.1 INTRODUCTION:

> **The world today has lost all interest in the Auckland Islands ... as far as can be seen, the islands will have no future history. The bleak climate, the unproductive soils, and the isolation of the Auckland Islands under the changed conditions of a modern world, suggest that, in the loneliness of the Sub-Antarctic Ocean, they will be `world forgetting, by the world forgot´.**
> (McLaren 1948:102-103)

> **Last century, New Zealand's sub-Antarctic islands were touted as a farming resource. Today they are the subject of a new kind of economic activity, nature tourism, which is demanding a completely different style of management.**
> (Peat 1991:38)

It is often claimed that New Zealand's competitive advantage in the international tourism market, is its clean green image. However, Fyson (1991:22) warns that "there is an inherent potential for conflict between increasing recreational and tourism use of conservation areas and the preservation of those conservation values on which such activity depends". This is particularly relevant to the management of sub-Antarctic tourism, where increasingly there is greater pressure to allow visitation, without creating undue disturbance to the natural values of the islands (Peat 1991:14). Tourism to New Zealand's sub-Antarctic islands is not new; fare paying passengers were often carried on the early government steamers (Fraser 1986); but visitation of New Zealand's sub-Antarctic islands is becoming increasingly popular, underlining the need for careful management.

New Zealand administers five of the twenty-two islands or island groups in the Southern Ocean (Fraser 1986), and was the first country to establish reserves for the protection and preservation of sub-Antarctic flora and fauna when it introduced protective legislation for Adams Island in 1910 (Brewster 1982:59). This status was subsequently applied to all New Zealand's sub-Antarctic

islands. New Zealand's five sub-Antarctic island reserves include the Antipodes, Bounty, Auckland, Campbell and Snares island groups. These island reserves contain some of the world's last remaining areas of vegetation mostly unmodified by people or introduced animals. Each of the reserves has a distinctive flora and fauna of international scientific importance. They provide habitat and breeding areas for birds and marine mammals peculiar to the sub-Antarctic regions (DoC 1992a:1). Nevertheless, despite the emphasis on their protection, Sanson and Dingwall (1992:15) believe that "tourism has undoubtedly become one of the key issues in the management of the sub-Antarctic islands".

This chapter will discuss the unique values of the New Zealand sub-Antarctic islands, and how their rareness may be to the detriment of the region as it simultaneously generates visitation. Past human impact and present New Zealand efforts to protect the islands from further human modification are discussed. The management guidelines for tourism are reviewed with a discussion of their potential as a model for world wide protection by nations in charge of sub-Antarctic islands. This chapter will provide a comprehensive evaluation of sustainable tourism in the context of Antarctica and the sub-Antarctic islands.

5.2 LOCATION AND DESCRIPTION:

Biogeographically, the New Zealand sub-Antarctic islands fall within the province of Insulantarctica, one of the 227 provinces identified in a classification scheme to encompass the world's biogeographical diversity. Although in this thesis referred to as `sub-Antarctic´, the southern New Zealand islands are more appropriately considered as representative of a cool-temperate zone, characterised by a mean annual air temperature generally above 5°C, supporting vegetation, including trees and woody plants, and lying generally between the subtropical and Antarctic convergences (Molloy and Dingwall 1990:200; Higham 1991). Fraser (1986:42) however asserts that the five New Zealand groups as well as Gough Island and Macquarie Island are the world's only true sub-Antarctic islands, as they are influenced only by the ocean and are properly situated between the Antarctic and subtropical Convergences. Higham (1991:9) believes that "both physically and biologically, the New Zealand islands are widely representative of their

biogeographical realm, and are therefore of international significance". Figure 5.1 page 136, shows the location of the islands in relation to mainland New Zealand.

The New Zealand sub-Antarctic islands thus follow the characteristics of the other islands in the Southern Ocean as discussed in Chapter 3. They have very distinctive island environments, reflecting the overwhelming influence of their oceanic surroundings. The islands provide restricted habitats, and although there is a high degree of species endemism, ecological diversity is limited (Clark and Dingwall 1985:3-4; Fraser 1986; Chapter 3). The islands host a number of endangered species, and have significant breeding colonies of marine birds and mammals (Hall 1992b). The islands are also very vulnerable to disturbance, and they are difficult to restore (Molloy and Dingwall 1990:196).

New Zealand's five sub-Antarctic island groups lie scattered across the Southern Ocean, south and east of the South Island (Higham 1991). The Antipodes are the most remote of the New Zealand sub-Antarctic islands. Campbell Island is the most southerly of the islands at 52°53' South, and with its weather station is New Zealand's only inhabited sub-Antarctic island. It is also the world's major breeding ground of the majestic southern royal albatross. The Auckland Islands are by far the largest group and lie between latitudes 50°30' and 50°60' South. They have the most varied bird and insect life of all the groups. They are large enough to have elements of most of New Zealand's other sub-Antarctic islands, and a wider range of native flora and fauna than anywhere else in the sub-Antarctic, making them a very popular visitation site. The Snares Islands are the closest to New Zealand. North East Island, the largest of the Snares, is just over three and a half kilometres long, but is home to an estimated six million sooty shearwaters. The barren Bounty Islands are situated at 47°45' South and 179°02' East. All the islands are heavily weathered and eroded. There is no soil nor vegetation, and the islands provide very few landing places. When the sea birds leave at the end of the breeding season, the Bounties are the truly desert islands of the Southern Ocean. Although by far the least hospitable of New Zealand's sub-Antarctic islands, they were nevertheless the first to be discovered in 1788 (Fraser 1986; Higham 1991; Peat 1991:38).

The biota of the sub-Antarctic islands is a culmination of a long history of geographic isolation, species dispersal, climatic factors, and community interaction, which occurred without human interference until very recently (Higham 1991). The island vegetation is distinctive and contains some of the southern-most forests in the world. All the vegetated island groups have many plants considered to be rare, including 34 species on the Auckland Islands alone (*ibid*). Atkinson and Bell (1973:387 in Dept of Lands & Survey 1984:22) indeed stated that "each of the islands is unique in terms of the plant-animal system it supports. Together they are an integral part of the sub-Antarctic ecosystem".

A summary of the features of the New Zealand sub-Antarctic islands as well as Macquarie Island (which can be considered geophysically part of New Zealand's sub-Antarctic region although it is Australian territory) is provided in Appendix 5.1.

5.3 HUMAN HISTORY AND IMPACT:

The New Zealand sub-Antarctic islands have not been permanently inhabited, but nevertheless have a rich human history which extends over almost 200 years. Past human activities include sealing, whaling, exploration, colonisation and settlement, shipwrecks of the sailing era, farming, research, tourism and reserve management (Higham 1991; Peat 1991:38-39; Sanson and Dingwall 1992:11). All these activities have left their imprint and are of considerable historical interest and cultural value. Maori visited the Snares Islands and possibly other New Zealand sub-Antarctic islands for food-gathering purposes (Hall 1992b). Auckland Island was inhabited by a small group of Maori from about 1842 until 1856. In addition to the castaway depots established for the survivors of the not infrequent shipwrecks, there were attempts at settlement in Port Ross and on Enderby Island by English settlers from 1849 to 1852. Associated with these activities were the introduction of cattle, goats, pigs and sheep (Fraser 1986).

Unfortunately, the first major impact of people in the sub-Antarctic was that of exploitation, in particular the slaughtering of marine mammals. Moreover, with the activities of sealers, colonists and farmers came rats, cats and mice (Clark and Dingwall 1985; Fraser 1986; Higham 1991). On the main Auckland Island,

pigs that were put ashore, and abandoned cats created havoc with the vegetation and ground-nesting birds, and rats similarly wiped out most of the ground-burrowing sea birds on Campbell Island (Fraser 1986:27). Only the Bounty and Snares Islands have been spared from the introduction of exotic animals and thus are largely unmodified increasing their preservation value (Clark & Dingwall 1985:78). Adams Island (Auckland Islands group) is considered to be the largest island in the world today spared the introduction of mammalian predators; it does not even have mice (Peat 1991:39).

Polynesians almost certainly never reached the sub-Antarctic islands until after the arrival of the European in New Zealand (Foggo 1990:215). This makes the sub-Antarctic islands very special in a global context. Their colonisation by humans has been within the last 200 years, within the period of detailed, written history and the era of science, and not much before the advent of photographic technology. The islands also lacked the selection pressures of moa browsing and grazing which occurred on mainland New Zealand (*ibid*). The sub-Antarctic islands therefore comprise an almost unlimited opportunity for understanding the dynamics of vegetation processes in the absence of herbivorous vertebrates and with a mere 200 years of human interference.

Fraser (1986:131) believes that "the handful of truly unspoilt sub-Antarctic islands are those which have been too small, remote, or dangerous to exploit in the past". Among these are the sheer-sided offshore stacks such as Jacquemart Island in the Campbell group and Leeward Island in the Antipodes, or some of the steeper Bounty Islands. Apart from these few islands there are effectively no places people have reached which they have not changed or affected to some extent. Nevertheless, compared to many continental regions, the New Zealand sub-Antarctic islands are virtually pristine (Hall 1992b). The Bounties and Antipodes are virtually unscathed; Disappointment Island, Adams Island, and the Snares have no introduced animals or rodents, and more or less have evolved undisturbed since their creation. Such places are extremely rare and are of enormous ecological importance to the world (Fraser 1986:138). Significantly, their wilderness character has become a major factor in the development of the tourism potential of the New Zealand sub-Antarctic islands, both on their own and in conjunction with visits to the New Zealand Ross Dependency.

5.4 SUB-ANTARCTIC ISLAND MANAGEMENT POLICY:

Responsibility for management of New Zealand's sub-Antarctic island Nature Reserves lies with the Department of Conservation (DoC). Under the *Conservation Act* 1987, the Department's mission is to conserve the country's natural and historic heritage (Edmonds 1990:284). Policy development originates from Head Office in Wellington, and the management of the conservation estate is administered by 14 regional conservancies. The Southland Conservancy (based in Invercargill) is responsible for the management of the sub-Antarctic island reserves (Sanson and Dingwall 1992:1-2). Public participation in the management of the sub-Antarctic islands is enhanced through the role of the Southland Conservation Board. Members of the Board are appointed by the Minister of Conservation to approve and review conservation management strategies and plans and to monitor the effectiveness of these documents. The New Zealand Conservation authority, which is a separate statutory body appointed by the Conservation Minister, provides a national overview in the approval process of conservation management strategies and plans (Sanson and Dingwall 1992:2).

As stated above, New Zealand was the first country to establish reserves to protect and preserve the sub-Antarctic flora and fauna. Adams Island (Auckland Islands) was made the first flora and fauna reserve in the New Zealand sub-Antarctic in 1910, although at that time land was still being farmed on Campbell Island and the main Auckland Island. The rest of the Aucklands were set aside in 1934, and gradually the other islands followed (Brewster 1982; Fraser 1986). By 1961, all five of New Zealand's sub-Antarctic groups were flora and fauna reserves. In 1978, they were gazetted as Nature Reserves, restricting landings and visitation on the islands, and in 1986 they became National Reserves. As declared National Nature Reserves, New Zealand's sub-Antarctic islands receive the highest form of statutory protection available, a status which is only accorded to areas whose natural ecosystems are of outstanding scientific value. The status of National Reserve requires an Act of Parliament to alter any conditions pertaining to the Reserve (Fraser 1986; Molloy and Dingwall 1990:196).

The management of the islands is governed by the *Reserves Act* 1977. This act provides for the protection in perpetuity of the indigenous flora and fauna, ecological associations and natural environment, and for extermination as far

as possible of exotic flora and fauna of these islands (Sanson and Dingwall 1992:2). The overriding aim of management of National Nature Reserves is to safeguard numbers, natural distributions and interactions of indigenous plants and animals (Peat 1991:40; DoC 1992a:1). These aims are contained in a set of management plans. Other uses, such as tourism can only be allowed provided that the primary management objective of protecting the natural ecological values of the islands is not imperilled (Sanson and Dingwall 1992:2).

All the island groups have individual management plans. Management plans have been prepared, approved and published for the Auckland, Campbell and Snares Island Groups. The plans for the Antipodes and Bounties have not been published, but they are recognised as statutory documents (Fraser 1986; Sanson and Dingwall 1992:2). These plans detail management measures regarding granting of permits, activities permissible on the islands, construction of buildings, frequency of visits, precautions against introductions of animals and plants, economic exploitation, transport on and near the islands, waste disposal, pollution, and management of adjacent waters (Clark and Dingwall 1985:78, 84). Appendix 5.2 provides an outline of the management plans for the Auckland, Campbell and Snares Islands.

In addition to national protection legislation, the New Zealand sub-Antarctic islands have also received ranking under the International Union for the Conservation of Nature and Natural Resources (IUCN) protected area classification system. All five island groups fall under Category I, Scientific/Strict Nature Reserve[1], indicating their importance and the need for a high level of protection and management (Clark and Dingwall 1985:168).

A conservation management strategy is currently being written for all New Zealand's sub-Antarctic islands (Andy Cox pers comm). This aims to set longer-term objectives of the Department's integrated management of natural and historic resources, tourism and other conservation purposes consistent with existing New Zealand Government legislation. The Department proposes to have this document in draft form in 1993, prior to a period of public consultation (Sanson and Dingwall 1992:2).

---

[1] Scientific/Strict Nature Reserve: intended to protect representative samples of the natural environment, primarily for scientific study, monitoring and education. Public access generally not permitted (Mossman 1987:5).

The Department of Conservation is not only responsible for the protection of the islands' natural features, but it has also written a draft historic resource management strategy for the historic sites on the sub-Antarctic islands (Andy Cox pers comm). The strategy identifies three key components; survey, evaluation and protection of the resource. It concentrates on a theme approach with active conservation measures designed to protect the best remaining example of each. A conservation plan is to proceed any on-site or active conservation management, and should be consistent with the over-riding principle of preservation with minimum alteration to the historic places as found. Priority will be given to keeping historic artefacts in-situs on the islands except where off-site conservation measures are necessary to ensure the protection of the resource (Peat 1991:42; Sanson and Dingwall 1992:11; DoC 1993). These historic sites also hold a fascination for tourists.

World Heritage Listing:

World Heritage Sites (designated under the UNESCO World Heritage Convention) are regarded as being outstanding representatives of the world's natural and cultural heritage (Molloy and Dingwall 1990:194). These sites are considered to be of such universal value that they should be included within a global network of sites, and their protection would be the responsibility of all nations. World Heritage Sites complement the conservation protection given by individual countries. The New Zealand mainland biota and landscapes are already well-presented in existing and proposed World Heritage sites, but the outlying islands are also important components of New Zealand's natural heritage (Molloy and Dingwall 1990:196). The New Zealand Royal Forest and Bird Society has been actively seeking recognition of New Zealand's sub-Antarctic islands as World Heritage Areas.

Molloy and Dingwall (1990:196) believe that World designation for New Zealand islands would not only promote protection of the islands but would also add international prestige to New Zealand's island conservation work and serve as an influential force for island protection elsewhere in the world. Sanson and Dingwall (1992:2) suggest there is some merit in linking a New Zealand proposal for World Heritage status for the islands with the Australian proposal for Macquarie Island in terms of their location in a similar biogeographic region. The IUCN has set up a working party of representatives from countries with responsibility for sub-Antarctic islands (including New

Zealand) to assess and report on the application of the World Heritage Convention to the islands of the Southern Ocean (NZAS 1993b:22).

To be included in the World Heritage list, the proposed site has to meet the following criteria:

- Sites nominated should be outstanding examples representing major stages of the earth's evolutionary history.
- Sites nominated should be outstanding examples representing significant ongoing geological processes, biological evolution, and man's interaction with the natural environment; as distinct from the periods of the earth's development, this focuses upon on-going processes in the development of communities of plants and animals, landforms, and marine areas and freshwater bodies.
- Sites nominated should contain superlative natural phenomena, formations or features; for instance, outstanding examples of the most important ecosystems, areas of exceptional natural beauty, or exceptional combinations of natural and cultural elements.
- Sites nominated should contain the most important and significant natural habitats where threatened species of animals or plants of outstanding universal value from the point of view of science or conservation still survive (Molloy and Dingwall 1990:197-200).

According to the analysis provided by Molloy and Dingwall (1990:205), the New Zealand sub-Antarctic islands correspond to all four criteria. They further maintain that the New Zealand sub-Antarctic island groups,

> which are all strictly protected and are managed to preserve or enhance a wide range of conservation values, and which collectively represent the diversity of landscapes and biota present in their biogeographical zone, are therefore the principal candidates for World Heritage status from among the cool-temperate islands of the Southern Ocean.

The advantages of designating World Heritage status to the sub-Antarctic islands include international prestige and recognition of their value to global conservation, to science and to society. While the greater exposure would increase the obligation for environmental protection, it can also generate considerable economic activity through increased tourist interest and activity

for the New Zealand government. This would of course necessitate careful management. World Heritage status can also be used to promote the cause of conservation generally, through increased public awareness and sponsorship of protected areas (Molloy and Dingwall 1990:197).

Although World Heritage status would enhance the islands' appeal (Peat 1991:43), there are, however, disadvantages associated with the designation of World Heritage status, in particular as the sub-Antarctic islands have very fragile ecosystems. The increase in pressure for public visits can hold the allure of an additional source of revenue for conservation managers who always seem under pressure for operational budgets (Molloy and Dingwall 1990:197). The desire of fees from entry permits must be carefully balanced against the need to hold visitor numbers to a level and frequency which does not place the island ecosystem at risk. Particularly as tourism has already impacted several sub-Antarctic island environments (Hall 1992b).

5.5 TOURISM IN NEW ZEALAND'S SUB-ANTARCTIC ISLANDS:

> **With the recent boom in `nature tourism', the Auckland Islands, along with Campbell, Bounty, the Antipodes and the Snares, are becoming popular destinations for the more adventurous.**
> (Pope 1990:105)

The New Zealand sub-Antarctic islands have been the subject of tourist visitation since the end of the nineteenth century, although commercialised tourist visitation to the islands did not commence until the late 1960s. Fare paying passengers were often carried on government steamers which supplied castaway depots. In the summer of 1969-70, the Danish ship *Magga Dan*, chartered by Lars Lindblad took tourists to both Auckland and Campbell islands en route to Antarctica (Williams 1990:31). Between 1968 and 1993, an estimated 2,850 people have visited the islands on ship-based tours (Sanson 1992) as shown in Table 5.1. Nevertheless, this figure is almost certainly an underestimate as numerous yacht and fishing vessel visits have occurred in the past two decades which have either not received approval by the relevant management authority or been observed by scientific and meteorological staff based on the islands.

Table 5.1 Known Tourist Visits to New Zealand's Sub-Antarctic Islands 1967-1993:

Cruise Season	No. of Ship Visits	No. of Passengers
1967/68	2	45
1969/70	-	-
1970/71	2	160
1971/72	-	-
1972/73	-	-
1973/74	1	90
1974/75	-	-
1975/76	-	-
1976/77	-	-
1977/78	-	0
1978/79	-	-
1979/80	1	90
1980/81	1	90
1981/82	2	180
1982/83	2	179
1983/84	2	190
1984/85	-	-
1985/86	1	100
1986/87	1	125
1987/88	3	45
1988/89	3	47
1989/90	5	72
1990/91	12	812
1991/92	2	15
1992/93	9	600*
Total	49	2850

*Proposed figures for the 1992/93 season.

Source: Sanson 1992:144; Sanson and Dingwall 1992:23; Hall and Wouters 1993.

As mentioned in the previous chapters, visitation to sub-Antarctic islands is a major component of Antarctic cruise tourism. Many cruise ships which pass through New Zealand en route to Antarctica, also increasingly visit its southern islands (Peat 1989). Before the mid 1980s, the New Zealand sub-Antarctic islands only received infrequent visitation from commercial tourism vessels such as the *Lindblad Explorer* (Lindblad Travel) and *World Discoverer* (Society Expeditions). Since then, New Zealand-based companies, such as Discovery Charters South Seas and Southern Heritage Tours, are marketing yacht-based tours to the islands alone for up to a maximum of 20 passengers. There are thus two types of tourist operator working in the New Zealand sub-Antarctic:

- International cruise ships visiting the islands en route to and from Antarctica carrying 90-160 passengers that visit two or three sites only.

- New Zealand boats carrying up to 25 passengers on 10-20 day tours of principally Auckland and Campbell Islands, with numerous site visits (Sanson and Dingwall 1992:15).

Both types of tourist vessel are increasingly visiting the sub-Antarctic islands (Peat 1989). Over the years a steady trickle of private motor boats and yachts have also visited the sub-Antarctic islands.

The total applications for the 1992-93 season was 13 cruises with 750 passengers (Sanson and Dingwall 1992:15). The actual figures for the 1992-93 season are as shown in Table 5.2. Campbell Island received a record eight visits from tourist ships. The *Pacific Ruby* chartered by the New Zealand company Southern Heritage Tours visited the New Zealand sub-Antarctic islands five times. During the 1992-93 season, the *Frontier Spirit* and the *Kapitan Khlebnikov* also visited the sub-Antarctic islands. Visits by these last two vessels were usually of half a day's duration and their passengers were confined to the board walk areas of both Campbell and the Auckland islands. Visits by the smaller vessels (about 20 pax) were usually extended a little beyond the board walk areas. Each vessel carried a New Zealand government representative and lecturers (NZAS 1993a:395).

Table 5.2 1992-93 New Zealand Sub-Antarctic Island Tourist Numbers:

Ship	No of Voyages	Passenger Nos
(Quark) *Kapitan Khlebnikov*	1	85
(Seaquest) *Frontier Spirit*	3	(Voyage 1) 95
		(Voyage 2) 107
		(Voyage 3) 118
(NZ Nature) *Pacific Ruby*	5	76
	Total	**481**

Source: Sanson pers comm

There are thus a variety of ways to get to the region, ranging from large luxury liners, to smaller motorised or sailing charter vessels, to private yachts

(Williams 1990:31). These varying ways in which visitors can travel to the sub-Antarctic complicate the issue of regulations.

