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Marine Tourism in New Zealand: Environmental Issues and Options

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A thesis submitted in partial fulfilment of the requirements for the degree of MSc in Marine Science at the University of Otago, Dunedin, New Zealand.

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Abstract

Tourism is the fastest growing sector of New Zealand's economy and accounts for more than $NZ 3.84 billion in foreign exchange. New Zealand's tourism is based predominantly on scenic attractions, wildlife and natural resources. The country has a diverse and relatively pristine marine environment and it is likely that coastal and marine tourism will become increasingly important. However, the marine species and habitats targeted by tourism need to be identified and environmental implications assessed if this growth is to be managed sustainably.

This study investigated marine tourism in New Zealand, with particular regard to the environmental issues and options. The term marine tourism was used to include all commercial operators visiting natural areas for the purpose of diving, recreational fishing, tour boating and cruises, and the viewing of seabirds and marine mammals. A mail-out questionnaire sent to all (~380) commercial operators was used to profile the industry. The major types of operation were identified and the key areas, species and habitats targeted by each. Case studies in three key marine tourism locations were used to give a more detailed examination of the industry; identifying issues being confronted in the marine tourism industry and areas needed for analysis.

New Zealand's marine tourism industry is still in its infancy; most operations are small, locally controlled businesses and have evolved within the past five years. Operations are concentrated around several key locations. Wildlife viewing is the most common activity, with more than 44% of operators noting marine mammals and 78% seabirds as their key attraction. Activity is orientated toward marine mammals in every area with resident populations. Other key activities identified are line fishing, snorkelling and diving.

The management of marine tourism is difficult because it encompasses numerous activities and is dispersed over a wide geographical area. Models developed to facilitate the planning of sustainable tourism are better suited to discrete areas. The Department of Conservation is the key conservation administrator in New Zealand and has the most direct role in the environmental management of marine tourism. Effective collaboration between the Department of Conservation and tourism agencies is needed to ensure that management decisions are guided by adequate research into environmental implications, as well as the economic and social aspects of tourism.
Limits may need to be set regulating the number of marine tourism operators and codes of practice, incorporating environmental guidelines, initiated and/or refined to regulate standards of operation. Marine tours provide an ideal opportunity to educate tour participants. The development of educational and interpretative programmes for use in marine tourism operations is necessary. The public needs to be educated with regard to the appropriate behaviour around marine wildlife. Areas that need to be highlighted include the problem of private boat users disturbing marine mammals and the abuse of fishing regulations.
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The broad scope of this study has involved meeting with a variety of people who provided me with valuable sources of information. A special thanks to the operators who agreed to be interviewed and kindly offered to let me participate in their tour and to all the operators who took time out of their busy schedules to complete the mundane task of "another survey".

Last, but by no means least, thanks to my family for their continued support and the value they placed on my education, and my friends who made my years in Dunedin such a good time.
1 Introduction and Aims

1.1 General introduction

Much of the world’s tourism industry, in particular nature tourism, is based upon the aesthetic attraction of the coastal and marine environment and our fascination with the living resources of those zones (Thomas, 1990). As the 21st century comes into focus, tourism is being revealed as a major sociocultural force with a potential to destroy, protect, or otherwise dramatically reconfigure marine ecosystems and societies (Miller and Auyong, 1991).

An introduction to marine tourism entails consideration of the magnitude of the total (marine and non-marine) tourism industry. In response to the demand for travel and adventure, tourism is now the world’s largest and most rapidly growing industry (Snow, 1990; Miller, 1993). The figures are remarkable. The industry employs over 212 million people worldwide (one in every 10 workers) and generates annually more than $US 372 billion dollars (excluding airfares) in gross output (Endicott, 1996, January 29). In 1995 international tourism receipts accounted for over 8% of export earnings worldwide, more than any other category of exports, and it represented fully one-third of all world trade in services (Endicott, 1996, January 29). An estimated 567 million tourists visited foreign countries in 1995 (Endicott, 1996, January 29), and studies indicate that the number of travellers will continue to increase by an average rate of 4.5% per annum through 1999 (Economist, 1989). By the year 2000 the World Tourism Organisation is projecting international arrivals of 661 million (Endicott, 1996, January 29).