Tourism Attractions:

> **Islands attract visitors for their isolation, high biological and scenic values, and the sense of adventure that an island visit holds ... Islands, particularly those under some form of restoration or protection, offer the nature-seeking recreationist an inspiring environment.**
> (Booth 1990:278)

Booth (1990:278) indeed asserts that it is likely that the designation of an island under protection or restoration status will increase the number of visitors wishing to go there. This assertion is highly applicable to tourism to the New Zealand sub-Antarctic islands, and may be one of the strongest factors for those who visit the island reserves.

Historic sites are of attraction to visitors. Among them are a cemetery at Port Ross, Auckland Island, which represents the short-lived whaling-based Hardwicke settlement of the 1850's; a World War II Coast watch lookout on Auckland Island, a castaway depot on Enderby and another on Antipodes; whaling relics on Snares and Campbell Islands; and the remains of the old sheep farm on Campbell Island (Peat 1991:42). Campbell Island is also the only site in the New Zealand sub-Antarctic where people are permanently based at the meteorological station (Mackenzie 1989:22).

The sub-Antarctic islands are notable for the abundance of wildlife they support. In particular the populations of birds on the islands are immense. The Snares are estimated to harbour over six million breeding seabirds, which is comparable to the total number of seabirds around Great Britain and Ireland. The Auckland Islands support the world's largest breeding populations of wandering albatross and shy mollymawk, and Campbell Island accommodates the world's largest breeding population of royal albatross. The Auckland Islands are also the principal breeding ground of one of the world's rarest seals, the Hooker's sea lion (Higham 1991). Molloy and Dingwall (1990:203) believe that the scenic quality of the islands and their aesthetic appeal are "such as to have an emotional impact on all who visit them".

As in the Antarctic and the other sub-Antarctic islands, the summer cruises to New Zealand's sub-Antarctic islands coincide with breeding times. This creates both an attraction for tourists as well as a problem. Some sites are more sensitive than others, such as Enderby Island, where sea lions are easily disturbed (Peat 1991:41). The recognition that any visit can put the natural ecosystems of the islands at threat (principally through the risk of accidental introduction of rodents or new flora and disturbance to breeding animals), has resulted in the development of a set of guidelines setting out strict management procedures for both types of operation (Sanson and Dingwall 1992:15).

Tourism Guidelines:

The Department of Conservation does not see its role as a promoter of tourism in the sub-Antarctic, but rather its vocation is to manage tourism so that it has the least impact (Peat 1991:40). The Department has prepared specific guidelines on tourism to the New Zealand sub-Antarctic islands to elaborate the policies on tourism contained in the management plans. The management plans have general recommendations for visitation management. The tourism policy for the Auckland Islands is,

> To permit visits to selected areas of the reserve by tourists but under such controls as deemed necessary to ensure protection of its natural features, ecosystems and cultural values... Cruising expeditions must have a genuine educational or inspirational purpose relating to better appreciation of nature... Often the most spectacular sight-seeing is obtained from the sea, and this activity is not restricted (Department of Lands and Survey 1987:14).

A similar policy exists for the Campbell Islands (pp51-52). It is the intention of the Department of Conservation that both island groups will be managed according to `wilderness´-type visiting codes, "visits are limited in number, the landings are supervised by a representative of the department, are under strict supervision and are of short duration" (Department of Lands and Survey 1983:14). Visits to the Bounty Islands are limited to specialised interest groups which have received permission from the Department of Conservation (Peat 1989) but the Snares Islands are not open for tourism.

A quota of 500 tourists per season was permitted for the Campbell and Auckland Islands in 1990/91 and a maximum of 600 people were permitted to land at any one designated tourist site in 1992/93 (Peat 1991:40; DoC 1992a:3). A maximum of 20 visitors to one guide is maintained for all landings, except on the Bounty Islands where the ration is one guide per ten visitors. No overnight stays on the islands are allowed unless specially authorised. Most of the visitation occurs on the main Auckland and Campbell Islands and on Enderby Island. However, to reduce visitor impact on the most popular sites (such as Enderby Island), several new sites have been made available, for example Lake Hinemoa track and Hadfield inlet (Auckland Island) (Sanson and Dingwall 1992:16).

Tourist visits are by entry permit only (*Reserves Act* 1977) to designated sites on modified islands, and have to be accompanied by a Department of Conservation Representative[1]. These representatives are there to ensure the strict regulations are complied with (Williams 1990:32). The representatives aim to encourage cooperation and greater understanding of what the visitor is seeing, and the need for reserve management. People ashore have to be carefully controlled as the ground is easily damaged because of the wet climate and peat soil, and is slow to recover (Fraser 1986). Upon completion of the voyage, a report on the cruise and recommendations where necessary are made. The author believes that it would be important to formalise the standard of reporting, as there appears to be some variation among the cruise reports examined.

No landings are permitted on pristine or near pristine islands (eg Snares, Antipodes, Adams and Disappointment Islands) (Peat 1991:40; DoC 1992a:1). A maximum cruise ship size of 160 passengers has been established for cruise ships visiting the islands and a visitor monitoring programme has also been in place since 1990 (Sanson and Dingwall 1992:16).

The Department charges a permit fee and a visitor impact fee. The visitor fee varies according to the size of the vessel. For the 1992/93 season the fees

---

[1] *Representative*: Department of Conservation employee or Honorary Ranger whose role it is to protect the ecological values of the subantarctic islands in accordance with specified Departmental guidelines, management plans for the islands, Government policy and legislation, and to monitor the effects of tourism on the islands. Note: that a representative is specifically not a 'guide' but a representative may assist in a guiding capacity at the discretion of the Regional Conservator. *Guide*: Is an individual with experience of New Zealand's subantarctic islands and approved by the Department of Conservation (DoC 1992a:2).

were: cruise ships (30-180 persons maximum), NZ$135 per passenger; tour boats (30 persons maximum), NZ$190 per passenger (minimum fee of NZ$2,800); and private yachts (1-10 persons), NZ$190 per crew member. These fees are directed towards management programmes such as the construction of over a kilometre of board walk on Campbell Island to allow tourists to visit an Albatross colony with minimal impacts on the environment, visitor impact monitoring, guidebooks, the provision of a New Zealand government representative, a rodent contingency plan to prevent the accidental introduction of rodents onto the islands, and the payment of a DoC resource rental (Peat 1991:40; Sanson 1992; Sanson and Dingwall 1992:17). For the 1992-93 financial year, approximately 0.34 percent of the total Department of Conservation budget is being spent on sub-Antarctic management, of which about 16 percent should be returned as revenue, that is tourism impact fees (McClelland pers comm). There is increasing interest in visits by private yachts to the islands, but all visitors are treated similarly for entry permit procedures (Sanson and Dingwall 1992:17). Overseas tourist ships are required to have a current deratting exemption certificate as part of the permit to land on the islands.

Visitors to Campbell Island and Auckland Island generally support the concept of board walks to protect the fragile environment, although some found the spacing between the slats too wide (Cooper 1993:9; Cessford and Dingwall 1993; Mahoney 1993). Several passengers in fact suggested the establishment of a board walked loop at the saddle, and a restriction on movement off it could in time be necessary to prevent damage to plants and peat. Indeed, without the board walk very few passengers would have been able to reach the saddle and return (Cooper 1993:9).

There are general guidelines with which visitors have to comply, as well as specific conditions and restrictions for visits within a particular island group (Peat 1991). For example, the Department does not allow helicopter landings and overflying without separate prior approval. The guidelines are intended to assist the Department of Conservation as managers of the reserves, tourism operators, and others wishing to visit the reserves. Key elements of the Department's strategy for tourism are given in Figure 5.2. The guidelines are detailed in Appendix 5.3.

Figure 5.2 Department of Conservation Management Strategy for Tourism:

Strategy	Details
Guide-lines on tourism/entry permits	A set of guide-lines on tourism is given to each tourist operator containing conditions reinforced in the signed entry permits.
Limitation on Islands and Sites	No visits are permitted to any of the less modified or unmodified islands which have high conservation values (eg Snares, Adams and Antipodes Islands) although zodiac cruising is allowed at these locations. Elsewhere a series of visitor sites has been established and a maximum limit of 600 visitors per site introduced. The majority of visits occur on the main Auckland, and Campbell Islands and on Enderby Island. Several new sites have been made available (eg Lake Hinemoa track and Hadfield Inlet) to reduce visitor impact of the most popular sites (eg Enderby Island).
Departmental Representatives	The presence of a departmental representative on each tour boat is regarded as the key to compliance with the Department's visitor guide-lines and the emphasis on rodent and plant quarantine measures and confining visits to environmentally acceptable sites. The representatives also act in an interpretation and guiding capacity, while operators must comply with guiding rations of 1 guide to 20 visitors.
Managing Impacts	A maximum cruise ship size of 160 passengers has been established for cruise ships visiting the islands and a visitor monitoring programme has also been in place since 1990. On potentially high impact sites (eg Campbell Island) extensive board-walks (2.3 km long) have been constructed at considerable expense to provide access for visitors while minimising disturbance to wildlife, vegetation and soils. A minimum viewing distance of 5 metres is enforced when viewing wildlife with all animals given the right of way. Rodent quarantine precautions are rigidly enforced and a full set of rodent bait stations is maintained in Invercargill for deployment in case of accidental introduction of rodents.
Tourism Revenue	The department recovers costs of managing visitor impacts, quarantine, the provision of a departmental representative and resource rental through its tourism impact and facilities fee.
Permit Application Fee	NZ$56.25 per cruise.
Tourism Impact Facilities Fee	Small Ships (<30 pax) NZ$190 per passenger ($2800 min fee). Cruise Ships (<160 pax) NZ$135 per passenger. This money is spent directly on the management of the reserves and human impacts.

Source: Sanson and Dingwall 1992:15-17

Nevertheless, in addition to the more traditional forms of visitation, people also participate in other activities around New Zealand's sub-Antarctic islands, such as diving and kayaking (Williams 1990:33). The abundant wildlife makes diving attractive, although it can be hazardous. Sea kayaking is rated as a `hard´ adventure due to the dangerous coastlines, the huge waves, and the

usually constant heavy swells. Campbell Island has been circumnavigated by kayak. These forms of activity add another element to the management of sub-Antarctic tourism.

The Department of Conservation places great emphasis on education and has produced a code of conduct which is contained in Appendix 5.4. Individual copies of the sub-Antarctic Island Guidebook are given to each tourist visiting the islands as part of their entry permit and to assist in interpretation (Sanson and Dingwall 1992:17) as well as a copy of the Subantarctic islands Minimum Impact Code which is presented as a small, easy-to-carry leaflet. A very important role of the departmental representatives is to ensure that visitors are well aware of plant quarantine measures adopted by the department to ensure the ultimate protection of the islands from new introductions (Sanson and Dingwall 1992:7). The Department of Conservation believes that the policy of insisting on a guide for every 20 visitors is central to successful management (Peat 1991:41).

DoC's tourism strategy has adopted ideas from the Galapagos Islands National Park (Peat 1991:40-41; National Radio 1992), which is a World Heritage Site administered by Ecuador. In turn, the New Zealand sub-Antarctic island management plans have greatly influenced the management of Macquarie Island. DoC has established a close association with the Tasmanian Department of Parks, Wildlife and Heritage administering Macquarie Island, which has adopted similar costing and management strategies and guide-lines for tourism operations. The two departments have worked closely on devising tourism guidelines for sub-Antarctic tourism because after visiting the New Zealand islands some cruises also visit Macquarie Island (Peat 1991:41; Hall, McArthur and Spoelder 1992; Sanson and Dingwall 1992:18).

The sub-Antarctic programme advocated by DoC receives substantial support from operators. However, the pricing policy employed by DoC is seen by several small-scale operators as discriminating them in favour of the larger cruise ships. The smaller operations feel that their own operations are more environmentally friendly than that of the large cruise-ships, yet it is felt that the DoC pricing policy acts against their own ventures and fails to appreciate the commercial context for small-scale special interest tourism operations. Furthermore, several operators have argued that their knowledge of the islands either matches or is better than those of the New Zealand government

representative that they have to take on board. Thus the requirements of electing a government representative may have to be changed. However, should the small-scale tour operator be allowed to act as a DoC representative, a conflict of interest may occur.

Public Education:

The Department of Conservation recognises that only a small proportion of the general public will ever visit the island reserves. To enhance public awareness and appreciation of the natural and historic features of the sub-Antarctic islands and their ecological significance, priority is given to interpreting the natural and cultural values of the islands on mainland New Zealand. This commitment is included in the islands' management plan, for example in the Campbell Islands Management Plan Policy on Interpretation (Dept Lands and Survey 1983:64) it states, "To ensure public awareness and appreciation of the natural and historic features of the reserve and its ecological significance."

Since 1987, several significant developments have occurred, in particular a sub-Antarctic visitor centre at the Southland Museum in Invercargill, which is devoted exclusively to New Zealand's sub-Antarctic islands. Its `Roaring Forties Experience´ gallery will contain a representative range of historic relics from the sealing, whaling, shipwreck, farming and Coast watch periods, as well as the main features of the sub-Antarctic natural history (Peat 1991:42-43; Sanson and Dingwall 1992:17).

Other projects include a well-presented colour guidebook to the sub-Antarctic islands and an `Art in the sub-Antarctic´ expedition. Well-known artists were invited to the sub-Antarctic islands in 1989 for three weeks to record their impressions. Their brief was to produce a creative response which could be shared with the wider New Zealand public on their return (Booth 1990:280; Pope 1990:90; Sanson and Dingwall 1992:18). The visitor booklet provided by the Department of Conservation provides an integrated portrayal of the sub-Antarctic islands' geomorphology, maritime, botanical, zoological and human history and is very attractive and well presented. Cooper (1993:8) notes that the sub-Antarctic guidebook is very well received by passengers with considerable favourable comment being made. He suggests that it would be

desirable to produce German and Japanese language editions as non-English speaking nationals make up a significant percentage of sub-Antarctic visitors.

In the 1990/91 season, the Department of Conservation placed a recreation planner on one of the cruises visiting the sub-Antarctic islands. Her task was to monitor the flow of visitors at each landing site in order to assess the impacts and the degree of `customer satisfaction´. On deliberation of the report DoC may review its policy of 600 visitors per site (Peat 1991:41). During the 1992-93 season, the Department of Conservation conducted another sub-Antarctic Islands visitor survey (Cox pers comm). Questionnaires were given to passengers on a cruise ship visiting New Zealand's sub-Antarctic islands prior to, and after visitation of the islands. The pre-visit questionnaire asked the passengers about their expectations. The post-visit survey examined passenger experience on the island visit, such as visitor impacts on plants and wildlife, and their perception of the way in which the island is managed (DoC 1992b). Since some questions were repeated in both studies, comparisons can be made. With the results, DoC hopes to gain a better understanding of visitors to the sub-Antarctic islands. Surveys such as the above can make a valuable contribution in analysing visitor needs as well as their understanding of the natural environment so that improvements can be made in the education of sub-Antarctic visitors.

The 1990/91 survey appeared to reinforce previous casual observations. Most tourists belonged to the older age groups, are most often American, from professional backgrounds or retired. Overall satisfaction with visits appears to be high and resulted in positive experience outcomes. In particular, the unique wildlife and wilderness characteristics of the islands was valued. Therefore, the market for shipborne tourists appears to be largely met by the opportunities provided. However, should activities or impacts occur which compromise the perception of a pristine state, the values attributed to the islands by visitors will diminish. This has management implications, as it appears that low impact management receives support and justification from the needs of the tourists, in addition to their ecological significance. The positive attitudes revealed by tourists toward island reserve management should also reduce the potential for adversarial relationship between tour operators and managers (Cessford and Dingwall 1993).

As in the Antarctic, conservation education is likely to reflect in more appropriate visitor behaviour on islands, as well as improved environmental behaviour on later visits and visits elsewhere. By building on the existing environmental ethic of the visitor, island managers can enhance conservation awareness and thus gain public support for conservation (Booth 1990:279). In New Zealand there is still a chance to maintain something of that which was there originally: something of the primeval landscape and its creatures. Islands have a special role in increasing public awareness of conservation. They are, in a sense, symbols of what New Zealand was once like. Edmonds (1990:285) believes that island management has to be more than just the maintenance or restoration of ecological balance but also has to be seen by the public as contributing in a wider way to New Zealand. It is here that links between islands as symbols of national identity and the conservation of their flora and fauna are so important.

Most people will not derive the benefits of the sub-Antarctic islands directly by visitation, thus indirect visiting via television, books, studying scientific reports, or by growing an unusual island variant in the garden, are important vicarious means to foster conservation support. These methods may in fact enhance conservation benefits as they have minimal direct impact (McLean and Sharp 1990:184). Some people simply benefit from knowing the islands exist, and that policy is aimed at preserving them for future generations. However, so that people gain by the islands' existence, information flow is very important, such as information that the islands exist; what is on the island; or that the state of the island is being maintained or enhanced. The heritage interpretation which the Department of Conservation provides the visitor and the general public about the sub-Antarctic islands is detailed, and could serve as an excellent example for Antarctic education provided by the New Zealand government, as well as the collation of information to educate the ever-increasing numbers of visitors who come to New Zealand for a natural experience.

Environmental Monitoring and Compliance:

Monitoring and regulation of tourist (and other) ships is difficult, corresponding to the Antarctic situation. The isolation of the islands and potential for unauthorised landings pose a real dilemma for protection. The department relies very heavily on the surveillance carried out by the Royal New Zealand

Airforce and Navy. Recent defence cutbacks have reduced New Zealand's operational surveillance capability in the Southern Ocean and on the sub-Antarctic islands, at the same time that human activity such as commercial tourism and fishing have increased. The Department's monitoring boat "Renown" only has operational capacity to the Snares Islands (Sanson and Dingwall 1992:20; Dingwall pers comm).

The management emphasis in the New Zealand's sub-Antarctic islands is on ecosystems or habitat protection and enhancement and removal of introduced flora and fauna (Sanson and Dingwall 1992:7), although the ecological basis for the plans is vague (Dingwall pers comm). DoC uses observational experience, in particular to ensure that the environment is not harmfully affected. However, for monitoring, a lot of reliance is placed on tourist vessels (Dingwall pers comm). For example, the cruise ship *Kapitan Khlebnikov* which visits the sub-Antarctic islands en route to Antarctica, carries helicopters for ice reconnaissance as well as sightseeing purposes (Quark Expeditions 1992-93). The Department of Conservation forbids the use of helicopter landings for tourism purposes on its sub-Antarctic islands. However, it has jurisdiction only over the island reserve. Should a helicopter fly at 1000 feet above the island, it can only interfere if there is apparent disturbance to the wildlife (Cox pers comm). Self-regulation by tour operators is thus also prevalent in the sub-Antarctic. It is therefore in the interest of the operators to ensure the preservation of the islands. The current system may be sufficient, however, regulation will become more difficult should the number of tourist ships increase greatly. The Department of Conservation will then have to consider alternative/improved ways of monitoring the sub-Antarctic islands.

Liaison between Participants in Antarctic and sub-Antarctic Tourism:

As already outlined above, the majority of Antarctic cruises also spend time in the sub-Antarctic islands. Whilst visiting the area south of 60° latitude, cruise ships are subject to the Recommendations of the Antarctic Treaty and its Protocol (Chapter 2). North of this area, regulations concerning visitation to the sub-Antarctic islands are dependent on respective national jurisdictions. In New Zealand this involves the Department of Conservation (DoC), and as discussed in chapter 4, all Antarctic affairs are conducted by the Ministry of Foreign Affairs and Trade (MFAT).

Although both departments are involved with the regulation of tourism to some of the world's last remaining pristine areas, there does not appear to be extensive liaison between the two departments. A comment made by the government representative during an Antarctic cruise in 1992-93 stated that the "combined DoC and NZAP paper provisions proved far too heavy!" (Mahoney 1993). Duplication of effort as discussed above can also arise when a ship carries both a government official and a DoC representative, as it is possible that no single person can be appointed who has both Antarctic and sub-Antarctic experience. This of course is costly both for the two departments as well as the tour operator.

During the 1992-93 summer season, visitor monitoring programmes were carried out by both the Tasmanian Department of Parks, Wildlife and Heritage (Macquarie Island) and the New Zealand Department of Conservation. Passengers aboard the *Kapitan Khlebnikov* asked to complete the questionnaires found this repetition disturbing. Sanson (1993:7) believes that this form of repetition was unnecessary, and that it "would be highly desirable to coordinate a single visitor monitoring programme with all government agencies involved in Southern Ocean cruise ship visits". Due to the close proximity, it is in particular essential that the New Zealand Antarctic Programme, Department of Conservation and the Tasmanian Department of Parks, Wildlife and Heritage, liaise in terms of producing a single visitor monitoring programme for both Antarctic and sub-Antarctic island visits.

5.6 SUSTAINABLE ECOTOURISM IN NEW ZEALAND'S ANTARCTIC AND SUB-ANTARCTIC REGIONS:

Frequently, due to a rapid increase in tourism and failure of management practices, deterioration of natural areas has occurred (Ministry of Tourism (MoT) 1992:4). The increasing trend of Antarctic and sub-Antarctic tourism accompanied by the immense susceptibility of these areas to human impact, accentuate this possibility. The current guide-lines may well be appropriate for the management of visitation to the sub-Antarctic islands and may also meet the requirements of their proposed World Heritage listings. However, as Codling (1982:7) observed, "all forms of control, whether zoning or other management techniques, raise questions as to the timing of their introduction, effective enforcement and monitoring of their effect". The assessment of

tourist activities requires a far more thorough study of Antarctic ecology and the relation to human impacts than has hitherto been the case. As mentioned above, consideration of the impact of tourism on the interaction of the ecological system of the sub-Antarctic and Antarctic environments has often been limited to a concern about its effect on a particular species or vegetation. This has implications for the sustainable management of tourism to these areas, in particular as the dominant form of tourism is that of ecotourism, which has as its primary motivation the interaction in a responsible manner with nature.

Indicatively, ecotourism in itself is a major contributor in promoting sustainable management, "ecotourism cannot survive unless the resources on which it is based are sustained" (MoT 1992:7). Sustainable tourism has thus been defined by Hall (1992b) as,

> from an ecological perspective, sustainable tourism means conserving the productive basis of the physical environment by preserving the integrity of the biota and ecological processes and producing tourism commodities without degrading other values.

A Ministry of Tourism paper on tourism sustainability (MOT 1992:5) has put forward several points which can be adapted to indicate the importance of tourism sustainability in Antarctica and the sub-Antarctic islands. These include:

- supporting the maintenance and improvement of the Antarctic and sub-Antarctic environment and heritage and ensuring its preservation for future generations;
- bringing satisfaction and enrichment to visitors and strengthening a respect for these natural areas and their historic places;
- generating jobs and wealth, diversifying regional economies, widening economic opportunities and stimulating appropriate investment;
- improving the quality of community life by widening choice, supporting local services and infrastructure, and bringing social contact.

The primary goal of Antarctic and sub-Antarctic tourism management should be the protection and enhancement of the natural environments. New Zealand already has domestic legislation, the *Resource Management Act*, which

encourages sustainable management of resources. Under this legislation, `sustainable management´ means,

> managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety (RMA Part 2 Section5).

Sustainable management as embodied in the RMA involves three interrelated factors; sustained resource use, protecting ecological systems, and maintaining environmental quality. This means that natural assets have to be maintained for future generations, development has to ensure that ecosystems continue to function and the intrinsic value of resources has to be protected (MoT 1992:3). The Ministry of Tourism (1991:1) believes that the RMA is directly relevant to sustainable tourism development.

Having no form of tourism in the Antarctic or sub-Antarctic may well be the most advisable management strategy (Hall 1992b). However, as became obvious in the previous chapters, this is also unrealistic. Paradoxically, to ensure the preservation of wilderness people must be allowed to visit these areas. This is necessary to persuade policy makers that the conservation status of these areas should be preserved. Documentaries, books and museums are important publicity, but are not sufficient to create a groundswell of public opinion for preservation. Tourism is currently the only form of economic exploitation of the sub-Antarctic islands and Antarctica. Since ecological appreciation alone is not enough to give wilderness value, ecotourism to the Antarctic and sub-Antarctic islands can provide the economic argument to ensure their preservation (Hall 1992b).

In conjunction with providing an enriching experience to visitors, Antarctic and sub-Antarctic tourism is also economically significant to New Zealand cities which benefit from tourism to these areas. Bluff in particular is associated with Antarctic tourism as a stage post for cruise ships departing or arriving en route to the continent. The development of the sub-Antarctic interpretation centre in the nearby city of Invercargill is an additional attraction for Antarctic travellers. Christchurch has in the past also been used by cruise ships, but currently appears to be used by smaller organisations travelling primarily to New Zealand's sub-Antarctic islands. Its Antarctic visitor centre creates tourist

revenue by providing an Antarctic experience for the public who will not visit Antarctica itself.

Ecotourism not only provides the opportunity for economic improvement within New Zealand, but it also brings social contact. Tourists from the cruise ships will often go ashore and visit New Zealand towns as can be shown by an account of the New Zealand Antarctic Society Canterbury Branch, "The 1971 year began with a membership of 285, which was boosted by 104 *Lindblad Explorer* tourists during the year. Tourists from two *Magga Dan* cruises to the ice had swelled branch membership in 1969" (Peat 1983:45).

Ecotourism can thus fill the hiatus that exists between preservation and economic development. As the management regimes established by the Department of Conservation aim to ensure the sustainable use of the sub-Antarctic islands as a tourist resource, they can serve as a model to other nations. With the sub-Antarctic precedent, and the application of the Resource Management Act, New Zealand can offer extensive guidance to the creation of an international tourism regime in Antarctica, as well as the other sub-Antarctic islands.

5.7 CONCLUSION:

Establishment of a tourist management regime for New Zealand's sub-Antarctic islands is substantially easier since it falls under national sovereignty, whereas sovereignty in the Antarctic is disputed. Sovereignty also allows for regulation and control over the activities of both tourists and tour operators. Hall (1992a) however, argues that, "the appropriateness of the New Zealand management models is still to be tested, particularly as some tourist operators have had little opportunity to contribute to the development of management strategies". The Department of Conservation is currently producing a `Conservation Management Strategy´ for the islands, in which public participation is a major component.

In New Zealand, the management of tourism in the sub-Antarctic islands has been based on concern over the potential impacts of visitation. The management regimes are strongly weighted in favour of ecological considerations. Unfortunately, managers face a paradox, as in order to

maintain support for their management strategies, they need to be able to give people access to the resource. Even controlled, that access will impact the ecological resource, however minimally. Management agencies therefore have to find a level at which ecological change is acceptable and which is in keeping with the commercial nature of both small and large tourism operations. In order to achieve this, managers need to understand the impact of visitation on ecological processes. Managers also need to be able to regulate the activities of tourism operations in such a way that commercial viability is not threatened (Hall and Wouters 1993:22). At present, the Department of Conservation is only at the very early stages of these processes. Until the effects are fully understood, the policy process will not be completely effective. Whereas tour operators generally base their operating strategies on minimising environmental impact, the Department of Conservation is also very concerned with the risk factor a visit holds. Any visit can introduce rodents or other exotic species. This risk does not diminish (Andy Cox pers comm).

The Department of Conservation has also been criticised for a lack of consistency in their sub-Antarctic management, making long-term planning and tour promotion difficult (Hall and Wouters 1993:15). To enable both conservation of the resource and commercial viability, it is essential that tour operators are involved in the planning process. However, it is argued that some tourist operators have had little opportunity to contribute to the development of management strategies. Further conflict between private operators and the Department of Conservation concerns the appropriate level of visitation to the islands. However, the Department of Conservation allocates three sites to ships carrying more than thirty passengers. Visits to these sites are specific to the site quota. The Department will consider applications to other sites on Auckland Island and Campbell Island by vessels carrying less than thirty passengers (Andy Cox pers comm). Southern Heritage Expeditions have argued that the Department should not be the only body responsible for ecotourism development and instead have called for a management body to be established which consists of private sector operators, tourism industry representatives and conservation organisations as well as Department of Conservation representation (Russ 1992).

The development of larger Antarctic cruise ships and the expansion of the Antarctic/sub-Antarctic cruise ship market will also place greater pressure on management authorities whose primary goals are conservation, while also

facing demands from tourist authorities who are promoting ecotourism to provide access to visitors and from smaller operators who wish to reduce the costs imposed by the Department.

However, as chapter 3 and this chapter illustrate, the efforts by the New Zealand Department of Conservation are much more substantial than that by other authorities in sub-Antarctic islands who allow visitation. Indeed, in tourism the Department of Conservation "is really between a rock and several hard places - required to foster it, control it, protect the environment from its depredation and also, if possible, in compliance with user pays, to make revenue (Chamberlain 1992:95) It is believed that with increased public consultation and experience, the management plans for the New Zealand sub-Antarctic islands will provide adequate protection and allow visitation. Tourism to these regions is unique, and the management of tourism in the global commons of Antarctica and the islands of the Southern Ocean poses special challenges. As O'Connor and Simmons (1990:192) concluded regarding the paradoxical relationship between preservation and recreation use, "If people do not use these island areas and learn to feel strongly about them, the preservation system may ultimately lack the support which is essential for its functioning".

CHAPTER 6 MANAGING THE PARADOX:

6.1 INTRODUCTION:

The consideration of Antarctic and sub-Antarctic tourism in the previous chapters has revealed a number of issues. It is reasonably clear that tourism to Antarctica and the sub-Antarctic will continue to grow, in particular in the form of ecotourism. The conventional image of tourism and wilderness areas is found on a model of inherent paradox (Stankey 1988:16). This paradox may be avoided. This thesis has shown that there are clearly limits to the extent to which Antarctica and the sub-Antarctic islands can and should support tourism, both in terms of their nature and conservation role, as well as their capacity to provide particular forms of recreation experiences. At the same time, Antarctic and sub-Antarctic tourism have benefits - the potential for increasing understanding, awareness and support for conservation.

There will always be tensions between tourism and Antarctica and the sub-Antarctic. Stankey (1988:16) believes that "different actors, institutions, objectives, and definitions of performance inevitably will mean that different views are held as to what is appropriate and acceptable". Resolving these conflicts satisfactory will never be easy or even feasible. There are many parties directly and indirectly involved in Antarctic and sub-Antarctic tourism. These include scientists, conservationists, national governments and citizens, tour operators and tourists. The management of Antarctic and sub-Antarctic tourism is governed by environmental responsibilities and sovereignty restrictions, issues which have huge implications for the establishment of an international Antarctic and sub-Antarctic tourism framework.

6.2 OVERVIEW OF THESIS:

Tourism has become an integral part of life in Antarctica, outnumbering scientists and their support staff. It is the fastest growing, and together with fishing, the largest commercial enterprise in Antarctica. The potential for further growth is huge. The growth of ecotourism in Antarctica and the sub-Antarctic is of concern to conservationists, scientists and operators, as uncontrolled ecotourism will destroy the very resource upon which it is based.

Potentially, Antarctic and sub-Antarctic ecotourism can be both beneficial and costly for Antarctic conservation (IUCN Submission 1992:2).

Chapter 1 indicated that people are attracted to Antarctica for many reasons, making it difficult to stereotype them or their activities. However, a distinction was made in Chapter 2 between commercial and private expeditions, and airborne and shipborne tourism. It is important to make such a distinction as their specific features impose differing management requirements (Chile Submission 1991). Tourism involving overflights does not demand the same degree of specialisation in the tourist guides as that which has to be provided for tourists on ocean cruises. As Reich (1979:85) stresses, "there is no evidence to support the existence of a relationship between aircraft and cruise passengers, apart from the fact that they are both called tourists, and it is therefore dangerous to assume that the members of the two groups are interchangeable". In response to this, Enzenbacher (1991) argues that although sea and airborne tourists may not be interchangeable, efforts to restrict certain forms of tourism or a decline in interest in one particular form of tourism may not necessarily result in a reduction of tourist numbers overall. That is, if land based tourism were restricted because it was viewed to create too great an impact on the Antarctic environment, the total number of Antarctic tourists would not necessarily decline if seaborne tour operators managed to enlarge their existing tour schedules or charter extra vessels and recruit more passengers.

Tourism to Antarctica and the sub-Antarctic islands possess features which distinguish it from other activities in these areas. Tourism tends to congregate relatively large numbers of people in fragile areas during a limited season, often resulting in the same sites being visited many times during the season, as was shown in Chapter 2. In terms of tourism impact, the regularity with which sites are visited will require urgent attention.

Tourism in the Antarctic is not completely unregulated (Nicholson 1986:3; Beck 1990b:344). Chapter 2 showed that the ATS provides a framework under which states have accepted a variety of obligations relevant to tourist and non-governmental expeditions. Informal regulations regarding the conduct of tours have emerged, in the form of Antarctic Treaty Recommendations, operator guidelines and visitor codes of conduct. Some of these regulations are being respected, but mostly compliance is self-monitored (Rovinski 1991:52-53). As

ecotourism is based on fragile and limited resources (the protected natural ecosystem) it will destroy itself if it is unregulated and excessive. If tourism is not to destroy itself and the environment, proper planning and management are critical at an early stage (Ryel and Grasse 1991:164; Sherman and Dixon 1991:107). However, existing measures are unsystematic and scattered, and there is no overall, comprehensive control mechanism (Beck 1990b:343; Harris 1991:320; IUCN Submission 1992:7).

A number of Antarctic tour operators are currently practising self-regulation to control the effects of Antarctic tourism. To date, this self-regulation appears to have been quite effective. The establishment of the IAATO and its instruments to manage visitor and tour operator behaviour especially demand approval. Chapter 2 showed that the majority of Antarctic tour operators have environmentally conscious ethics, and aim to minimise their intrusion on the Antarctic environment. The industry and those favourable of Antarctic tourism will state that self-regulation is the best method to exert control on Antarctic tourism and to minimise/prevent its negative impacts. The education and awareness of the passengers is a large component of this method as the guests on cruise ships will expect environmentally-conscious behaviour and operating methods of crew and staff.

It is not only the increase in tourist numbers, but the contingency of an increase in operators who do not practise ecotourism that is also of concern. The instruments established by the IAATO provide a useful and practical guidance for the Antarctic tourist industry. If adhered to by all Antarctic operators, no further dialogue on Antarctic tourism management would be necessary, but not all Antarctic tour operators are associated with the IAATO. Moreover, self-monitoring can allow lenience in operating methods to occur which may be detrimental to the environment in lieu of profit or tourist experience. This leads to a major issue in the management of Antarctic and sub-Antarctic tourism, whether the current situation is sufficient or legislation in addition to self-regulation be introduced.

The majority of Antarctic Treaty parties believe that the issue of tourism management can be dealt with effectively under the Protocol on Environment Protection. The Protocol provides a comprehensive framework for protecting the Antarctic environment, wildlife and historic resources. It applies universally to all activities in the Antarctic, including tourism. Strict observance of the

rules contained in the Annexes, such as EIA, waste disposal, and prevention of marine pollution would certainly promote environmentally responsible tourist operations (IUCN Submission 1992:4). Since the major contention about tourism in the Antarctic is its potential impact, these parties believe the Protocol provides adequate guidance, with the provision of EIAs. It is believed that the analysis of impacts made by the different groups active in the Antarctic, including tourism should not be separated (Scully 1990:165).

The Protocol is a long over-due statement of commitment to environmental protection in Antarctica. However, it may not be sufficient to manage tourism. Regulating tourism under the Protocol as it is currently phrased, is restricted by several matters. Some key issues are still to be finalised, such as compliance, enforcement, liability for environmental damage and response action. The measures relating to marine pollution apply only to ships operated by or on behalf of the Treaty Parties. Tourist operations are usually multi-national, ships are often registered in ports in non-Treaty countries, thus tourist activities create special problems. Jurisdictional and liability matters are very complex, and present particular problems in controlling the activities of non-Treaty governments and other third parties. It is thus essential to finalise the incomplete matters and to find ways to place legally binding obligations on all participants in Antarctic tourism (IUCN Submission 1992:4).

New Zealand has made several practical suggestions to manage the impact of Antarctic tourism, such as board walks to regularly visited sites. These are useful, but the Protocol alone will not provide all the contemporary information and regulation setting that is really necessary for the comprehensive guidance of Antarctic tourism. Chapter 2 has already outlined the inadequacy of the Antarctic Treaty System, as well as the urgency of developing international guidelines for Antarctic tourism. Thus, although New Zealand's efforts should be encouraged, it is believed that it is not sufficient to control tourism effectively.

Kimball (1990a:27) believes that a single agreement (such as the Protocol) to govern scientific research, tourism, marine species conservation and minerals development, as well as possible future activities, however remote, may stretch the decision-making mechanism to its breaking point. Antarctic tourists now equal and often exceed the number of Antarctic scientists. Antarctic science is protected by the Protocol, whereas the other major unique Antarctic activity of

tourism is covered by a range of *ad hoc* measures. Additional measures may therefore need to be introduced. Specific reference could be made to the provisions of the Protocol and its different Annexes that apply to tourism and other activities, so as not to repeat the same provisions on marine pollution, waste disposal, protection of the flora and fauna, and in particular the need for EIA (Chile Submission 1991).

The management of sub-Antarctic tourism differs from the regulation of tourism to Antarctica. Chapter 3 determined that management of the sub-Antarctic islands is regulated by individual nations. This is both an advantage and a disadvantage to the management of tourism. Regulation is much easier to establish when a particular region is controlled by one nation, as is the case in the sub-Antarctic. The review of the controls on tourism enacted by the Department of Conservation in New Zealand shows that national policy can be very effective and can be used as an example to other nations (Chapter 5). However, the review of tourism management strategies in the sub-Antarctic showed the great disparity in national administration. It is very difficult to constitute environmentally-friendly management rules in areas which are governed by disinterested governments. To apply uniform controls across such a vast area as the islands of the Southern Ocean, which are subject to individual domestic laws, will require the cooperation of many nations. The introduction of a uniform sub-Antarctic tourism strategy is essential, and will need to be done by persuasion and education, although, as shown in the workings of the Antarctic Treaty System, this is not always equally successful.

Antarctic and sub-Antarctic tourism are nevertheless related. The same regulations ought to be applied throughout the Southern Ocean region. National management of sub-Antarctic tourism adds a further dimension to the creation of an international Antarctic and sub-Antarctic tourism management framework, as any measure will need to avoid infringing national sovereignty.

The Treaty provides no solutions to the question of sovereignty (Auburn 1972:42). However, from the perspective of claimant nations, tourism in Antarctica offers a potential mechanism to justify territorial claims and a possible source of funds to subsidise stations and research. The commercial and national interests which are becoming increasingly active in Antarctic tourism, will play a major role in determining the management and policy

framework which will regulate the flow of visitation to the continent (Hall 1992a).

Chapters 2 and 3 showed that the current strategies for Antarctic and sub-Antarctic tourism are greatly affected by the complexities of sovereignty and jurisdiction. A close review of the New Zealand situation confirms this. The New Zealand Department of Conservation and the Ministry of Foreign Affairs and Trade which administers the New Zealand Antarctic Programme, apply different policies. The Antarctic Treaty has frozen all claims, so although New Zealand may wish to apply national legislation to regulate tourism in the Ross Dependency, it will be opposed by other nations as it will be seen to act contrary to the Treaty. New Zealand attempts to influence Antarctic tourism by requiring all tourist vessels which transit through New Zealand to carry an observer (usually a New Zealand government representative). New Zealand is responsible for the historic huts in the Dependency area, and is thus able to exert controls over visitor behaviour in and near the huts.

The Department of Conservation administers the sub-Antarctic islands which fall under New Zealand's national jurisdiction. By allowing controlled tourism, the Department believes that the islands' preservation becomes acceptable to people as the conservation need can be experienced first hand. Sub-Antarctic tourism is covered by national legislation, which has allowed the Department to produce a comprehensive set of management measures. Enforcement is primarily through education and the presence of a Departmental representative aboard tour ships.

The New Zealand case study also showed that even within one nation, there is sometimes a lack of cooperation and information sharing. This is one of the major criticisms of the Antarctic Treaty System. It is believed that in New Zealand increased collaboration would be beneficial. Ideally, this should extend to liaison with the Australian Department of Parks Wildlife and Heritage, which administers Macquarie Island.

It is not only the land areas in the Southern Ocean which should be considered in the management of Antarctic and sub-Antarctic tourism. The seas around Antarctica and the sub-Antarctic islands are the natural habitats of many species which breed on Antarctica and the islands. Growing commercial interest may mean increased shipping in Antarctic waters and a greater danger

of ship-borne accidents. Although beyond the scope of this thesis, a tourism strategy should include regulations on ships' procedures in the Southern Ocean. A shipping convention which relates to shipping activities in Antarctic and sub-Antarctic waters will need to be established to ensure that vessels meet minimum safety and operational standards (HRSCERA 1989:40). IAATO believes that all people, whether tourists, base scientists or support personnel, should be subject to the same criteria for responsible conduct. Likewise, if ship's specifications are to be legislated, the regulation should be valid for all vessels, government and private alike (Peter Cox pers comm). Unfortunately, although the Protocol allegedly applies equally to governmental and nongovernmental activities, some shipping regulations do not apply to military vessels as indicated in Chapter 2.

6.3 RECOMMENDATIONS:

While minimising negative impacts on the environment visited, Ryel and Grasse (1991:165,168) believe that ecotourism should stimulate an awareness, appreciation and understanding of the ecosystem and the need for its preservation. To reduce visitor impact in Antarctica and the sub-Antarctic islands, education can often be used as an effective management tool (Glick 1991:71). Other benefits may arise from nature tourism, such as increased interest and active involvement in conservation activities, or species and habitat protection (Booth 1990:279; Sherman and Dixon 1991:96). This is aided by ecotourism operators, who are often learned naturalists (Ryel and Grasse 1991:168). Ecotour operators must instil a conservation ethic for environmentally sensitive travel in their clients if they are to continue to bring visitors to fragile areas (Whelan 1991:15) which it is believed should particularly be promoted in the Antarctic region.

Ryan (1991:105) believes that "the proponents of a more ecologically or socially responsible tourism are to a large degree forced upon normative arguments that seek a change of behaviour by tourists based upon a change of values". To argue that tourism must change in order to preserve ecologically fragile areas that are nonetheless attractive to tourists, and to place hope in educative forces, is of little immediate help to those responsible for the management of areas visited by tourists. Nevertheless, people generally have expectations about the experiences they will have in the visited

area (Clark and Stankey 1979:72). These expectations can be fostered to result in an awareness of the natural environment and the need for its protection. Booth (1990:282) believes that changing visitor attitudes through education is a more effective management approach than law enforcement.

Environmental guides (such as the New Zealand Department of Conservation representatives) are part of the education process as they help the visitor to understand and care about the places visited (Blangy and Nielsen 1993:357). Guidelines also assist in managing tourism impact and should be an integral part in a management strategy. For these procedures to be effective, they must be supported by an enforcement policy (Blangy and Nielsen 1993:358), which is currently inadequate in the Antarctic and to a certain degree in the sub-Antarctic. Ideally, guidelines should be provided at every step: prior to an Antarctic/sub-Antarctic trip, during the visit, and after the trip. Good visitor guidelines will also aid managers to acquire public support for their management procedures. By outlining the conservation agenda and management framework, the visitor and operator will generally support practices. Otherwise conflicting practices may occur (Booth 1990:279).

As an aggregate group, visitors to Antarctica and the sub-Antarctic islands may be described as the well-educated, the articulate, the doers in society, not necessarily reflecting the diversity of individuals within society. Booth (1990:279) believes that "these attributes can be useful to managers who wish to exploit the benefits of recreation for island management".

Although tour operators and ecotourists have begun to make the conservation of natural areas a priority, most efforts have been taken without coordination (Wood 1991:200). Working together, Antarctic and sub-Antarctic tour operators, national and international conservation groups, local communities and governments could have a far greater positive impact on the conservation of the sub-Antarctic and Antarctica's natural areas and the development of sustainable ecotourism. Tourism is a global market (Glick 1991:62) and Whelan (1991:15) argues that "some of the constraints of ecotourism are due to the fact that it is an international activity". This is very relevant in the Southern Ocean: many tourists come from a range of countries, as do ecotour operators and major carriers. There is a great need to develop standard, official and widely adopted guidelines to be applied uniformly to all tourist operations in the region. Standardisation of guidelines will also assist in

clarifying regulations for customers (IAATO Submission 1992c; IUCN Submission 1992:4; Blangy and Nielsen 1993:360).