In line with this trend, tourism is New Zealand’s fastest growing industry and its largest earner of foreign exchange, contributing close to $NZ 5 billion in 1995. A thriving domestic tourism industry generates a further $NZ 4 billion a year, making tourism worth some $NZ 9 billion a year, and contributing more than 5% to the country’s gross national product (NZTB, 1994/1995). New Zealand’s slice of the international tourism market is small at 0.2%, but international visitor arrivals are increasing at three times the world average (Edwards, 1996). For the year ended June 1995, visitor arrivals were 1.39 million and it is projected that the annual number of overseas visitors will exceed 2 million by the turn of the decade (NZTB, 2000).

---

1 There are no world figures for domestic tourism.
Chapter 1: Introduction & Aims

1994/1995). By comparison, New Zealand’s current population is only 3.6 million (Statistics New Zealand, 1996).

Tourism businesses and destinations exhibit a life cycle partitioned into phases of discovery, increasing growth, maturity and either rediscovery, equilibrium, or decay (Butler, 1980; Haywood, 1986). New Zealand’s tourism industry is in the phase of increasing growth (Fig. 1.1). The anticipated growth will result in substantial pressures being exerted on New Zealand’s tourism infrastructure. In particular the country’s natural resources will come under increasing pressure given that the predominant style of tourism in New Zealand is nature based, focusing on wildlife, wildlife areas and scenic beauty.

![Visitor industry life cycle (by region)](source: Economic Development Corporation-Hawaii)

FIGURE 1.1.
Visitor industry life cycle (by region)

The dependence of tourism on the environment is clear and well-known. One of the most influential perspectives on the relationship between tourism and the environment is that of Budowski (1976) who suggests that three basic relationships can occur: conflict, coexistence or symbiosis. Nature tourism has been touted as an alternative form of tourism that, if managed carefully, can thrive in sensitive environments without compromising the ecological integrity of the area. It approaches, more than most forms of tourism, the symbiosis identified by Budowski (1976).

In reviewing the literature on nature-based tourism, it is crucial to begin with a brief discussion of what has always been a fairly ill-defined concept. Nature tourism has been equated with a number of terms (Table 1.1). Ecotourism appears to be the most popular term, but its increasing usage has done little to clarify the concept. In
the growing body of literature discussing ecotourism, four main parameters are often mentioned, despite the fact that very few definitions include all four: (i) the primary motivation of the tourist must be nature based, (ii) the operation must have minimal impact on the environment, (iii) the operation should include an educational component, and (iv) the enterprise must contribute to the environment by assisting environmental conservation and restoration. The present study avoids the term ecotourism, because of the confusion and debate that exists over definitions. Nature tourism is regarded as a more conservative term that does not attempt to incorporate all the aforementioned parameters.

### Table 1.1

Examples of names used to refer to nature-based tourism (Valentine, 1993)

<table>
<thead>
<tr>
<th>Nature-based tourism</th>
<th>Ecotourism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature travel</td>
<td>Nature tourism</td>
</tr>
<tr>
<td>Nature orientated tourism</td>
<td>Wildlife tourism</td>
</tr>
<tr>
<td>Environment-friendly tourism</td>
<td>Green tourism</td>
</tr>
<tr>
<td>Environmental pilgrimage</td>
<td>Special interest tourism</td>
</tr>
<tr>
<td>Sustainable tourism</td>
<td>Appropriate tourism</td>
</tr>
<tr>
<td>Alternative tourism</td>
<td>Responsible tourism</td>
</tr>
<tr>
<td>Ethical tourism</td>
<td>Community-based tourism</td>
</tr>
<tr>
<td>Soft tourism</td>
<td>Soft and hard tourism</td>
</tr>
</tbody>
</table>

### 1.2 The impacts of tourism

#### 1.2.1 Negative Impacts

Tourism is far from a "smokeless" industry and, unfortunately, the rate of growth has not been without its environmental and social consequences. The degradation of a recreational resource can occur swiftly with the onset of commercial use (Mattix and Goody, 1990), particularly because many of the places visited by tourists seeking nature tourism support fragile ecosystems and sensitive species that cannot endure heavy disturbance. As a result, the literature documenting the industry's environmental impacts is long and imposing reviewed in (Kuss, Graefe, & Vaske, 1990). Impacts concerning specific marine and coastal activities have also been described, some of which are discussed below.
Marine Reptiles