The IUCN (IUCN Submission 1992:4) believes that agreement on consistent management policies and practices is likely to be easier than achieving unanimity in law. Many national Antarctic authorities already implement procedures and operational codes of practice to encourage environmentally sensitive tourist operations, although they vary greatly in scope and detail. Development of these guidelines should take advantage of current approaches to tourism management in the sub-Antarctic islands, where the management objective is to ensure minimum environmental impact while aiming to maximise visitor enjoyment, experience and safety (IUCN Submission 1992:4).

To maximise the benefits from Antarctic and sub-Antarctic ecotourism, and minimise the detrimental impacts, certain strategies will need to be employed. Tourism naturally tends to concentrate in areas where the environment is most attractive but often also most fragile (Kozlowski 1985:148). Tourist activities, and associated infrastructure, frequently have destructive impacts on places where the resistance of nature is the lowest (Glick 1991:68). Hence, certain tourist development should be excluded or at least restricted in areas where Antarctica's natural qualities are threatened. Managers therefore need working methods to define areas, development levels and time periods to which various forms of tourism should be confined (Kozlowski 1985:148).

The seasonality of the Antarctic tourist season and restricted access to the continent are natural restrictions which have resulted in `honey pots´, whereby tourists congregate in the same areas season after season. Under the Antarctic Treaty System, tourism was allocated sites (ASTIs) specifically for tourism purposes. However, no such site has ever been designated. The Environmental Protocol stipulates that all Antarctic activities are subject to the same criteria. Thus, sites specifically identified for tourist activities would be contrary to the principles of this Protocol.

The notion of areas allocated to tourism is supported by Clark and Bamford (1987:159) who believe that the foundation of a strategic planning initiative may be the concept of Areas of Specific Tourist Interest (ASTI) (similar in concept to a site of scientific interest). By identifying these sites and simultaneously considering the tourist themes and resource constraints,

opportunities to limit the pressures on the most sensitive areas will arise. The primary concern should be to ensure that a properly negotiated management plan exists for the most sensitive of the popular tourist destinations. Harrowfield (pers comm) supports the restriction of sites accessible to tourists. Reducing the range of areas available for visitation will urge the tour operators to apply absolute minimum impact procedures. The range of sites will require reviewing periodically.

Limiting places that can be visited involves identifying preferred locations for visits, taking into consideration the need to satisfy tourist interests and enjoyment, to ensure safety and avoid accidents and to minimise environmental disturbance or disruption of other legitimate Antarctic activities, thus achieving all-round benefit. Such sites can direct tourists activity away from research sites, and environmentally sensitive areas or those that are subject to special protection or management, to areas of interest that are least likely to be adversely affected by the presence of tourists. This would also facilitate supervision and control of tourist visits.

To regulate tourism properly, clear management plans are required (HRSCERA 1989:12). In areas where tourism, research, and environmental protection are all important, the designation of Antarctic Specially Managed Area (ASMA) (Protocol) may be useful, which will allow integrated management of different uses at a site, while avoiding adverse or cumulative impacts (IUCN Submission 1992:5). It is suggested that tourism regulation can be incorporated within an ASMA, avoiding the need for ASTIs.

Management plans must be written for the ASMAs. This would greatly benefit the regulation of tourism. However, as the ATCPs are the predominant group to produce the plans, this may result in unnecessary restriction of areas able to be visited by tourists. The New Zealand government does not believe in the designation of sites specifically for tourists in the Ross Dependency. It is therefore recommended that efforts be made to include tourism in the management plans for ASMAs.

Defining where visitors are allowed to go is facilitated in the sub-Antarctic islands as such a strategy can be implemented under national administration. New Zealand excludes all tourists from its ecologically unmodified islands, and closes of parts of the other islands to protect ecologically-sensitive areas.

New Zealand also practices temporal restrictions prohibiting visits to wildlife breeding grounds during the breeding season. The Department of Conservation has management plans for all its sub-Antarctic islands, which provides for a focused administration, and could provide an excellent example for other nations administering sub-Antarctic islands.

It is believed that, subject to appropriate studies, management plans will need to include in detail:

- the optimal number of visitors, under specified seasonal and climatic conditions, that specific sections of Antarctica can safely carry without compromising the conservation, environmental and scientific values of the area.
- the range of tourist opportunities and activities which Antarctica is able to provide.
- restrictions on activities on land
- suitable interpretative and education materials.
- suitable minimum impact code
- the procedures and facilities which would be required to monitor and maintain the integrity of the natural environment on a sustained basis.
- appropriate prohibitions on tourism and tourism development within the ASMA.
- that any tourism activity shall be in accordance with the Antarctic Treaty and Protocol.
- cost recovery system (Corkill 1988:20; IUCN Submission 1992:6).

A visitor permit quota system is often implemented to restrict the number and/or type of visitor. Permits authorising tourist visits are useful to regulate visits where direct supervision of activities is impractical. This can also be used to limit numbers and duration and timing of visits, and as a means to convey conditions under which visits are approved (IUCN Submission 1992:4). Representatives provide official supervision of the tourists. Booth (1990:281) believes this method is "arbitrary and *ad hoc*", and that although it may be a useful first step to address the problem of tourism impact, should not be used as a long-term solution. A quota approach is based on the principle that impact is directly related to the number of visitors, but this is inadequate. Two irresponsible visitors can cause more damage than twenty environmentally-conscious visitors.

Establishing the ecological capacity for a protected area seems essential but Whelan (1991:12) argues that few areas have identified carrying capacity. In Antarctica this is because no one agency or organisation is responsible for monitoring or managing the environmental impacts of visitation. Accidents such as the *Bahia Paraiso*, or souvenir taking, occur because, at least in part, there is no one responsible for establishing or enforcing guidelines against environmentally destructive behaviour.

Sherman and Dixon (1991:109) believe that the easiest way to capture benefits from nature tourism is to charge a fee to use the area. This occurs in the New Zealand sub-Antarctic islands, where the Department of Conservation requires operators to pay a user fee. The industry is willing to implement such measures to minimise environmental impact. The IAATO and PATA will, as part of its objectives, assist in the preparation of EIAs that pertain to its members' activities. The IAATO (IAATO Submission 1992c) believes that its experience in managing tourists in Antarctica, and the PATA experience in tourism management should be recognised. IAATO currently represents most Antarctic tour operators, and so encourages ATCPs to support it, and encourage relevant companies and others with tourism-related activities in Antarctica to join IAATO. In addition to its support for management plans for areas visited by tourists, the IAATO welcomes a voluntary observer programme on tourist visits (IAATO Submission 1992c).

Antarctic and sub-Antarctic tourism is greatly determined by accessibility. Currently, access to the continent is limited to the Antarctic summer season. However, accessibility becomes a determinant of change, should it be improved. In sub-Antarctic and Antarctic tourism, the price mechanism is also a major factor in the regulation of tourism. The present high cost of travelling to the continent restrict the number of people that are able to visit, thus creating a sense of exclusivity. Nevertheless, the prospects of cheaper visits to Antarctica, particularly the Antarctic Peninsula from Chile and Argentina, does raise the likelihood of increased visitor numbers. This is in conjunction with a general increase in Antarctic and sub-Antarctic tourists numbers.

To assess the effects of tourists on the Antarctic and sub-Antarctic ecosystem, there is need for more detailed knowledge of possible impacts (Harris 1991:318; IAATO Submission 1992c; IUCN Submission 1992:6). Efforts to

address this problem are currently being conducted in the South Shetland Island by Storehouse and team. The New Zealand Department of Conservation and the Tasmanian Department of Parks Wildlife and Heritage are conducting visitor impact surveys in the sub-Antarctic islands (Cessford and Dingwall 1993). The range of visitor codes are steps in the right direction, but their effect is not quite clear as some tourists still go ashore with little guidance from operators. Practical measures such as marking paths and using the categories of protection as discussed in Chapter 2 would help to minimise tourist damage to soils, vegetation and breeding colonies (Harris 1991:318).

A Convention on Antarctic and Sub-Antarctic Tourism:

The previous chapters have shown that although a range of regulations and management measures exist for Antarctic and sub-Antarctic tourism, these do not appear to be enough. Current measures consist of a range of disconnected strategies. A number of efforts have been made to improve the situation by such methods as visitor codes and operator guidelines. These have been mostly independent of each other and of a central enforcement body. Often the same issues are covered by several different organisations concerned about Antarctic tourism. Antarctic and sub-Antarctic tourism has occurred since the late 1960s and is as prominent an activity as science in these areas. However, there is still no systematic, uniform, and comprehensive legal regime in place under one single body to manage Antarctic and sub-Antarctic tourism. Hall (1993:122) noted that "if tourism is to benefit the interests of visitors, operators, Treaty members, and the Antarctic environment alike, the need to manage appropriately the internationalised Antarctic tourism industry will require a measured international response similar to that given to other Antarctic conventions"

Many difficult and practical problems arise from a lack of effective control over tourist expeditions to the Antarctic (Nicholson 1986:6). From a claimant state point of view the simplest means of providing regulation would be to enact domestic legislation with respect to their territories for tourist activities. By such means many of the guidelines developed by ATCPs could be given legally binding force (Nicholson 1986:6). New Zealand governs tourist visits to its sub-Antarctic islands in this way. Private activity can not be solved by the application of flag state or claimant state jurisdiction alone.

Regulation of Antarctic and sub-Antarctic tourism could be covered by a new legal instrument. Regulation of all other major human activities in the Antarctic, including past, current and possible future activities has been treated this way: scientific activities are addressed by the Treaty itself, mining was to have a separate agreement, CCAMLR regulates commercial fishing, commercial sealing if it were to be resumed would be managed under the provisions of CCAS, and conservation management is treated under the Protocol. The Protocol is intended to provide a comprehensive series of environmental principles and rules for environmental protection applying to all human activities. The IUCN (IUCN Submission 1992:3) therefore questions whether it is appropriate to include in the Protocol all the required rules for the management of any one activity, such as tourism. Given that tourism is a significant and growing commercial enterprise, it warrants regulation according to a separate legal instrument such as a Convention on Antarctic and sub-Antarctic Tourism. CCAMLR, came into force before the establishment of a fishery on the species of commercial importance, Antarctic krill (Bush 1990:136; Powell 1990:65). Antarctic and sub-Antarctic tourism are no longer unknown activities, and a distinct tourism convention is long overdue.

Given the potential for negative environmental impacts because of tourism growth and lack of a coherent and legal management regime, it is readily apparent that a Tourism Convention is imperative, and can be justified by the established Antarctic Conventions. When a matter mainly involved the conduct of their own nationals, the Consultative Parties used the Recommendation mechanism established in Article IX of the Antarctic Treaty. When a matter was likely to affect third states or their nationals, the Consultative Parties concluded separate treaties and invited any interested state to accede. Such considerations led to the adoption of the Convention for the Conservation of Antarctic Seals, which was then related back to the Antarctic Treaty by repeating in its text the main undertakings of the Treaty (Peterson 1986:145). This could function as a precedent to establish a Convention on Tourism to the Antarctic Treaty.

A separate legal regime would recognise the relative magnitude of the Antarctic tourism industry and the complexity of its management requirements. It would also ensure a comprehensive approach to tourism regulation, and would foster integrated management of tourism with other human activities in

the region. Nicholson (1986:17) perceived the need for a separate legal regime in the form of an International Convention to draw together the rules and guide-lines necessary for the effective control of tourist activity in the Antarctic. Only such a Convention can ensure that all Consultative Parties adopt and enforce a consistent set of legally binding rules to govern all aspects of Antarctic tourism. An alternative strategy would concern the adoption and enforcement of national jurisdiction by individual ATCPs, although any claimant's exercise of territorial jurisdiction raises as many problems as it resolves, given the region's legal uncertainties and the refusal of non-claimants to recognise any government's sovereignty. "From this point of view, the establishment of an international tourism regime would minimise the difficulties caused by competing national and territorial jurisdictions" (Beck 1990b:354).

A separate legal regime in the form of an International Convention would draw together the rules and guidelines necessary for the effective control of Antarctic tourist activity (Nicholson 1986:7). Only such a Convention can ensure that all parties adopt and enforce a consistent set of legally binding rules to govern all aspects of Antarctic tourism. All groups affected would benefit from an international forum for discussion. Access to an international body that provides needed technical and financial assistance, as well as access to information and other groups experiencing similar concerns, would be invaluable. This thesis proposes that the establishment of a Convention will encourage coordination, promote study into visitor impact, management strategies, code of ethics, information sharing and access. The new controls would be augmented by:

a. Instituting comprehensive review of tourism issues. Among these are: approval for visits to stations, prior notification of proposed itineraries, codes of conduct, safety standards for vessels and operations, accident and emergency insurance, liability monitoring and reporting procedures, environmental impact assessments, the availability to tour groups of up-to-date information on weather and ice conditions, and the preparation of suitable education and information materials.
b. Promoting interaction between governments, managers of Antarctic programmes, scientists and tour operators with the aim of developing tour management guide-lines.

c. Proactive planning for Areas of Special Tourism Interest followed by careful monitoring of subsequent impacts.
d. Controlling choices of tourist destinations (IUCN 1991:56-56,70).

The New Zealand case-study has shown that even within a nation which administers both sub-Antarctic and Antarctic territory, there is a lack of communication and cooperation between the relevant government departments. This Convention would bring together all those associated or interested in Antarctica and the sub-Antarctic region as a tourist destination. This will allow the exact nature of sub-Antarctic and Antarctic tourism to be discussed fully, without being restricted by the Antarctic Treaty requirement of being a nation that conducts scientific research on the continent. Extensive input from all interested countries and interest groups during the formation of institutional arrangements for tourism and their later implementation would increase the potential of such an agreement being ratified by a wide range of countries (Mussack 1988). From a tourism operator's perspective, it would indeed be important that the guidelines for visitation to the range of sub-Antarctic islands, and the Antarctic continent are compatible, as tour groups regularly visit both regions as part of the same cruise.

Clark and Dingwall (1985) were quoted in Chapter 1 stating that tourism has a valid place in the Southern Ocean as long as it is regulated and carefully supervised. The problem therefore becomes one of developing appropriate tourism management strategies, which has focussed attention on New Zealand's attempts to manage visitation to its sub-Antarctic islands as a model for tourism management throughout the Antarctic region. Indeed, a range of management options have been suggested for Antarctica, but the legal and policy dimensions surrounding Antarctica demand the establishment of an International Antarctic and sub-Antarctic Tourism Convention (Hall 1992a:2). At present, Antarctic policy makers and tour operators are regulating a commercial industry whose effects are not completely understood. A Convention will allow comprehensive tourism impact assessments under a single umbrella. The multinational character of Antarctic and sub-Antarctic tourism makes it extremely difficult to define under the present Antarctic Treaty framework (Hall and McArthur 1993:122). The potential and current growth of Antarctic tourism makes a formal management regime for Antarctic and sub-Antarctic tourism imperative. The internationalised tourism industry in the Southern Ocean requires a measured international response similar to that

given to other Antarctic Conventions if it is to benefit the Antarctic environment, the interests of the visitors, the operators and the Antarctic Treaty members.

6.4 CONCLUSION:

Antarctic and sub-Antarctic tourism needs enhanced cooperation and communication between nations and tour operators. Reporting and procedures for tourist activity should be standardised and information exchanges between all concerned parties should be consistent. More research is required on the environmental effects of Antarctic and sub-Antarctic tourism. Areas that are frequently visited should have detailed management plans, and passenger education should be improved and consistent (Enzenbacher 1992c:263).

It cannot be denied that Antarctic and sub-Antarctic tourism is a growing industry. Although some regulations exist, they are *ad hoc*, and incomplete. The regulation of Antarctic and sub-Antarctic tourism is complicated by the complexity of sovereignty and jurisdiction. An International Convention on Antarctic and sub-Antarctic tourism would reduce these complications and ensure that ecotourism can continue in Antarctica and the sub-Antarctic with the least possible impact. Such a Convention would thus be essential to manage the paradox between preservation and visitation in these last remaining wilderness areas.

APPENDIX 2.1 NEGATIVE IMPACTS OF TOURISM

Factor	Impact On	Consequence
	Scientific Research	
Increase in human presence	Exposure to Visitors	Disruption to functioning of base
Increase ship and air traffic	Possible need of assistance in accident	Loss of time and money for research
Use of vehicles to transport tourists on land	Destroy sensitive areas	Affect scientific research
Increase in facilities	Competition for ice-free land with bases	Increased friction science and tourism
Areas frequently visited by tourists	Disruption to site Souvenir taking (natural)	May affect science potential
	Social/Cultural	
Increase human presence	• Destruction historic sites • Noise and litter • Stress on base personnel	• Damage to cultural heritage (eg. souvenir-taking) • Aesthetic hazard and reduction in quality • Disruption to working ability
Increase in cruise ships	• Congestion • Reduction wilderness perception	• Reduction in quality • Loss of sense of achievement by visitor
Onshore facilities	Visual obstruction	Reduction in wilderness quality
Vehicles	Increased numbers	Impact on natural quality, disturbance
Introduction exotic plants and animals	Competition with wild species	Visitor confusion
	Environment	
Type of Activity	*Nature of Impact*	*Infrastructure Characteristics*
Overflights	• Fall-out from engines • Disturbance to wildlife due to noise • Pollution	• No requirement for permanent land-based facilities
Ship-based (including zodiacs)	• Transient environmental effects, although pressure may be placed on regularly visited land attractions • Oil spill, marine pollution and waste • Disturbance to wildlife • Potential introduction of bird and plant diseases • Introduction of exotic flora • Noise	• No requirement for permanent land-based facilities

On-shore facilities	• Increase demands for ice-free land and fresh water supply • Disposal of sewage and rubbish • Degradation of specific sites with high visitation levels • Disturbance to wildlife • Potential introduction bird and plant diseases • Introduction of exotic flora • Behavioural changes of animals due to feeding • Use of land vehicles to transport tourists, damages wider areas	• Support infrastructure including the provision of an all weather airstrip capable of handling large commercial aircraft • Accommodation facilities • Potential combination of tourist facilities with scientific bases

The above impacts are not specifically restricted to tourist activities. Many are also potential impacts of scientific activities. However, in the context of this thesis, the concentration is on the possible disturbance of the Antarctic environment by tourists as defined in Chapter 2.

Sources: Mossman 1987:122; Boo 1990:25; Hall 1992a:6

APPENDIX 2.2 ANTARCTIC TREATY PARTIES

The Antarctic Treaty came into effect on 23 June 1961, with 12 signatories. There are now 40 contracting parties to the Treaty, of which 26 are Consultative Parties (ATCPs). The tourism interest of the respective parties is indicated by *. This interest can be at the management level, or as a country from which Antarctic tourists or tours originate. OS is original signatory, CS is a claimant state.

Party	Ratification Date	Status
Argentina*	23 June 1961	ATCP, OS, CS
Australia*	23 June 1961	ATCP, OS, CS
Austria	25 August 1987	Acceding State
Belgium	26 July 1960	ATCP, OS
Brazil*	16 May 1975	ATCP (12.9.83)
Bulgaria	11 September 1978	Acceding State
Canada*	4 May 1988	Acceding State
Chile*	23 June 1961	ATCP, OS, CS
China	8 June 1983	ATCP (7.10.85)
Colombia	31 January 1989	Acceding State
Cuba	16 August 1984	Acceding State
Czechoslovakia	14 June 1962	Acceding State
Democratic Peoples Republic of Korea	21 January 1987	Acceding State
Denmark	20 May 1965	Acceding State
Ecuador	15 September 1987	ATCP (19.11.90)
Finland	15 May 1984	ATCP (9.10.89)
France*	16 September 1960	ATCP, OS, CS
Germany*[1]	5 February 1979	ATCP (3.3.81)
Greece	8 January 1987	Acceding State
Guatemala	31 July 1991	Acceding State
Hungary	27 January 1984	Acceding State
India	19 August 1983	ATCP (12.9.83)
Italy*	18 March 1981	ATCP (5.10.87)
Japan*	4 August 1960	ATCP, OS
Netherlands	30 March 1967	ATCP (19.11.90)
New Zealand*	1 November 1960	ATCP, OS, CS
Norway	24 August 1960	ATCP, OS, CS
Papua New Guinea	16 March 1981	Acceding State
Peru	10 April 1981	ATCP (9.10.89)
Poland	8 June 1961	ATCP (29.7.77)
Republic of Korea	28 November 1986	ATCP (9.10.89)
Romania	15 September 1971	Acceding State
South Africa*	21 June 1960	ATCP, OS
Spain*	31 March 1982	ATCP (21.9.88)
Sweden	24 April 1984)	ATCP (21.9.88)
Switzerland	15 November 1990	Acceding State
Union of Soviet Socialist Rep[2]	2 November 1960	ATCP, OS
United Kingdom*	31 May 1960	ATCP, OS, CS
United States*	18 August 1960	ATCP, OS
Uruguay	11 January 1980	ATCP (7.10.85)

[1] The German Democratic Republic was united with the Federal Republic of Germany on 2 October 1990. GDR acceded to the Treaty on 19 November 1974 and became an ATCP on 5 October 1987.

[2] From December 1991 the Soviet Union's Antarctic activities became the responsibility of the Russian Federation.

Adapted from: NZASc:276-277

APPENDIX 2.3 IAATO ANTARCTICA VISITOR GUIDELINES

The following Visitor Guide-lines have been adopted by all members of the International Association of Antarctica Tour Operators (IAATO) and will be made available to all visitors travelling with them to Antarctica.

1. DO NOT DISTURB, HARASS, OR INTERFERE WITH THE WILDLIFE.

- never touch the animals.
- maintain a distance of at least 15 feet (4.5 meters) from penguins, all nesting birds and true seals (crawling seals), and 50 feet (15 meters) from fur seals.
- give animals the right-of-way.
- do not position yourself between a marine animal and its path to the water, nor between a parent and its young.
- always be aware of your surroundings; stay outside the periphery of bird rookeries and seal colonies.
- keep noise to a minimum.
- do not feed the animals, either ashore or from the ship.

Most of the Antarctic species exhibit a lack of fear which allows you to approach relatively close; however, please remember that the austral summer is a time for courting, mating, nesting, rearing young and moulting. If any animal changes or stops its activities upon your approach, you are too close! Be especially careful while taking photographs, since it is easy to not notice adverse reactions of animals when concentrating through the lens of a camera. Disturbing nesting birds may cause them to expose their eggs/offspring to predators or cold. Maintain a low profile since animals can be intimidated by people standing over them. The disturbance of some animals, most notably fur seals and nesting skuas, may elicit an aggressive, and even dangerous, response.

2. DO NOT WALK ON OR OTHERWISE DAMAGE THE FRAGILE PLANTS, i.e. LICHENS, MOSSES AND GRASSES.

Poor soil and harsh living conditions mean growth and regeneration of these plants is extremely slow. Most of the lichens, which grow only on rocks, hard-packed sand and gravel, and bones, are extremely fragile. Damage from human activity among the moss beds can last for decades.

3. LEAVE NOTHING BEHIND, AND TAKE ONLY MEMORIES AND PHOTOGRAPHS.

- leave no litter ashore (and remove any litter you may find while ashore); dispose of all litter properly.
- do not take souvenirs, including whale and seal bones, live or dead animals, rocks, fossils, plants, or other organic material, or anything which may be of historical or scientific value.

4. DO NOT INTERFERE WITH PROTECTED AREAS OR SCIENTIFIC RESEARCH.

- do not enter buildings at the research stations unless invited to do so.
- avoid entering all officially protected areas, and do not disturb any ongoing scientific studies.

Areas of special scientific concern are clearly delineated by markers and/or described in official records (the expedition staff know these sites). Scientific research in Antarctica is in the interest of everyone... visitors, scientists, and laymen.

5. HISTORIC HUTS MAY ONLY BE ENTERED WHEN ACCOMPANIED BY A PROPERLY AUTHORISED ESCORT.

- nothing may be removed from or disturbed within historic huts.

Historic huts are essentially museums, and they are all officially maintained and monitored by various governments.

6. DO NOT SMOKE DURING SHORE EXCURSIONS.

Fire is a very serious hazard in the dry climate of Antarctica. Great care must be taken to safeguard against this danger, particularly around wildlife areas, historic huts, research buildings, and storage facilities.

7. STAY WITH YOUR GROUP OR WITH ONE OF THE SHIP'S LEADERS WHEN ASHORE.

- follow the directions of the expedition staff.
- never wander off alone or out of sight of others.
- do not hike onto glaciers or large snow fields, as there is a real danger of falling into hidden crevasses.

Along with these guide-lines the Antarctic Treaty principles and the Agreed Measures are explained, as well as several United States domestic laws that apply to its citizens.

Source: IAATO Submission 1992a

APPENDIX 2.4 GUIDELINES OF CONDUCT FOR ANTARCTICA TOUR OPERATORS

1. Thoroughly read the Antarctic Conservation Act of 1978 (US Public Law 95-541), abide by the regulations set forth in the Act, and brief your staff accordingly. Comparable legislation for non-US countries should be adhered to accordingly. Be mindful of your own actions and present the best example possible to the passengers.
2. Be aware that under the Act, it is prohibited to enter Specially Protected Areas (SPAs) and Sites of Special Scientific Interest (SSSIs) unless permits have been obtained in advance. Only those with "compelling scientific purpose" are allowed permits to enter SPAs, as any entry could "jeopardise the natural ecological system existing in such an area". SSSIs are "sites where scientific investigations are being conducted or are planned and there is a demonstrable risk of interference which would jeopardise these investigations". Permits to enter SSSIs are only granted if the "proposed entry is consistent with the management plan" for that particular site.
3. Enforce the IAATO Guidelines of Conduct for Antarctica Visitors in a consistent manner. Please keep in mind, however, that guidelines must be adapted to individual circumstances. For example. fur seals with pups may be more aggressive than without pups, and therefore passengers need to stay farther away; gentoo penguins are more sensitive to human presence than chinstraps; penguins on eggs or with small chicks are more easily disturbed than moulting chicks.
4. Hire a professional team, including qualified, well-trained and experienced expedition leaders, cruise directors, officers, and crew. Place an emphasis on lecturers and naturalists who will not only talk about the wildlife, history and geology, but also guide passengers when ashore. It is recommended that at least 75% of the staff have previous Antarctic experience.
5. Hire zodiac drivers who are familiar with driving zodiacs in polar regions. Zodiac drivers should take care not to approach too close to icebergs or other floating ice, or glaciers where calving is a possibility, or to steep cliffs where snow or ice may suddenly slip down into the sea. They should also use caution not to disturb wildlife, which can be very sensitive to engine noise.
6. Educate and brief the crew on the IAATO Guidelines of Conduct for Antarctica Visitors, the Agreed Measures for the Conservation of Antarctic Fauna and Flora, the Marine Mammal Protection Act of 1972 and the Antarctic Conservation Act of 1978, and make sure they are consistently enforced. We encourage tour operators to give slide illustrated talks to the crew and offer guided tours ashore, in order to stimulate the crew's interest in Antarctica and to make sure that they also understand the need for the environmental protection of the region. Unsupervised crew should not be ashore.
7. Have a proper staff-to-passenger ration. Ensure that for every 20 to 25 passengers there is 1 qualified naturalist/lecturer guide to conduct and supervise small groups ashore.
8. Limit the number of passengers ashore to 11 at any one place at any one time.
9. Brief all passengers thoroughly on the IAATO Guidelines of Conduct for Antarctica Visitors the Agreed Measures for the Conservation of Antarctic Fauna and Flora, the Marine Mammal Protection Act of 1972 and the Antarctic Conservation Act of 1978. It is imperative that passengers and crew be briefed about the Acts and agreed measures, as well as the specifics about the landing sites, prior to going ashore. Make certain that passengers understand both the ethical and legal responsibilities outlined in these documents.

10. When approaching whales or seals by ship or by zodiac, the ship's officer on the bridge, or the zodiac driver, should use good judgement to avoid distressing them.
11. Communicate your voyage itinerary to the other passenger vessels in order to avoid over-visitation of any site.
12. Give proper notice to all research stations: 72 hours advance notice and a 24-hour advance reconfirmation of the ship's estimated time of arrival at all Antarctic research stations.
13. Respect the numbers of visits which have been allocated by different stations, for example Palmer and Faraday, as agreed with the NSF and BAS, respectively. Comply with the requests of the station commander - for example, the commander at Arctowski requests that visits only be made in the afternoon.
14. Respect the work the scientists are conducting - do not disturb those working while visiting the stations.
15. It is the responsibility of the tour operator to ensure that no evidence of our visits remains behind. This includes garbage (of any kind), marine pollution, vandalism. etc. Litter must never be left ashore.
16. Follow Annex 5 of the Marpol Agreement. Retain all plastic for proper disposal on the mainland. Wood products, glass and metal must be compacted and disposed of well away from land or returned to the mainland. Ensure that incinerators, if used, are functioning properly.
17. Refrain from dumping bilges or treated sewage within 12 nautical miles of land or ice shelves, or in the vicinity of research stations where scientific research is taking place. This might inadvertently affect the results of scientific investigations, and could potentially harm the wildlife.
18. Respect historic huts, scientific markers and monitoring devices.

Source: IAATO Submission 1992a

APPENDIX 4.1 CRUISE VISITS TO THE ROSS DEPENDENCY AND NEW ZEALAND'S SUB-ANTARCTIC ISLANDS 1974-1991

Ship	Dates	Depart/Arrive	Pax Nos	Itinerary	Pax Landed
Lindblad Travel Inc *Lindblad Explorer*	1974	unknown	unknown	unknown	unknown
Lindblad Travel Inc *Lindblad Explorer*	1979	unknown	unknown	unknown	unknown
Lindblad Travel Inc *Lindblad Explorer*	01.02.81 - 06.03.81	Ushuaia/ Lyttleton[1]	88	Admiralty Bay, King George Island, Deception Island, Paradise Bay, Port Lockroy, Arthur Harbor, McMurdo Station, Scott Base, Cape Evans, Cape Royds, Macquarie Island, Campbell Island, Enderby Island, Stewart Island.	Generally, all passengers went ashore where landings were effected. An average of 10 crew members were also landed at each site.
Society Expeditions *World Discoverer*	22.01.81 - 22.02.81	Punta Arenas/ Christchurch[1]	Approx 115	Puerta Williams, Arctowski, Whalers Bay, Paradise Harbor, Port Lockroy, Wienke Island, Palmer Station, Torgeson Island, McMurdo Station, Cape Royds, Macquarie Island, Enderby Island.	 122 112 112 112 112 122 112 118 112 122
Lindblad Travel Inc *Lindblad Explorer*	13.12.81 - 05.01.82	Bluff/Bluff	105 58 Crew	Snares Island, Enderby Island, Auckland Island*, Enderby Island*, Macquarie Island*, Commonwealth Bay, MacKellar Islands, Dumont D'Urville.	*most pax, some crew 96, 28 crew 82, 10 crew 96, 36 crew
Lindblad Travel Inc *Lindblad Explorer*	06.01.82 - 29.01.82	Bluff/ Port Lyttleton	Approx 120 58 crew	Snares Island, Enderby Island*, Auckland Island*, Macquarie Island*, Scott Island, Dumont D'Urville, Campbell Island*, Disappointment Island, Stewart Island*.	 121 86 *assumed most pax, and some crew participated in landing, but firm figures not available

Society Expeditions *World Discoverer*	20.01.82 - 17.02.82	Punta Arenas/ Bluff[1]	150	Arctowksi Stations*, Deception Island, Argentine Island, Faraday Station*, Palmer Station*, Peter I Island, Macquarie Island*, Auckland Island*, Enderby Island*, Stewart Island.	*Information not available on numbers landed 10 persons
Society Expeditions *World Discover*	20.02.83 - 19.02.83	Punta Arenas/ Bluff[1]	110	Arctowski Station, Deception Island, Port Lockroy, Faraday Station, Palmer Station, McMurdo Station, Cape Evans, Cape Royds, Cape Hallett, Cape Adare.	Essentially all passengers were landed at each site visited.
Salen Lindblad Inc *Lindblad Explorer*	20.01.83 - 26.02.83	Punta Arenas/ Wellington[1]	104	Nelson Island, King George Island, Paulet island, Deception Island, Palmer Station, Paradise Bay, Port Lockroy, Argentine Islands, McMurdo Station, Scott Base, Cape Evans, Cape Royds, Franklin Island, Cape Hallett, Campbell Island, Enderby Island, Auckland Island, Stewart Island, Bluff.	Essentially all passengers were landed at each site visited.
Salen Lindblad Inc *Lindblad Explorer*	29.01.84 - 02.03.84	Punta Arenas/ Wellington[1]	103	Nelson Island, King George Island, Deception Island, Paradise Bay, Port Lockroy, Peter I Island, McMurdo Station, Scott Base, Cape Evans, Cape Royds, Cape Hallett, Campbell Island, Auckland Island, Enderby Island, Stewart Island.	Essentially all passengers were landed at each visited.

Society Expeditions *World Discoverer*	20.01.87 - 21.02.87	Punta Arenas/ Bluff[1]	150	Romanche Glacier, Cape Horn, King George Island, Deception Island, Gonzalez Videla /Almirante Brown Stations, Palmer Station, Peter I Island, Cape Royds, Cape Evans, Scott Base, Terra Nova Bay, Cape Adare, Balleny Islands, Campbell Island, Auckland Island, Snares Island.	Too much ice to reach McMurdo and Scott bases.
Society Expeditions *World Discoverer*	08.12.90 - 23.12.90	Christchurch/ Hobart	Approx 148	Chatham Island, Bounty Island, Antipodes Island, Campbell Island, Enderby Island, Macquarie Island	137 zodiac zodiac 134 148 131/137
Society Expeditions *World Discoverer*	23.12.90 - 11.1.90	Hobart/Bluff	Approx 158	Macqaurie Island, Commonwealth Bay, Mertz Glacier, Point Geologie, Campbell Island, Auckland Island, Enderby Island, Snares Island.	152/158 136 zodiac zodiac 147 130 156 zodiac
Society Expeditions *World Discoverer*	11.01.91 - 06.02.91	Bluff/Bluff	Approx 160 40 crew	Campbell Island, Cape Crozier, McMurdo Station, Scott Base, Cape Evans, Terra Nova Bay, Coulman Island, Cape Hallett, Cape Adare, Carnley Harbor, Hanfield Island, Auckland Island, Enderby Island, Snares Island.	151 zodiac 155 154 zodiac 146 zodiac 141 137 151/144 cruising 98 155 zodiac
Salen-Lindblad *Frontier Spirit*	03.02.91 - 26.02.91	Hobart/Bluff	Approx 230	Macquarie Island, Terra Nova Bay, Scott Base, McMurdo Station, Cape Evans, Cape Royds, Cape Adare, Campbell Island, Enderby Island, Snares Island.	 220 228 210 200 201 155

Society Expeditions *World Discoverer*	06.02.91 - 03.03.91	Bluff/Bluff	Approx 100	Snares Island, Auckland Island, Enderby Island, Campbell Island, Cape Crozier, Cape Royds, Cape Evans, Scott Base, McMurdo Station, Coulmand Island, Cape Hallett, Cape Adare, Buckle Island, Macquarie Island,	zodiac 110 141 135 zodiac 130 134 143 149 cruising cruising cruising cruising zodiac
Salen-Lindblad *Frontier Spirit*	27.02.91 - 21.03.91	Bluff/Bluff	Approx 112	Campbell Island, Balleny Island, Cape Evans, Marble Point, Scott Base, McMurdo Station, Cape Royds, Ross Ice Shelf, Franklin Island, Coulman Island, Cape Hallett, Cape Adare, Balleny Island, Macquarie Island, Auckland Island, Enderby Island, Stewart Island,	92 98 112 97 98
Adademik Fedorov	details unknown	details unknown	details unknown	Cruise through Ross Sea?	details unknown

[1] These cruises are frequently referred to as `circumnavigation´ cruises. However, in effect they only travelled around half the Antarctic continent.

To create the above table, the author compiled data from several sources. Some information may not be correct, due to discrepancies among sources, or lack of figures.

Source: Enzenbacher 1991:136; National Science Foundation 1991; New Zealand Antarctic Society 1992a:163; Sheppard pers comm.

APPENDIX 4.2 CONDITIONS APPLICABLE TO TOURIST GROUPS AND PRIVATE EXPEDITIONS VISITING NEW ZEALAND ANTARCTIC STATIONS

9. In considering requests to visit its stations in Antarctica the New Zealand Government requires assurances in writing from the expedition organisers that:
   They will comply with the provisions of the Antarctic Treaty, the Recommendations then effective and the conditions applicable to the stations to be visited.
   Tourists and other visitors do not engage in any activity in the Treaty area which is contrary to the principles and purposes of the Antarctic Treaty or Recommendations made under it. The relevant principles and Recommendations are attached.
   The proposed tourist or private expedition is entirely self-supporting and that adequate safety precautions, including the establishment of adequate telecommunications procedures, are being undertaken.
   They are covered by adequate insurance to compensate for any costs involved in rendering assistance in an emergency.
   They agree to provide the New Zealand Government with a report at the end of the visit covering their activities within the Treaty area.

10. Requests should normally be lodged with the Manager, DSIR Antarctic[1], Christchurch, or a New Zealand diplomatic post at least three months prior to the departure for Antarctica.

11. Once New Zealand Government approval in principle has been granted through the Manager, DSIR Antarctic, the SENZREP at Scott Base is the responsible authority for finalising details of visits to New Zealand bases and other areas where visitors may have some impact on scientific programmes in progress.

12. The safety of all visitors is the responsibility of the tour expedition leader. Whilst all reasonable precautions will be taken to ensure the safety of those visiting New Zealand bases, the New Zealand Government will not accept any liability for accident or injury sustained by visitors at any time within the Antarctic.

13. Normal courtesies and limited hospitality will be extended to any tourist and private expedition visiting New Zealand Antarctic stations in accordance with these conditions. Operational limitations and commitments to supporting the New Zealand Antarctic Programme may, however, limit the extent of services from time-to-time.

14. Tourist and private expeditions are expected to furnish the SENZREP, Scott Base with at least 24 hours notice, preferably 48 hours, of expected time of arrival in order to minimise disruptions to Base routine and as a matter of courtesy.

15. For their own safety or to safeguard scientific programmes being undertaken at or near the station all tourists and other visitors are asked to comply with any conditions or restrictions on their movements which the SENZREP may stipulate.

16. In order to minimise disruption to station activities the SENZREP may have to limit the number and length of visits to any particular base by a tourist or

---

[1] Now New Zealand Antarctic Programme (NZAP)

private expedition. Scott Base will determine these limits depending on the situation at the particular time of the visit.

17. Since the tourist or private expedition is expected to be entirely self-sufficient, the New Zealand Government will not assist with transportation, operational support, food or shelter. Such assistance may be provided only in an emergency. Reimbursement by the tour organiser will be required where goods and services beyond those used during humanitarian rescue efforts are provided.

18. Visits by personnel from New Zealand stations to an expedition base or ship may only be arranged through the SENZREP, Scott Base.

19. The New Zealand Government has on behalf of the Antarctic Treaty nations undertaken care and custody of certain historic monuments in the Ross Dependency in order to protect the structures and their contents. Visits to and permission for entry into these historic monuments by tourist and private expeditions should be made only with the assent of the SENZREP, Scott Base and , where appropriate, with a suitable guide.

20. In the event of any member of the visitor group as a whole not complying with any of the conditions applicable in the above, the SENZREP, Scott Base may cancel all arrangements made without notice.

Source: Ministry of External Relations Trade 1990:3-4 Points 9-20; Enzenbacher 1991:88.

APPENDIX 4.3 TOURIST PROCEDURES DURING VISITS TO THE ROSS DEPENDENCY

New Zealand Government Representative

All vessels intending to land in the Ross Dependency must be accompanied by a New Zealand Government representative, who will ensure compliance with any permits and will be able to act as a guide and provide site interpretation. This person will also carry keys to historic huts within the Ross Dependency.

Procedures for Visits

Cape Adare

This is the site of two huts occupied by Borchgrevink during 1899-1900 and a third hut erected by Scott's northern party (1910-1911). Other features include Hanson's Grave and an extensive Adelie penguin colony (241,000 pairs in 1988).

The hut was last visited by a conservation group from the Antarctic Heritage Trust during 1989/90 season when the roof of the last remaining intact hut was reclad.

Beach lands at Cape Adare are always difficult with most visiting parties being unable to land due to surf conditions.

The huts are located close to the beach and now are totally surrounded by the Adelie rookery. Care must be taken not to disturb nesting birds. The hut is locked and a key is carried by the New Zealand representative.

Procedures

Parties should land on the beach immediately in front of the huts. This beach landing can be difficult, waves frequently dump. Skill is required by zodiac drivers here.

Note: the Cape Adare area regularly experiences extremely high winds, both from the sea and off the continent.

Borchgrevink's hut is kept locked. There are to be no more than 5 persons in the hut at anyone time (inclusive of the NZ representative).

Hanson's grave is 1000' above Cape Adare, approximately 45 minutes walk one way. This walk is difficult and exposed and should only be offered to and attempted by fit and agile persons. This is *not* the walk for the majority of passengers.

Cape Hallett

This is the site of the old Hallett Station, a large Adelie penguin rookery and SPA. Hallett Station was built in 1957-58 for the International Geophysical Year (IGY). It was operated as a joint New Zealand - United States of America station until 1964 when a fire destroyed the main science building. It remained as a support facility operated by the United States Antarctic Research Programme until 1973 when it was closed.

Removal of the majority of the station began in the late 1970's and has almost been completed. Four buildings and a fuel tank remain.

The adjacent Adelie rookery contained 60,000 pairs at the 1988 census. The penguins are rapidly returning to the area previously occupied by the station buildings.

The area was last visited in 1990/91.

A Specially Protected Area (SPA 7) is situated in the Cape Hallett area. This area comprises all of the land between the coastal road and the ice margin. No entry into this area is permitted.

SPA 7 is designated to protect a rich area of vegetation (mosses and lichens) which support a variety of outstanding terrestrial fauna.

Procedures

Parties should be landed on the beach in front of the existing buildings. Care is required when moving about buildings as penguins now nest throughout the area.

The Adelie rookery proper, which is located to the south and west of the buildings, should not be entered.

Cape Royds

This is the site of the hut built by Shackleton for the 1907-09 expedition and an extensive Special Site of Scientific Interest (SSSI No 1), which includes the Adelie penguin rookery (3,500 pairs in 1988) and sea access to the coast about much of Cape Royds.

The area east of Pony Lake to the coast at Derrick Point contains many artefacts of the various expeditions which have occupied the site. The best being the hut built in February 1908.

Procedures

Parties must arrive via Backdoor Bay, east of Derrick Point, and walk to the hut and surrounding area (10-15 minutes). The hut is kept locked, key carried by a NZ representative, and there are removable wooden shutters on the windows on the north wall of the hut. These must be replaced at the end of the visit.

No more than 8 persons are to be in the hut at any one time (inclusive of the NZ representative).

No more than 8 persons are to be in the hut at any one time (excluding those directly invoved in landings). this is because on the limited amount of area available for people to walk due to the SSSI.

Where practicable additional staff from Scott Base may travel to Cape Royds to assist with on-site interpretation.

No person may enter the SSSI which is marked by small orange plates.

Cape Evans

This is the site of Scott's Hut, built in January 1911 for the push to the South Pole. Adjacent to this hut is Greenpeace's year round base housing 5 persons. Scott's Hut is located on the beach at Home Bay, Cape Evans. It is surrounded by many historic relics, including a memorial cross to some members of Shackleton's Ross Sea Party 1914-17.

Procedures

Landings can be made anywhere possible on the beach. Access to the beach through ice to the huts can sometimes be difficult. Scott's Hut is kept locked. Key is carried by the NZ representative.

No more than 10 persons are to be in the hut at any one time.

Where practicable, additional staff from Scott Base may travel to Cape Evans to assist with site interpretation.

McMurdo Station Area

Hut Point, the western boundary of the McMurdo Station facilities area, has located on it Discovery Hut built by Scott in 1902. Nearby is a memorial cross to Vince erected by this expedition. Observation Hill on the southern boundary of McMurdo Station has located at the top the memorial cross to Scott's Party which perished on the return journey from the South Pole.

Discovery Hut

This hut was the first building erected on Ross Island by Scott's 1902 expedition. Having been used as a staging post and refuge for subsequent expeditions, it has undergone many modifications since it was erected.

Procedures

Discovery Hut is kept locked, key will be available through NZ representative. Access to the hut can be from either the ice pier at McMurdo (five minutes walk), from McMurdo Station (15 minutes walk), from Scott Base (50 minutes walk), or from a landing on a small beach on the western side of Hut Point (80 metres from the hut).

No more than 10 people are permitted in the hut at any one time.

Access may be offered at times when the NZ representative is not available through the Senior New Zealand Representative at Scott Base who also holds a key.

Observation Hill

Access to Observation Hill is by a track which leaves from behind the buildings on the flank of the hill or from the road to these buildings. Walking time from McMurdo 40 minutes (one way) or 1 hr 15 minutes from Scott Base (one way).

McMurdo Station

All visits to be coordinated with the Senior United Sates Representative Antarctica, by the cruise director.

Scott Base

Scott Base is New Zealand's major science and logistics station in the Ross Dependency. In the summer season it houses 40-80 persons and 11 people in winter. It is located 3.5 km from McMurdo Station.

Procedures

All visits to Scott Base must be organised in advance through the Manager, DSIR Antarctic[1], and will take place only on a non-interference to base operations basis. Once in the area final arrangements should be made direct through the New Zealand representative on board with the Senior New Zealand Representative at Scott Base using 5400KHZ (or VHF if the NZ representative onboard is carrying a NZARP radio). A minimum of 72 hours notice must be

[1]Now New Zealand Antarctic Programme (NZAP)

given to Scott Base. Access to Scott Base will depend upon sea ice conditions and/or if the ice pier is available to the tour vessel.

If there is open water in front of Scott Base landings may be made on the beach at the eastern end of Scott Base buildings.

If it is not possible to land visitors ashore at Scott Base the walking time to Scott Base to McMurdo is 40-60 minutes depending upon weather. In consultation with the tour organisers Scott Base will, if required, provide limited transport between McMurdo and Scott Base.

Visits to Scott Base

1. The Senior New Zealand Representative will advise the times and numbers that each group may arrive at Scott Base.

2. Group sizes will be advised, 10-15 per group.

3. Groups are to assemble at the visitor reception area in front of the Command Centre.

4. Tours of base facilities will last 1 - 1.5 hours and include:
    a. an introduction to the base
    b. tour of facilities including science laboratory
    c. light refreshments in mess
    d. visit to Scott Base shop

Notes

1. There are no facilities for posting mail available at Scott Base. (The Post Office closed in 1987.)
2. Postage stamps are not available at Scott Base.
3. A limited number of cachets are available in the public foyer in the Command Centre.
4. The bar is available on an invitation-only basis to all non NZAP personnel.
5. The only public area at Scott Base is the foyer of the Command Centre which houses Telecom and Shop.
6. While phone calls to the rest of the world may be made at Telecom, Scott Base, there is normally a 7-day waiting list or booking period. Limited calls may be available.

Source: New Zealand Antarctic Programme 1993a

APPENDIX 4.4 CODE OF ENVIRONMENTAL PRINCIPLES FOR TOURISM IN NEW ZEALAND

The New Zealand Tourist Industry Federation has developed a proactive code of environment principles for tourism, reflecting, and being part of, community concern for the environment, and to ensure an active, positive environmental responsibility by the tourist industry. Its guiding principles are:

- To promote environmentally sustainable tourist development so as to ensure that the tourist industry can continue to be based upon the natural resources of New Zealand in the long term.
- To recognise that both development and conservation can be valid and complementary uses of New Zealand's resources.

Protection and Development:
- To manage existing natural and cultural areas associated with tourist development and use in such a way that they are protected and enhanced.
- To recognise that every environment has limits of acceptable change which in some areas may be considerable but which in other areas may be small or zero.
- To encourage the relevant agencies to identify areas worthy of special protection and determine carrying capacities for sensitive areas.
- To adopt general conservation policies and to minimise adverse environmental impacts.

Assessment and Monitoring:
- To ensure that environmental assessment becomes an integral step in the consideration of any site as a tourist development.
- To ensure that community attitudes and feelings are incorporated from the earliest stages of planning for a tourist development.
- To encourage the review of current environmental management practices throughout the tourist industry and the modification of these practices where necessary.
- To ensure that an on-going responsibility for environmental care and protection and community concerns is adopted.

Liaison:
- To cooperate with relevant local, regional and national authorities and communities in order to integrate environmental requirements into resource management.
- To ensure that those involved in the tourist industry contribute to discussions on environmental planning and management issues as they affect tourism.
- To provide the opportunity for the wider community to be involved in discussions and consultations on tourism and environmental management issues.

Education and Information:
- To promote and to reward environmentally responsible tourist organisations and businesses.
- To foster in both management and staff, environmental awareness and conservation principles.
- To enhance visitors' appreciation and understanding of the natural environment through the provision of accurate interpretation and information.
- To encourage an understanding of the Maori lifestyle, customs, beliefs and traditions as they relate to the environment.

This Code was developed in conjunction with the tourist industry, the New Zealand Tourism Department, the Department of Conservation, and other interested parties.

Source: New Zealand Tourist Industry Federation Inc, 1991.

APPENDIX 4.5 NATIONAL POLICY STATEMENT

Purpose of national policy statements

(1) The purpose of national policy statements is to state policies on matters of national significance that are relevant to achieving the purpose of this Act [Resource Management Act].

(2) In determining whether it is desirable to prepare a national policy statement, the Minister may have regard to -

(a) The actual or potential effects of the use, development, or protection of natural and physical resources:

(b) New Zealand's interests and obligations in maintaining or enhancing aspects of the national or global environment:

(c) Anything which affects or potentially affects any structure, feature, place, or area of national significance:

(d) Anything which affects or potentially affects more than one region:

(e) Anything concerning the actual or potential effects of the introduction or use of new technology or a process which may affect the environment:

(f) Anything which, because of its scale or the nature or degree of change to a community or to natural and physical resources, may have an impact on, or is of significance to, New Zealand:

(g) Anything which, because of its uniqueness, or the irreversibility or potential magnitude or risk of its actual or potential effects, is of significance to the environment of New Zealand:

(h) Anything which is significant in terms of section 8 (Treaty of Waitangi):

(i) The need to identify practices (including the measures referred to in section 24(h)[1], relating to economic instruments) to implement the purpose of this Act[2] :

(j) Any other matter related to the purpose of a national policy statement.

Source: Resource Management Act 1991 Part V Section 45.

---

[1] 24(h) The consideration and investigation of the use of economic instruments (including charges, levies, other fiscal measures, and incentives, to achieve the purpose of this Act.

[2] The purpose of this Act is to promote the sustainable management of natural and physical resources.

APPENDIX 5.1 FEATURES OF THE NEW ZEALAND SUB-ANTARCTIC ISLANDS AND MACQUARIE ISLAND

Island	Area (ha)	Maximum Altitude (m)	Physical Features	Flora and Vegetation	Fauna	Cultural Features	Management
Antipodes Islands	2,100	402	Islands are of volcanic origin.	Recorded flora include 46 species of flowering plant, 18 pteridophyte, 23 bryophyte, and 15 moss species. 4 plant species are endemic.	25 species of bird breed on the islands. There are 4 endemic species of birds. There is a high degree of endemism among land invertebrates. Southern elephant seal is the only indigenous breeding mammal.	Islands were discovered in 1800. Sealing occurred until the 1820s. A castaway depot was maintained from 1886 to 1927. The island was leased for farming in 1895 but was never stocked. Mice are the only introduced fauna.	Entire island is a National Nature Reserve: 1961 - declared a Reserve for Preservation of Fauna and Flora; 1975 - foreshores were added to the Reserve; 1977 - designated a Nature Reserve; 1986 - National Nature Reserve. National conservation legislation also pertains to the Reserve. A draft management plan has been prepared for the Reserve. Visitation is strictly controlled.

Auckland Islands	62,564	667	The group consists of a main island and several islets and stacks. The islands are the eroded remains of two basaltic volcanoes. The islands have been subject to several periods of glaciation.	Vascular flora is extremely rich and consists of 228 species including 44 species of ferns. The main Auckland Island is dominated by a southern Rata forest.	The islands have a rich birdlife, with at least 46 species of breeding birds, including 8 endemic species. The islands are among the major breeding grounds in the world of the shy and wandering albatross. The islands are the main breeding grounds for Hooker's sea lion, several other seal species also breed on the foreshore. Several hundred species of terrestrial invertebrates occur, with a high degree of endemism.	Islands were discovered in 1806. Sealing and whaling occurred throughout the 1800s. The main island was inhabited by a small group of Maori from 1842-1856. A settlement Hardwicke was establishe d in 1849 but was abandoned in 1852. Later attempts at sheep farming failed. Introduced fauna and flora occur on several of the islands, although an active eradication programm e is underway.	The Auckland Islands are a National Nature Reserve: 1910 - Adams Is. declared a Reserve for the Preservation of Fauna and Flora; 1934 - the rest of the islands were included; 1975 - the Reserve was extended to cover the foreshore; 1977 - classified as a Nature Reserve; 1986 - declared a National Nature Reserve. A Management Plan has been established for the Reserve which permits limited visitation, although tour parties must be accompanied by a ranger.
Bounty Islands	135	88	Comprises over 20 small granite islands, islets, and rocks.	No terrestrial vegetation has been described although lichen and green algae reportedly occur.	The islands support the largest known breeding ground of New Zealand fur seal. 7 species of bird breed, including two endemic species.	Discovered in 1788. Sealing operations began shortly after until decimation of seals by 1830. A cast-away depot was establishe d in the 1880s.	The islands are a National Nature Reserve: 1961 - Reserve for Preservation of Flora and Fauna; 1975 - foreshores added to the Reserve; 1977 - classified as a Nature Reserve; 1986 - declared a National Nature Reserve. A draft management plan has been prepared with visits being strictly controlled.

Campbell Islands	11,331	567	Campbell Island is a remnant of a dissected volcanic dome. The island was glaciated in the Pleistocene.	The vascular flora consists of 218 species, subspecies, and hybrids, with 119 species of moss.	29 species of bird breed on the islands, with one endemic. The islands support large breeding colonies of albatross and yellow-eyed penguin. Southern elephant seal, New Zealand fur seal, and Hooker's sea lion breed on the islands. Southern Right Whale congregate near the islands for breeding.	Islands discovered in 1810 with sealing continuing until the 1830s when stocks were exhausted. Whaling ceased in 1916. Sheep farming from 1895-1931. A meteorological station currently operates on the island.	The Islands are a National Nature Reserve: 1954 - Reserve for Preservation of Fauna and Flora; 1975 - foreshores added to the reserve; 1977 - designated a Nature Reserve; 1986 - National Nature Reserve. Visitation is permitted but is strictly regulated. A management plan has been developed for the islands.
Snares Islands	328	152	Snares Islands comprise two groups of islands and are composed of jointed granite.	Flora of the islands comprises 20 vascular, 27 moss and bryophyte, 6 fungi and 45 lichen species. The vegetation is dominated by Olearia forests.	The islands have 23 species of breeding birds with several endemic species. 2.75 million burrow-holding pairs of Sooty shearwater were estimated to live on islands in 1982. Several marine mammals breed on the island.	There is evidence of a pre-European Maori presence on the islands. European discovery occurred in 1791. Sealing occurred throughout the 1800s. A castaway depot was established in 1867, maintained until 1929. A research station was established in 1961.	The Islands are a National Nature Reserve: 1961 - Reserve for Preservation of Fauna and Flora; 1975 - extended to include foreshore; 1977 - designated a Nature Reserve; 1983 - designated a National Reserve. A Management Plan for the Reserve has been prepared. No tourist landings on any of the islands is allowed, although cruising may be permitted.

Macquarie Island (includes Judge and Clerk Islands, and Bishop and Clerk Islands).	12,785	433	Rocky shoreline with steep cliffs. Island is volcanic in origin. Glacial activity in past but there is now no permanent ice.	No trees, but the Island is heavily vegetated: 40 vascular, 50 moss, 30 liverwort, and 55 lichen species. 3 endemic vascular species. High degree of endemism among lichens.	21 breeding species of bird. Only known breeding ground of the royal penguin. A number of seal species also breed on the Island. There are several hundred species of invertebrate.	Discovered in 1810. Inhabited periodically by sealers and whalers throughout the 1800s. Several scientific expeditions visited the Island during the 19th century. A meteorological and scientific research station was established in 1948. Several significant sealing sites remain. Introduced animals include grey duck, mallards, wekas, cats, rats, mice, and rabbits.	The entire island is declared a Nature Reserve under Tasmanian State legislation: 1933 - declared a Nature Sanctuary; 1972 - declared a State Reserve; 1977 - declared a Biosphere Reserve; 1978 - classified as a Nature Reserve. Entry to the Reserve is by permit. A detailed management plan was established in 1991. Limited tourist visitation is permissible under strict supervision.

Source: Hall 1992b.

APPENDIX 5.2 NEW ZEALAND SUB-ANTARCTIC ISLANDS MANAGEMENT PLAN

Island	Administration	Public Entry and Use	Management of Flora and Fauna	Monitoring Ecological Changes and Human Impacts	Management Facilities and Controls	Devt.	Sea	Education
Auckland	Management. Support of other government agencies.	General Scientific research. Historical, archaeological sites, antiquities and research. Survey control station. Magnetic station. Tourism.	General. Feral goats. Feral pigs. Feral cats. Feral cattle. Feral rabbits. Precautions against further rodents and rodent control. Control exotic plants and precautions against further introduction. Manipulation indigenous taxa.	Ongoing programme to monitor changes in the natural eco-systems of the reserve. To monitor the effects of human impacts on the reserve.	Tracks, buildings and structures. Wharf and shore mooring facilities. Land vehicles. Domestic animals. Waste disposal. Fires and fire control. Emergency entry. Use of helicopters.	To oppose all applications for exploitive uses of the reserve which would be detrimental to its natural or cultural values as a protected area.	Marine buffer zones. Marine and coastal pollution.	Interpretation. Management plan review.
Campbell	Management. Ministry of Defence support. Special arrangements with NZ meteorological service, Ministry of Transport.	General. Scientific research. Historical and archaeological sites, antiquities, and research. Magnetic station - occupation. Tourism.	General. Feral sheep. Feral cattle. Feral cat. Precautions against further introduction rodents and rodent control. Control exotic plants; precautions further introduction. Manipulation indigenous taxa.	Program to monitor changes in natural ecosystem of reserve. Program to monitor effects of human impacts on reserve.	Building tracks. Land vehicles. Pets. Waste disposal. Fires and fire control. Search and rescue. Use of helicopters.	To oppose all applications for exploitive uses of the reserve which would be detrimental to natural or historic values.	Marine buffer zone. Marine and coastal pollution.	Interpretation. Management plan review.
Snares	Management. Ministry of Defence support.	General (policy and implementation). Scientific research. Historical, archaeological sites, antiquities and research. Magnetic stations - occupation. Tourist and related visitors. Shore mooring by fishermen.	Survival and protection. Quarantine. Manipulation indigenous taxa.	Ongoing program to monitor changes in the natural ecosystem of the reserve Program to monitor effects of human impacts on the reserve.	Buildings and tracks. Waste disposal. Fire and fire control. Emergency entry. Use of helicopters.	To oppose all applications for uses of the reserve which would be detrimental to its natural or cultural values as a protected area.	Marine buffer zone. Marine and coastal pollution.	Interpretation. Management plan review.

Source: Department of Lands and Survey 1983; Department of Lands and Survey 1984; Department of Lands and Survey 1987.

APPENDIX 5.3 NEW ZEALAND'S SUB-ANTARCTIC ISLANDS GUIDELINES ON TOURISM

General Summary

1. All visits require an Entry Permit (Reserves Act 1977) for which a permit fee and a visitor impact fee is charged by the Department of Conservation.
2. Tourist landings are excluded from the Antipodes and Snares Island groups. Zodiac cruising without landing is permitted off these island groups.
3. Within the Auckland Island group tourism visits are only permitted on the main island (Auckland Island and Enderby Island).
4. Within the Campbell Island group, tourist visits are restricted to the main island (Campbell Island).
5. At the Bounty Island group landing is only permitted on Depot and/or Proclamation Islands, outside November - February inclusive, the New Zealand Fur Seal breeding season.
6. Helicopter landings and overflying are not permitted without separate prior approval.

General Conditions

1. The Department reserves the right to revoke any landing authority or change any landing site prior to departure. Likely reasons for this include:
   - environmental damage identified by monitoring after the issuing of the authority.
   - non-compliance with permit conditions.
2. Cruise ships (180 pax maximum) and small tour boats (30 people maximum) must be accompanied by a representative with sub-Antarctic experience.
3. Yachts (2-9 pax, non profit-seeking) must be accompanied by a representative or person accredited by the department.
4. The representative shall reserve the right to refuse entry to or change the landing site on any island upon arrival. Likely reasons for this would be:
   - distribution of breeding animals.
   - weather conditions (on ground).
   - disturbance to the environment.
   - non-adherence to conditions of authority (permit).
5. Maximum of 600 people will be permitted to land at any one designated tourist site per year.
6. A maximum ratio of 20 visitors: 1 guide is to be maintained. Note that for Bounty Islands the ratio is to be 10:1.
7. Each day's programme must be approved by the Departmental representative prior to landing.
8. All tourist operations will be ship based with no overnight stays on the islands except in an emergency, or specifically authorised.
9. The tourist operator is required to ensure the satisfaction of the representatives that all visitors remove all soil or plant material (eg seeds) from all boots, clothing and day packs prior to landing on each island and immediately following their return from that island for quarantine purposes. The representative will not permit a visits until this has occurred.
10. No collecting of specimens or souvenirs is permitted.
11. The following are requirements of all visitors in order to protect wildlife and avoid violating the seals', penguins', or seabirds' personal space. Visitors must:
    a. Not get closer than a "baseline" distance of: 5 metres to all wildlife and seabirds, and 7 metres to marine mammals.
    b. Give animals the right of way.
    c. Stay on the edge of, and walk through, animal groups.
    d. Back-off where necessary. For example, if seabirds are staying consistently off their nests (particularly while incubating eggs), there is great danger of predators (eg skuas) destroying eggs or young; of eggs or young being exposed to the weather (hot or cold temperatures).
    e. Not touch the animals or offer food to any wildlife.
    f. Not completely surround any wildlife during viewing.
    g. Keep all noise to a minimum to avoid frightening animals.

12. Any food and drink items to be consumed ashore are to be checked and approved for taking ashore by the representative prior to departure ashore for quarantine purposes. No avian food products are permitted ashore due to risk of spread of disease to sub-Antarctic bird populations.
13. Entry permits for tourism are for that purpose only, any other activities must be covered by a separate agreement and authority (permit) issued by the Department. An example of other activities is commercial photography or filming.
14. All shore parties are to be in 2 way radio communication with the ship and have appropriate first aid and emergency equipment provided by the tour operator.
15. No toilets are provided at any landing site for tourist use.
16. No rubbish (eg film wrappers, orange peel, tissues) must be left at any visitor site.
17. Smoking is not permitted whilst ashore on islands.
18. Historic sites and huts may only be entered when accompanied by the representative.
19. The use of helicopters is not permitted for tourism purposes.
20. Employees of tourist operators and ships crew will be subject to the same conditions as apply to tourists when ashore.

Auckland Island Group

Enderby Island

1. Maximum number ashore to be determined by representative in each case.
2. Due to sensitivity of Hooker' sea lions breeding at Sandy Bay, the representative will be required to place restrictions on party size and movements according to the location of breeding sea lions.
3. A system of marker flags will be provided by cruise ships (30-160 pax) to route passengers around low impact sensitive sites at Sandy Bay.
4. All people are to keep of Sandy Bay Beach during the sea lion breeding season (December and January) except for entry to and exit from the island. This will be at a site specified by the representative.

(NB: Beach conditions which facilitate safe evacuation of passengers from Sandy Bay on Enderby island can change very quickly, and all tourist operators must be prepared for this situation.)

Main Auckland Island

1. Landings on the main Auckland Island are restricted to parties of no more than 30 at any one time, at specific sites as approved by the representative except at Erebus/Terror Cove, Hanfield Inlet and Epigwaitt.

Campbell Island Group

1. Maximum number ashore to be determined by representative in each case.
2. All landings are to be restricted to Perseverance harbour at the wharf or the Spruce tree. The representative may permit landings of small parties elsewhere specifically to reduce the impact of overland travel.
3. All access to Campbell Island Meteorological Station is at the invitation of the Officer in Charge (OIC).
4. Access north of Mt Fizeau and to Beeman Hill is restricted.
5. Parties of visitors are only permitted travel overland as approved by representative.

Bounty Island Group

1. Bounty Islands are not suitable for regular tourism. Visits will be limited to specialised interest groups.
2. Landings are restricted to times when weather and seal behaviour conditions allow.
3. A ration of 10 visitors to 1 guide is to be maintained.
4. A maximum of 10 people, exclusive of guides and representative, are allowed ashore at any one time. All visitors under the immediate supervision of the representative.

Source: Department of Conservation 1992a.

APPENDIX 5.4 SUB-ANTARCTIC ISLANDS MINIMUM IMPACT CODE

SUBANTARCTIC ISLANDS MINIMUM IMPACT CODE

The Department of Conservation's primary objective in managing the New Zealand subantarctic islands is to maintain them in their natural state.
This means ensuring that the distributions, numbers and interactions of indigenous plant and animal species are not detrimentally affected by humans' past and present activities.
The following rules and regulations have been implemented in order to allow nature tourism to the islands with minimum risk and disturbance to the environment.

Please thoroughly study and follow these guidelines.

- **All the New Zealand subantarctic island groups are National Nature Reserves and entry is by permit only.** Tourist visit entry permits are issued on the condition that the group is accompanied by a Department of Conservation representative. The representative's role is to oversee visitors' activities to ensure that they have no detrimental effects of the ecology of the islands.

Guidelines are set in accordance with Government legislation and Department of Conservation management plans for the islands.

- **Tourist landings are not permitted on the Antipodes and the Snares Island groups, and unmodified or near-pristine islands in the Auckland and Campbell Island groups.** These islands are free of rats, and the accidental introduction of rodents would decimate insect and bird populations, and cause extinctions. An appreciation of these islands can be gained by cruising off the coast in rubber boats.

- **The Department of Conservation permits landing at designated sites on the following islands:**

Within the Auckland Island group on the main island (Auckland Island) and Enderby Island only.
Within the Campbell Island group only on the main island (Campbell Island).
At the Bounty Islands group landing is only permitted on Depot and Proclamation Islands between the months of March and October.
The DoC representative has the right to refuse entry or change the landing site on the island for such reasons as: risk of disturbing breeding animals, poor weather conditions, sensitivity of the environment.

- **Animal (eg rodents, wasps) and plant (eg seeds, soil) quarantine procedures are strictly enforced** with all tourist visits to ensure there are no accidental introductions of new pests, plants or pathogens which could dramatically affect the unique fauna and flora of the islands. It is also necessary to be on guard against the spread of aliens between islands and within the islands of a group. All footwear and clothing must be thoroughly checked and cleaned before and following each separate island visit. All gear must be packed until immediately prior to landing and must be sealed against rodent entry.

- **No plant, animal or rock should be deliberately disturbed or removed.**

- **No collecting of specimens or souvenirs is permitted during visits to islands.** This includes historical evidence of humans' presence in the Subantarctic.

- **No rubbish of any kind (eg orange peels, tissues, film packages) may be left on the island.** Rubbish takes a long time to break down, attracts rodents and spoils the natural appearance of the site.

- **No avian food products (eg chicken or eggs) are permitted ashore due to the risk of spreading disease to birds.**

- **The individual space of all wildlife must be respected at all times.**

Visitors must
- give all animals the right of way. Wild animals especially seals, are extremely sensitive to movement and a person's height above the ground in relation to their size.

- get no closer than five metres to all wildlife. Remember the subantarctic summer is the animals' time for courting, mating, nesting and rearing young. Approaching too closely may cause parents to abandon young, leaving them vulnerable to predators.
- do not touch any wildlife. Such action can jeopardise the bond between parent and off-spring.
- avoid surrounding any animal during viewing. It is important not to cause animals any stress or alter their natural behaviour.
- keep noise to a minimum. Disturbance of nesting seabirds can lead to exposure of eggs to chilling, sunlight and predators.

- **Keep to formed tracks and board walks where provided to minimise damage to fragile peat soils and plants.**

- **Smoking is not permitted on the islands.** Peat soils and dry vegetation during summer can create conditions of high fire risk.

- **No toilets are provided at any visitor site for tourist purposes.**

THE TOURISM IMPACT MANAGEMENT FEE

The Department of Conservation charges a tourism impact management fee in order to help with the cost of providing for tourism in the islands. Visitors should recognise that their presence, while welcome, creates management expenses and inherent risks to the island ecosystem.
The fee is payable by the tour operator for each tourist visiting the islands. The fee helps cover the following costs:

1. **Provision of Limited Tourist Facilities on the Subantarctic Islands.** Due to the fragile nature of the subantarctic islands' peat soils an extensive and costly programme of boardwalking has been carried out at permitted tourist sites at both Campbell Island and Auckland Islands.

2. **Animal and Plant Quarantine Contingency.** Every visitor (research, management or tourist) places a risk of accidental introduction of animal or plant pests to these unique islands. All introduced species have the potential to devastate these fragile island communities. If an animal or plant were accidentally introduced during a visit, there would be significant costs in eradicating the alien species. (A store of rodent and plant quarantine equipment is maintained in Invercargill and regular rodent quarantine work carried out by the Department of Conservation at ports and anchorages from which subantarctic tour boats most frequently depart eg Port Pegasus, Stewart Island).

3. **Provision of Department of Conservation Representative and Visitor Monitoring Programme.** The Department of Conservation representative, required on all tourist ships, has the important roles of ensuring that visitor guidelines are followed and monitoring visitor impacts as part of an on-going programme.

4. **Government resource rental.** Commercial operators utilising Department of Conservation administered land are required to apply for a resource rental.
The subantarctic islands - national assets managed on behalf of all New Zealand citizens - are no different. The resource rental is spent by the department directly on management of the islands.

5. **Subantarctic Islands Guidebook.**
A copy of this is given to each visitor.

Source: Department of Conservation 1992c.

BIBLIOGRAPHY

GENERAL REFERENCES

Adams, R., Lockley, R., (1982) Voyage through the Antarctic, Penguin Books Ltd, London.

Adventure Associates, (1988), Brochures.

Adventure Network International (ANI), (1992/93), Brochures.

Alley, Rod, (1987), "New Zealand Policy and Antarctica", Policies on Ice - New Zealand's Antarctic Policy Choices, Ed. Noel Galvin, A National Conference organised by the Environment Council and Institute of Policy Studies, Victoria University, pp6-7, Wellington, 26-27 September 1987.

Antarctic and Southern Ocean Coalition (ASOC), (1992), "Tourism and Non-Governmental (NGA) Activities", Draft Report on XVII ATCM, point 6.

Antarctic and Southern Ocean Coalition (ASOC Submission), (1992), Regulation of Non-Governmental and Tourism Activities in Antarctica, XVII ATCM/INFO 52, 12 November.

Antarctic Journal, (1993), "Treaty Delegates Gather for 17th Antarctic Treaty Consultative Meeting", Antarctic Journal, National Science Foundation, Vol 28, No 1.

Antarctic Treaty, (1990), The Antarctic Treaty Handbook, Seventh Edition.

Antarctica Act, (1960), New Zealand.

Antarctica Amendment Act, (1970), New Zealand.

Antarctica (Environment Protection) Bill, (1993), New Zealand.

Auburn, F. M., (1972), The Ross Dependency, Martinus Nijhoff, The Hague.

Australian Foreign Affairs Record (AFAR), (1986), Australia and the Antarctic Treaty System, Vol 55, No 2, pp90-98, Commonwealth of Australia.

Barber, L., Selby, M., (1983), "The Search for an Alternative Strategy: New Zealand and the Antarctic", The Round Table, 288 (466-472).

Barnes, James, N., (1982), Let's Save Antarctica!, Greenhouse Publications PTY Ltd, Richmond, Australia.

Beck, P. J, (1986), The International Politics of Antarctica, St. Martin's Press, New York.

Beck, P. J., (1990a) "Antarctica Enters the 1990s: An Overview", Applied Geography, Vol 10, No 4, pp247-264.

Beck, P. J., (1990b), "Regulating One of the Last Tourism Frontiers: Antarctica", Applied Geography, Vol10, No4, pp343-356.

Beck, P. J., (1992), "The 1991 UN Session: The Environmental Protocol Fails to Satisfy the Antarctic Treaty System's Critics", Polar Record, 28(167):307-314.

Birnbaum, Jesse, (1993), "Great Explorations", Time, Vol 141, No 9, pp 40-45.

Blakely, Roger, (1987), "Ministry for the Environment Involvement in Antarctic Issues", Policies on Ice - New Zealand's Antarctic Policy Choices, Ed. Noel Galvin, A National Conference Organised by the Environment Council and Institute of Policy Studies, Victoria University, pp9-12, Wellington, 26-27 September 1987.

Blangy, S., Nielsen, T., (1993), "Ecotourism and Minimum Impact Policy", Annals of Tourism Research, Vol 20.

Blay, S. N. L., Piotrowicz, R. W., Tsamenyi, B. M., (1989), Antarctica After 1991: The Legal and Policy Options, Antarctic and Southern Ocean Law and Policy Occasional Paper 2, Faculty of Law, Universtiy of Tasmania, Hobart.

Bonner, W. N., (1984), "Conservation and the Antarctic", in Antarctic Ecology, Vol 2.

Bonner, W. N, Lewis Smith, R. I. (Eds), (1985), Conservation Areas in the Antarctic, International Council of Scientific Unions, SCAR, Scott Polar Research Institute, Cambridge.

Boo, E., (1990), Ecotourism: The Potentials and Pitfalls, Volume 1, World Wide Fund For Nature, Washington DC.

Booth, Kay, (1990), "Restoration, A Positive Force for Island Restoration", Ecological Restoration of New Zealand Islands, Editors, D. Towns, C. Daugherty, I. Atkinson, Conservation Sciences Publication No 2, pp278-283.

Boswall, J., (1985), "Airborne Tourism 1982-84: A Recent Antarctic Development" Polar Record, pp187-190.

Brewster, B., (1982), Antarctica - Wilderness at Risk, Friends of the Earth, A H & A W Reed Ltd, Wellington.

British Antarctic Survey, (1984), Antarctica: A Continent for Science, British Antarctic Survey Natural Environment Research Council.

Bush, W., (1990), "The Antarctic Treaty System: Toward A Comprehensive Environment Regime", Antarctica's Future: Continuity or Change, Eds. R Herr, H Hall, M Haward, Australian Institute of International Affairs, Tasmanian Government Printing Office, Hobart, pp119-180.

Cessford, G. R., Dingwall, P. R., (1993), Assessing Shipborne Tourists Visiting New Zealand's Subantarctic Islands, Department of Conservation, Wellington.

Chamberlain, Jenny, (1992), "On the Tourism Trail", North and South, pp88-96, September.

Chester, Jonathan, (1991), Antarctica: Beauty in the Extreme, Michael Friedman Publishing Group Inc, New York.

Chile (Submission), (1991), Tourism and Other Activities in Antarctica, Item 14, XVI ATCM/WP29, 8 October.

Chile, France, Germany, Italy, Spain (Submission), (1992), Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty, Preliminary Draft.

Clark, L., Bamford, D., (1987), Conserving the Natural Heritage of the Antarctic Realm, Proceedings of the 29th Working Session of IUCN's Commission on National Parks and Protected Areas, Wairakei, pp 157-161, IUCN, Gland, Switzerland.

Clark, M. R., Dingwall, P. R., (1985), Conservation of Islands in the Southern Ocean, International Union for Conservation of Nature and Natural Resources, Cambridge University Press.

Clark R. N., Stankey, G. H., (1979), "Determining the Acceptability of Recreational Impacts: An Application of the Outdoor Recreation Opportunity Spectrum", Dispersed Recreation and Natural Resource Management, pp 70-80.

Codling, R. J., (1982), "Sea-borne Tourism in the Antarctic: An Evaluation", Polar Record, 21:3-9.

Cooper, Wynston, (1993), Report on MS Frontier Spirit Cruise #58 Jan-Feb 1993, New Zealand Representative, Department of Conservation Field Centre Manager.

Corkill, John, (1989), "A Conservation Perspective on National Parks and Tourism", National Parks and Tourism, Proceedings of a seminar held in Sydney, 6 May 1988, Eds. Paul Bateson, Sandy Nyman, David Sheppard, NSW National Parks and Wildlife Service, The Royal Australian Institute of Parks and Recreation (NSW Region), pp19-24.

Costello, M., (1993), "Growing Prospects for Antarctic Tourism", Ministry of Tourism Newsletter, Ministry of Tourism, No 6, pp 6-7, March.

Council of Managers of National Antarctic Programs (COMNAP), (1992) Report to the XVII Antarctic Treaty Consultative Meeting, Point 6, Venice.

Cuthbert, Arani, (1991), Tourism: To Annex or Not To Annex, Greenpeace Antarctic Campaign Tourism Update, Greenpeace, 16 October.

Davis, B. W., (1983), "Australia's Biosphere Reserves: The Role of Macquarie Island", Australian Ranber Bulletin, 2(3), p93, Spring.

Davis, B. W., Drake, G. A., (1983), Australia's Biosphere Reserves: Conserving Ecological Diversity, Australian National Commission for UNESCO, Australian Government Publishing Service, Canberra.

Department of Conservation (DoC), (1992a), New Zealand's Sub-Antarctic Islands - Guidelines on Tourism, Southland Conservancy, Invercargill.

Department of Conservation (DoC), (1992b), Subantarctic Islands Visitor Survey - Pre-visit and Post-visit Questions, Southland Conservancy, Invercargill.

Department of Conservation (DoC), (1992c), Subantarctic Islands Minimum Impact Code, Southland Conservancy, Invercargill.

Department of Conservation, (1993), Historic Resource Management Strategy, Southland Conservancy, Invercargill.

Department of Environment Affairs, Marion and Prince Edward Island - Policy on Tourism and Private Expeditions, Department of Environment Affairs, Pretoria, South Africa, No date.

Department of Lands and Survey, (1983), Management Plan for the Campbell Islands Nature Reserve, Department of Lands and Survey, Management Plan Series No NR13, Wellington.

Department of Lands and Survey, (1984), Management Plan for the Snares Islands Nature Reserve, Department of Lands and Survey, Management Plan Series No NR9, Wellington.

Department of Lands and Survey, (1987), Management Plan for the Auckland Islands Nature Reserve, Department of Lands and Survey, Mangement Plan Series No NR19, Wellington.

Department of Parks, Wildlife and Heritage (DPWH), (1990), One of the Wonder Spots of the World: Macquarie Island Nature Reserve; Department of Parks Wildlife and Heritage, Tasmania.

Department of Scientific and Industrial Research (DSIR), (1982), Antarctic Achievements 1957-1982 - New Zealand's Role in the Antarctic, Antarctic Division DSIR, Christchurch.

Department of Scientific and Industrial Research (DSIR), (1986), New Zealand Government Policy on Tourist and Private Antarctic Expeditions, Antarctic Division, Christchurch.

Department of Scientific and Industrial Research (DSIR), (1990), Antarctica Information Brochures, Christchurch.

Dingwall, Paul, (1990), "Antarctic Tourism", IUCN Bulletin, Vol 21(2), pp9-10.

Dixon, J. E., (1993), "The Integration of EIA and Planning in New Zealand: Changing Process and Practice", Journal of Environmental Planning and Management, Vol 36, No 2, pp239-251.

Doyle, T. J., (1989), "The Antarctic Treaty: Within or Without?", Antarctica: Policies and Policy Development, Ed. John Handmer, Resource and Environmental Studies No 1, Centre for Resource and Environmental Studies, Australian National University, pp 49-60.

Eagles, P. F. J., (1992), "The Travel Motivations of Canadian Ecotourists", Journal of Travel Research, Vol 31, No 2, pp3-7.

ECO, (1985), Tourism and Colonisation in Antarctica, Prepatory Meeting for 13th ATCM, Vol 30, No 3, 22-26 April, pp1-2.

Edmonds, Alan, (1990), "Partnerships in Island Restoration", Ecological Restoration of New Zealand Islands, Editors, D. Towns, C. Daugherty, I.

Atkinson, Conservation Sciences Publication No2, Department of Conservation, Wellington, pp 284-285.

Enzenbacher, D. J., (1991), A Policy for Antarctic Tourism: Conflict or Cooperation?, Submitted in partial fulfilment of the requirements for the degree of Master of Philosophy in Polar Studies, Scott Polar Research Institute, University of Cambridge, St Edmund's College.

Enzenbacher, D. J., (1992a) "Tourists in Antarctica: Numbers and Trends", Polar Record, 28 (164): 17-22.

Enzenbacher, D. J., (1992b), "Tourism in Polar Areas: A Symposium", Polar Record, 28(166):246.

Enzenbacher, D. J., (1992c), "Antarctic Tourism and Environmental Concerns", Marine Pollution Bulletin, Vol 25, 9-12, pp258-265.

Enzenbacher, D. J., (1993), "Tourists in Antarctica: Numbers and Trends", Tourism Management, pp142-146, April.

Erize, F. J., (1987), "The Impact of Tourism on the Antarctic Environment, Environment International, Vol 13, 1, 133-136.

Evening Standard, (1993), Icy Adventure Plan, 13 May.

Fogg, Prof. G. E., Smith, D., (1990), The Explorations of Antarctica, the Last Unspoilt Continent, Cassell Publications Ltd, London.

Foggo, M. N., (1990), "The Botanical Values of the New Zealand Subantarctic Islands", Ecological Restoration of New Zealand Islands, Conservation Sciences Publication No 2, Ed. D. Towns, C. Daugherty, I. Atkinsion, pp 215-216, Department of Conservation, Wellington.

Fraser, Conon, (1986), Beyond the Roaring Forties: New Zealand's Sub-Antarctic Islands, Government Printing Office Publishing, Wellington.

Fyson, Hugh, (1991), "Wooing the Tourists?", Terra Nova, Dec, pp 22-24.

Gibbs, G. W., (1990), "The Silent Majority: A Plea for the Consideration of Invertebrates in New Zealand Island Management", Ecological Restoration of New Zealand Islands, Conservation Sciences Publication No 2, 123-127, Department of Conservation, Wellington.

Glick, Dennis, (1991), "Tourism in Greater Yellowstone: Maximising the Good, Minimising the Bad, Eliminating the Ugly", Nature Tourism: Managing for the Environment, Ed. T Whelan, Island Press, Washington DC, pp 58-74.

Graham, Alistair, (1987), "Policy Formation and the Public: The Australian Experience", Policies on Ice: New Zealand's Antarctic Policy Choices, Ministry of Energy, A National Conference Organised by the Environment Council and Institute of Policy Studies, Victoria University, Wellington, pp 19-20.

Graham, Alistair, (1989), "An Environmentalist's Perspective on the Future of Antarctica", Antarctica" Policies and Policy Development, Ed. John Handmer, Resource and Environmental Studies No 1, Centre for Resource and Environmental Studies, Australian National University, Canberra, pp 25-30.

Grosvenor, G. M., (1991), "Report from the President", National Geographic, Vol 179, No 5, May.

Hall, C. M., (1992a), "Tourism in Antarctica: Activities, Impacts, and Management", Journal of Travel Research, 30(4):2-9, Spring.

Hall, C. M., (1992b), Ecotourism in the Australian and New Zealand Sub-Antarctic Islands, International Geographical Union Commission on Leisure and Recreation Symposium, Telluride, August.

Hall, C. M., (1993), "Case-study: Ecotourism in Antarctica and Adjacent Sub-Antarctic Islands: Development, Impacts, Management and Prospects for the Future", Tourism Management, pp117-122, April.

Hall, C. M., McArthur, S., Spoelder, P., (1992), "Ecotourism in Antarctica and Adjacent Sub-Antarctic Islands: Development, Impacts, Management and Prospects for the Future", Ecotourism, Weiler, B., Ed., pp 156-164, Bureau of Tourism Research, Canberra.

Hall, C. M., Wouters, M. M., (1993), Managing Nature Tourism in the Sub-Antarctic Islands: The Australian and New Zealand Situation, unpublished.

Harris, Colin. M., (1991), "Environmental Management in King George Island, South Shetland Islands, Antarctica", Polar Record, 27(163): 313-24.

Harrowfield, David L, (1990), "Conservation and Management of Historic Sites in the Ross Dependency", Antarctica 150: Scientific Perspectives ↔ Policy Futures, Eds. John Hay, Alan Hemmings, Norman Thom, Proceedings of a Conference Organised by *Environmental Science* at the University of Auckland, Auckland, pp 55-66.

Hart, P. D., (1988), "Bound for 60 South - Taxes, Tips, and Transfers Included: The Growth of Antarctic Tourism", Oceanus, Vol 31. No 2, Summer, pp 93-100.

Hatherton, Trevor, (1983), "Preferred Futures: A Scientific View", The Antarctic: Preferred Futures. Constraints and Choices, Proceedings of a seminar held by the New Zealand Institute of International Affairs, Wellington, pp63-68, 17-18 June 1983.

Hatherton, Trevor, Ed., (1990), Antarctica - the Ross Sea Region, DSIR Publishing, DSIR Info Series No 165, Wellington.

Hearder, J., (1989), "The Australian Government Perspective", Antarctica: Policies and Policy Development, Ed. John Handmer, Resource and Environmental Studies No 1, Centre for Resource and Environmental Studies, Australian National University, Canberra, pp 7-12.

Hemmings, A. D., (1991a), "Managing Antarctica's Resources", Terra Nova, p8, October.

Hemmings, A. D., (1991b), "Antarctica - A Premature Celebration", Greenstone, No2, Nov-Dec, pp 4-7, The Greenstone Collective, Auckland.

Hemmings, A. D., (1992), "Antarctica Not Secure yet", Forest and Bird, 23(2): 12-18.

Hemmings, A. D., Cuthbert, A., Dalziell, J., (1991), Non-Governmental Activities and the Protection of the Antarctic Environment, A Paper for the Government of New Zealand. Antarctic and Southern Ocean Coalition (NZ), August.

Hemmings, A. D., Towle, S. M., (1990), "Towards the 1990s: Developing an Antarctic Environmental Policy for New Zealand", Changing Directions, The Proceedings of the Conference Ecopolitics IV, Graduate Centre for Environmental Studies, University of Adelaide, Edited by Ken Dyer and John Young, pp 277-289.

Herber, Bernard P., (1992), "The Economic Case for an Antarctic World Park in Light of Recent Policy Developments", Polar Record, 28(167):293-300.

Herr, R., Hall, R., (1989), "Science as Currency and the Currency of Science", Antarctica: Policies and Policy Development, Ed. John Handmer, Resource and Environmental Studies No 1, Centre for Resource and Environmental Studies, Australian National University, Canberra, pp13-24.

Herr, R. A., Hall, H. R., Haward, M. G., (1990), "Antarctica's Future: Symbols and Reality", Antarctica's Future: Continuity or Change?, Ed. R. Herr, H. Hall, M. Haward, Tasmanian Government Printing Office, Hobart, pp11-16.

Higham, T. (Ed), (1991), New Zealand's Sub-Antarctic Islands - A Guidebook, Department of Conservation, Craig Printing Co Ltd, Invercargill.

Hill, John, (1983), "Introduction to New Zealand and Antarctica", The Antarctic, Preferred Futures, Constraints and Choices, Proceedings of a Seminar held by the New Zealand Institute of International Affairs, Wellington.

House of Representatives Standing Committee on Environment, Recreation and the Arts (HRSCERA), (1989), Tourism in Antarctica, Report of the House of Representatives Standing Committee on Environment, Recreation and the Arts, Parliament of the Commonwealth of Australia, Australian Government Publishing Service, Canberra, May.

International Antarctic Centre (AIC), (1993), Information Brochures.

International Association Antarctica Tour Operators (IAATO), (1991), Antarctica Visitor Guidelines; Antarctica Tour Operator Guidelines; Antarctica Tour Operators Form Association, Press Release, IAATO.

International Association Antarctica Tour Operators (IAATO Submission), (1992a), Tourism in Antarctica - Guidelines for a Low-Impact Presence, XVII ATCM/INFO 65, 16 November.

International Association Antarctica Tour Operators (IAATO Submission), (1992b), Educational Program on Tourist Vessels to Antarctica, XVII ATCM/INFO 75, 16 November.

International Association Antarctica Tour Operators (IAATO Submission), (1992c), Responsible Tourism in Antarctica, XVII ATCM/INFO 76, 12 November.

International Centre for Antarctic Information and Research (ICAIR), (1992), Information Brochure.

International Union for Conservation of Nature and Natural Resources, (IUCN), (1991), A Strategy for Antarctic Conservation, IUCN, Gland, Switzerland, and Cambridge.

International Union for Conservation of Nature and Natural Resources (IUCN Submission), (1992), Tourism in Antarctica, XVII ATCM/INFO 18, 11 November.

Janiskee, R. L., (1991), Ecotourism in Antarctica: Too Much of a Good Thing?, Paper Presented at the Annual Meeting of the Association of American Geographers, Miami, April

Johnson, Stanley, (1985), Antarctica The Last Wilderness, Weidenfeld & Nicholson Ltd, London.

Josefa, S., (1990), "Council Against Promoting Tourism for Antarctica", The Press, 6 July, p 16.

Keys, Harry, (1987), "Environmental Assessment, Information and Inspections in Antarctica", Policies on Ice - New Zealand's Antarctic Policy Choices, Ed. Noel Galvin, A National Conferemce Organised by the Environment Council and Institute of Policy Studies, Victoria University, pp33-35, Wellington, 26-27 September 1987.

Kimball, L. A., (1990a), Southern Exposure: Deciding Antarctica's Future, World Resources Institute, Washington DC.

Kimball, L. A., (1990b), "Conservation and Antarctic Policy-making: The Antarctic Conservation Agenda", Antarctica's Future - Continuity or Change, Eds. R Herr, H Hall, M Haward, pp 81-89, Australian Institute of International Affairs, Tasmanian Government Printing Office, Hobart.

Kozlowski, Jerzy, (1985), "Threshold Approach in Environmental Planning", Ekistics, 311, pp146-153, March/April.

Kriwoken, L., Keage, P., (1989a), "Introduction", Antarctica: Policies and Policy Development, Ed. ohn. Handmer, Resource and Environmental Studies No 1, Centre for Resource and Environmental Studies, Australian National University, Canberra, pp 1-6.

Kriwoken, L. Keage, P., (1989b), "Antarctic Environmental Politics: Protected Areas", Antarctica: Policies and Policy Development, Ed. John Handmer, Resource and Environmental Studies No 1, Centre for Resource and Environmental Studies, Australian National University, Canberra, pp 31-48.

Levich, S. V., Fal'kovich, N. S., (1987), "Recreation and Tourism in the Southern Ocean and Antarctica", Izvestiya Vsesoyuznogo Geograficheskogo Obshchnestva, Vol 119, No 2, pp 168-174.

Louisson, S., (1992), Antarctica: The Last Frontier, Reuters.

Madden, Richard, (1993a), "To boldly go with the Antarctic ice floes", Sunday Times, Aug 1.

Madden, Richard, (1993b), "Lure of the planet's loneliest continent", Sunday Times, Aug 1.

Mahoney, Paul, (1993), Report on sub-Antarctic and Antarctic Cruise, New Zealand Representative, Senior Conservation Officer, Department of Conservation, Head Office.

Manheim, Bruse S. Jr., (1990), "Paradise Lost? The Need for Environmental Regulation of Tourism in Antarctica", Environmental Defense Fund Inc., Wildlife Program, Washington DC, Jan 28.

Mason, Peter, (1992), A Visitor Code for the Arctic, Paper presented at the Circumpolar Universities Cooperation Conference, The Role of Circumpolar Universities in Northern Development Third Annual Conference, Rovaniemi, Finland, Nov-Dec.

May, John, (1988), The Greenpeace Book of Antarctica - A New View of the Seventh Continent, Dorling Kindersley Ltd, London.

McKenzie, Raewyn, (1989), "Life on Campbell Island", New Zealand Geographic, No1, pp20-38, Jan - March.

McLaren, Fergus. B., (1948), The Auckland Islands: Their Eventful History, A H & A W Reed, Wellington.

McLauchlan, G. (Ed in Chief), (1987), The Bateman New Zealand Encyclopedia, David Bateman Ltd, Auckland.

McLean, I. G., Sharp, B. M. H., (1990), "The Value of Pristine Environments", Ecological Restoration of New Zealand Islands, Eds. D. Towns, C. Daugherty, I. Atkinson, Conservation Sciences Publication No 2, pp 182-185, Department of Conservation, Wellington.

McPherson, John, G., (1975), Footprints on a Frozen Continent, Hicks Smith & Sons Ltd, Sydney.

Minister of External Relations and Trade, (1990), Antarctica - The New Zealand Connection, (NZAS), Speech, 8 Dec.

Minister of External Relations and Trade, (1991), New Zealand to Sign Antarctic Protocol, Media Release, 4 Oct.

Ministry for the Environment (MfE), (1989), White Paper on Antarctic Environment, Laid on the Table of the House of Representatives, Government Print, Wellington, August.

Ministry for the Environment (MfE), (1990), Antarctica, Ministry for the Environment Information Sheet, June, Wellington.

Ministry of External Relations and Trade (MERT), (1990), New Zealand Government Policy on Tourist and Private Antarctic Expeditions, DSIR Antarctic, New Zealand Antarctic Research Programme, April.

Ministry of Foreign Affairs (MoFA), (1984), Antarctica and New Zealand, Info Bulletin No 8, Ministry of Foreign Affairs, Wellington, Aug.

Ministry of Science and Technology (MoST), (1986), Revised Government Policy for Antarctica Visitors Announced, News Release, Office of Minister of Science and Technology, 3 Sept.

Ministry of Tourism (MoT), (1991), The Resource Management Act - A Guide for the Tourism Industry, Issues Paper No 1, Ministry of Tourism.

Ministry of Tourism (MoT), (1992), Tourism Sustainability - A Discussion Paper, Issues Paper No 2, Ministry of Tourism.

Molloy, L. F., Dingwall, P. R., (1990), "World Heritage Values of New Zealand Islands", Ecological Restoration of New Zealand Islands, Editors, D. Towns, C. Daugherty, I. Atkinson, Conservation Sciences Publication No 2, Department of Conservation, Wellington, pp194-206.

Mossman, Rex, (1987), Managing Protected Areas in the South Pacific: A Training Manual, Department of Conservation, Auckland.

Murray-Smith, Stephen, (1988), Sitting on Penguins: People and Politic in Australian Antarctica, Century Hutchinson Australia Pty Ltd, Sydney.

Mussack, I. E. L., (1988), An Approach to the Management of Tourism in the Antarctic, MSc Thesis, University of Canterbury, Centre for Resource Management, University of Canterbury and Lincoln College.

National Science Foundation (NSF), MODS, Washington, 1980-1991.

Naveen, Ron, (1992), Provisional List: 1992-93 Shipboard Antarctic Tours, Oceanites, United States.

Neider, Charles, (1974), Edge of the World - Ross Island Antarctica, Doubleday and Company Inc., New York.

New Zealand Antarctic Programme (NZAP), (1993a), Tourist Procedures During Visits to the Ross Dependency - A Handbook for New Zealand Government Representatives On-board Tourist Vessels in Antarctica, New Zealand Antarctic Programme, Christchurch.

New Zealand Antarctic Programme (NZAP), (1993b), NZAP News, New Zealand Antarctic Programme, No 3, Christchurch.

New Zealand Antarctic Programme (NZAP), (1993-94), Antarctic Programmes 1993-94, New Zealand Antarctic Programme, Christchurch.

New Zealand Antarctic Society (NZAS), (1992a), Antarctic, Bulletin Vol 12, no 5, New Zealand Antarctic Society Inc.

New Zealand Antarctic Society (NZAS), (1992b), Antarctic, Bulletin Vol 12, no 7, New Zealand Antarctic Society Inc.

New Zealand Antarctic Society (NZAS), (1992c), Antarctic, Bulletin Vol 12, no 8, Issue, No 140, New Zealand Antarctic Society Inc., June.

New Zealand Antarctic Society (NZAS), (1992d), Antarctic, Bulletin Vol 12 No 9, Issue No 141, New Zealand Antarctic Society Inc., Oct.

New Zealand Antarctic Society (NZAS), (1992e), Antarctic, Bulletin Vol 12 No 10, Issue No 142, New Zealand Antarctic Society Inc., Nov.

New Zealand Antarctic Society (NZAS), (1993a), Antarctic, Bulletin Vol 12 Nos 11 and 12, Issues Nos 143 and 144, Jan-Feb, New Zealand Antarctic Society Inc.

New Zealand Antarctic Society (NZAS), (1993b), Antarctic, Bulletin Vol 13 No 1, Issue No 145, March, New Zealand Antarctic Society Inc.

New Zealand (Submission), (1992) New Zealand Opening Statement: XVII ATCM, XVII ATCM/INFO 89, 19 November.

New Zealand Tourism Board, (1991), Tourism in New Zealand - A Strategy for Growth, New Zealand Tourism Board.

New Zealand Tourist Industry Federation (NZTIF), (1990), A Code of Environmental Principles for Tourism in New Zealand, New Zealand Tourist Industry Federation.

Nicholson, I. E., (1986), "Antarctic Tourism: The Need for a Legal Regime?", Maritime Studies, No 29, pp1-7, May-June.

Norling, Prue, (1992), "The Farthest Continent", Pacific Way, Air New Zealand, pp56-63.

Norway (Submission), (1992), Tourism in the High North, Management Challenges and Recreation Opportunity Spectrum Planning in Svalbard, Norway, XVII ATCM/INFO 16, 17 November.

Novak, Skip, (1991), "Sailing South - the Adventurer's Lure", Style, Air New Zealand Edition, pp104-110.

O'Connor, K. F., Simmons, D. G., (1990), " The Use of Islands for Recreation and Tourism: Changing significance for Nature Conservation", Ecological Restoration of New Zealand Islands, Editors, D. Towns, C. Daugherty, I. Atkinson, Conservation Sciences Publication No 2, Department of Conservation, Wellington, pp186-193.

Peat, Neville, (1983), Looking South - New Zealand Antarctic Society's First Fifty Years 1933 - 1983, New Zealand Antarctic Society Inc.

Peat, Neville, (1989), "Sweeps Made Over Rock Clusters In the Cause of Life", The Press, Monday March 27.

Peat, Neville, (1991), "Treading Softly in the Sub-Antarctic", Terra Nova, 5, 38-43.

Peterson, M. J., (1986), "Antarctic Implications of the New Law of the Sea", Ocean Development and International Law, Ed. D. Cheever, The Journal of Marine Affairs, Vol 16, No 2, pp 137-181, Crane Russak, New York.

Poncet, S., Poncet, J., (1991), Southern Ocean Cruising Handbook, Government Printing Office, Stanley, Falkland Islands.

Pope, Lindsay, "Wild Splendour", (1990), New Zealand Geographic, No 8, pp83-106, October - December.

Powell, D., (1990), "Antarctic Marine Living Resources and CCAMLR", Antarctica's Fute: Continuity or Change, Eds. R Herr, H Hall, M Haward, Australian Institute of International Affairs, Tasmanian Goverment Printing Office, Hobart, pp 61-70.

Protocol on Environmental Protection To The Antarctic Treaty, With Annexes, (1991), Done at Madrid, 4 October 1991, and an Additional Annex Done at Bonn, 17 October 1991.

Quark Expeditions, (1992-93), Journeys to the Far Side of Antarctica, Travel Brochures.

Quartermain, L. B., (1971), New Zealand and the Antarctic, A. R. Shearer, Government Printer, Wellington.

Radio New Zealand, (1992), "Morning Report", Transcript of Interview between Radio New Zealand "Morning Report" presenter and Mr Lou Sanson of the Department of Conservation, Invercargill, 26 May.

Raymond, R., (1990), "Frozen Assets", Panorama, Ansett Airlines Inflight Magazine, pp30-34, April.

Reich, R. J., (1979), Tourism in the Antarctic: Its Present Impact and Future Development, Unpublished Thesis, Scott Polar Research Institute, Cambridge.

Reich, R. J., (1980), "The Development of Antarctic Tourism", Polar Record, 20(126), 203-214.

Reserves Act, and amendments, (1977).

Resource Management Act, (1991).

Roberts, Nigel, (1983), "New Zealand Interests in Antarctica", The Antarctic: Preferred Futures, Constraints and Choices, Proceedings of a Seminar held by the New Zealand Institute of International Affairs, Wellington, pp 5-11, 17-18 June 1983.

Rounsevell, D., Copson, G., (1985), "Southern Ocean Sanctuary", UNESCO Review, No 10, pp 9-11.

Rovinski, Yanina, (1991), "Private Reserves, Parks, and Ecotourism in Costa Rica", Nature Tourism: Managing for the Environment, Ed. T Whelan, pp39-48,

Russ, R., (1992), "New Zealand Ecotourism: The Role of the Private Sector - Player and Referee", Ecotourism Business in the Pacific: Promoting a Sustainable Experience, Conference Proceedings, Environmental Science Occasional Paper, No 8, Ed. J. Hay, pp 190-194, University of Auckland, Auckland.

Russia (Submission), (1992), Regulation of Tourism and Non-Governmental Activities in the Norwegian High Arctic, XVII ATCM/INFO 77, 17 November.

Ryan, Chris, (1991), Recreational Tourism - A Social Science Perspective, Routledge, London.

Ryel, R., Grasse, T., (1991), "Marketing Ecotourism: Attracting the Elusive Ecotourist", Nature Tourism: Managing for the Environment, Ed. T Whelan, Island Press, Washington DC, pp 164-186.

Sage, B., (1985), "Conservation and Exploitation", Key Environments Antarctica, Ed. W. Bonner, D. Walton, Pergamon Press Ltd, Oxford, 293-317.

Sanson, L., (1992), "New Zealand's Sub-Antarctic Islands: A Case Study in the Development of Ecotourism Policy", Ecotourism Business in the Pacific: Promoting a Sustainable Experience, Conference Proceedings, Environmental Science Occasional Publication No 8, Ed. J. E. Hay, pp 141-150, University of Auckland, Auckland.

Sanson, L., (1993), Report on Kapitan Khlebnikov Ross Sea/Subantarctic Islands Tourist Cruise 12-24 Feb 1993, Government Representative, Operations Manager, Department of Conservation, Southland Conservancy, Invercargill.

Sanson, L. V., Dingwall, P. R., (1992), Progress in the Conservation of New Zealand's Subantarctic Island Nature Reserves (1987 - 1992), Department of Conservation, Paper Prepared for Presentation at the SCAR/IUCN Workshop on Protection, Research and Management of Subantarctic Islands, Paimpont, France 27-29 April 1992.

Sawyer, J., (1991), "Ecotourism", The New Road, The Bulletin of the W.W.F. Network on Conservation and Religion, Issue No 18, March-April.

Scott, Mark, (1991), "Antarctica - A New Zealand Perspective", New Zealand Geographic, No9, pp 52-82, Jan-Mar.

Scully, R. T., (1990), "The Antarctic Treaty as a System", Antarctica's Future - Continuity or Change?, Ed. R. Herr, H. Hall, M. Haward, Tasmanian Government Printing Office, Hobart.

Seaquest Cruises, (1992), "Antarctica", New Explorer, Journal of Explorations Aboard Seaquest Cruises, pp 22-24, Fall.

Secretariat (Working Paper), (1992), Draft Final Report of the XVIIth Antarctic Treaty Meeting, XVII ATCM/WP 34, 19 November.

Selkirk, P. M., Seppelt, R. D., Selkirk, D. R., (1990), Subantarctic Macquarie Island - Environment and Biology, Cambridge University Press.

Sherman, P. B., Dixon, J. A., (1991), "The Economics of Nature Tourism: Determining if it Pays", Nature Tourism: Managing for the Environment, Ed. T Whelan, Island Press, Washington DC, pp 89-131.

Stankey, George, (1989), "Tourism and National Parks: Population and Peril", National Parks and Tourism, Proceedings of a seminar held in Sydney, 6 May 1988, Eds. Paul Bateson, Sandy Nyman, David Sheppard, NSW National Parks and Wildlife Service, The Royal Australian Institute of Parks and Recreation (NSW Region), pp11-18.

Stonehouse, B., (1990), "A Traveller's Code For Antarctic Visitors", Polar Record, 26(156):56-58.

Stonehouse, B., (1992a) "Monitoring Shipborne Visitors in Antarctica: A Preliminary Field Study", Polar Record 28 (166): 213-218.

Stonehouse, B., (1992b), "IAATO: An Association of Antarctic Tour Operators", Polar Record, 28(167):322-24.

Swithinbank, C., (1992), "Non-government Aircraft in the Antarctica 1991/92", Polar Record, 28 (166):232.

Swithinbank, C., (1993), "Airborne Tourism in the Antarctic", Polar Record, 29(169):103-110.

The Dominion, (1993a), Antarctic Style Centre Planned,13 May.

The Dominion, (1993b), Antarctic Treaty, 22 June.

The Dominion, (1993c), "Antarctic Mining Ban To Be Made Law in New Zealand", The Dominion, Saturday 26 June.

Thomson, Bob, (1987), "Scientific Activity, Private Expeditions, Tourism and Colonisation", Policies on Ice - New Zealand's Antarctic Policy Choices, Ed. Noel Galvin, A National Conference Organised by the Environment Council and Institute of Policy Studies, Victoria University, pp 38-39, Wellington, 26-27 September 1987.

United Kingdom Submission, (1991), Trends in Antarctic Tourism, XVI ATCM/INFO 38, 4 October.

United Kingdom (Submission), (1992), The Regulation of Tourism and Non-governmental Activities in the Antarctic Treaty Area: Yacht-based Tourism, XVII ATCM/INFO 22, 11 November 1992.

United States (Submission), (1991), Compilation of Data on Tourist Visits to the Antarctic Peninsula, XVI ATCM/INFO 68, 10 October.

United States (Working Paper), (1992), Antarctic Tourism and the Environmental Protocol, Agenda Item 13, XVII ATCM/WP 6, 9 November.

Wace, Nigel, (1990), "Antarctica: A New Tourist Destination", Applied Geography, Vol 10, No 4, pp 327-341.

Wallace, Catherine, (1987), "The Antarctic Minerals Convention: Environmental Protection or Pre-condition for Development", Policies on Ice - New Zealand's Antarctic Policy Choices, Ed. Noel Galvin, A National Conference Organised by the Environmental Council and Institute of Policy Studies, Victoria University, pp15-19, Wellington 26-27 September 1987.

Walton, D. W. H., (1985), "The Sub-Antarctic Islands", Key Environments Antarctica, Eds. W. Bonner, D. Walton, 351-369, Pergamon Press Ltd, Oxford.

Walton. D. W. H. (Rapporteur), (1986), The Biological Basis for Conservation of Subantarctic Islands, Report of the Joint SCAR/IUCN Workshop, Paimpont, France, 12-14 September 1986.

Whelan, Tensie, (1991), "Ecotourism and Its Role in Sustainable Development", Nature Tourism: Managing for the Environment, Ed. T Whelan, Island Press, Washington DC, pp 3-22.

Williams, K., (1990), "The Subantarctic Islands" Adventure, No 46, June-July, pp 25-35.

Wood, M. E., (1991), "Global Solutions: An Ecological Society", Nature Tourism: Managing for the Environment, Ed. T Whelan, Island Press, Washington DC, pp 200-206.

Woolcott, R., (1990), "Challenges and Changes", Antarctica's Future: Continuity or Change, Ed. R. Herr, H. Hall, M. Haward, 21-28, Tasmanian Government Printing Office, Hobart.

Woollaston, P. Hon., (1990), "The Antarctic Environment", Antarctica 150: Scientific Perspectivies - Policy Futures Conference, Proceedings of a Conference Organised by Environmental Science, University of Auckland, Ed. J. Hay, A. Hemmings, N. Thom, pp, September 1990.

World Expeditions International Adventures, (1988), Brochures.

PERSONAL COMMUNICATIONS

Bound, G. L., Falkland Islands Tourism, Falkland Islands.

Costello, Murray, Ministry of Tourism, Wellington.

Cox, Andy, Southland Conservancy, Department of Conservation, Invercargill.

Cox, Peter A., Director Planning and Operations, Society Expeditions, Seattle.

Dingwall, Paul, Science and Research Division, Department of Conservation, Wellington.

Harrowfield, D. L., Research Officer, Visitor Centre, International Antarctic Centre, Christchurch.

Hemmings, Alan, D., International Antarctic Campaign, Greenpeace, Auckland; Antarctic and Southern Ocean Coalition (NZ).

Ising, Tore, Head of Section, Ministry of Environment, Oslo, Norway.

Johnson, P. H., Administrator, Trista da Cunha, South Atlantic.

McClelland, Pete, Department of Conservation, Southland Conservancy, Invercargill.

Prior, Stuart, Director (Acting), Antarctic Policy Division, Ministry of External Relations and Trade, Wellington.

Sanson, Lou, Operations Manager, Southland Conservancy, Department of Conservation, Invercargill.

Sheppard, Deirdre, Librarian, New Zealand Antarctic Programme, Christchurch.

Van Rensburg, Fe, Director General, Department of Environment Affairs, Pretoria, South Africa.

Walton, Dr D. W. H., Head, Terrestrial and Freshwater Life Sciences Division, British Antarctic Survey, Cambridge, United Kingdom.

Wong, Felicity, Ministry of External Relations and Trade.

Zwart, Ron, Branch Manager, Wainuiomata Holiday Shoppe.