The population of loggerhead turtles (*Caretta caretta*) nesting on the Greek Island of Zakynthos is in danger of extinction because of the effects of tourism (Arianoutsou, 1988; Warren and Antonopoulou, 1990; Purnier et al., 1993). Several holiday resorts use the presence of the turtles as an attraction for tourists who have an interest in the natural environment. This has led to several problems affecting the existence of the turtles. Firstly, loss of habitat has been brought about, as the industry is keen to provide additional facilities on the beaches where nesting takes place. Secondly, disturbance of nesting females is a problem as tourists visiting the beaches often try to get too close to the animals which may abandon their nesting attempt. Thirdly, compaction of the sand by visitors has lead to an imbalance of the gases which are absorbed by buried eggs and this hampers the successful emergence of hatchlings. Lastly, hatchlings use light to orientate themselves. Under normal light conditions, once the young are hatched, they instinctively move towards a light source and head for bright surf in the sea. As flashlight-bearing tourists come to view the turtles at night, turtles are disorientated and have been found dehydrated in dunes above the beach.

Other turtle populations are being adversely impacted too. In Israel, where in the 1950s there were about 15 nests every kilometre of coast between Nahorinya and Rosh Haniqra (5 km), on average today there are two per kilometre (Sella, 1979). A breeding population of 1400 turtles in Turkey in 1977 has become reduced to only 800 in the course of ten years (Warren and Antonopoulou, 1990). In both the Israeli and Turkish cases declines have been attributed to tourist development (Warren and Antonopoulou, 1990). The impact of tourism activity on nesting turtles has also been documented for the green sea turtle (*Chelonia mydas*) nesting on Tortugero, Costa Rica (Jacobson and Lopez, 1994) and the leatherback turtle (*Dermochelys coriacea*) on Rantau Abung beach, Malaysia (Elegant, 1991).

Seabirds

Tourist operations targeting marine birds are well documented and examples include viewing blue penguins in Australia (Dann, 1992), yellow-eyed penguins (Department of Conservation, 1991) and royal albatross on the Otago Peninsula, New Zealand (Veitch, 1992), white herons on the west coast of New Zealand, red-footed boobies in the Galapagos (Burger and Gochfield, 1993), and herons, terns and piping plovers in coastal New Jersey (Burger et al., 1995).

The effects of visitors on breeding birds have been extensively studied (Kury and Gochfield, 1975; Conover and Miller, 1978; Ellison and Cleary, 1979; Safina and Burger, 1983). The effects of such disturbances can include desertion of nest sites.
Tremblay and Ellison, 1979; Burger, 1981), increased risk of predation during absence of a "care-giver" (Robert and Ralph, 1975; DesGranges and Reed, 1981), decreased hatching success (Hunt, 1972; Screiber, 1979) and increased loss of chicks which are unable to find their way back to their nests (Veen, 1977).

**Marine Mammals**

Increasingly, populations of marine mammals worldwide are being targeted by wildlife operators. The targets of these encounters include seals, sea lions, manatees, whales and dolphins. Despite the worldwide growth of tourism associated with marine mammals, very few data are available on impacts on the animals concerned. The studies available investigate only short-term reactions and the results are difficult to extrapolate to long-term effects.

Kovacs (1990) investigated the impact of tourism on the behaviour of female harp seals (*Phoca groenlandica*) and their pups in the Gulf of St. Lawrence, Canada. They concluded that the behaviour of mother-pup pairs is altered by the presence of tourists, but that the impact was short-lived as they resumed normal behaviour patterns within one hour of the tourists' departure.

For more than 30 years, people have been able to approach and hand feed bottlenose dolphins (*Tursiops truncatus*) at Monkey Mia, Western Australia, and at Tangalooma, Eastern Australia, as these dolphins frequent shallow waters (Connor and Smolker, 1985; Nelson, 1990; Dowling, 1991; Orams, 1995). The high mortality of calves, more than 70%, has been associated with feeding by visitors. Several reasons for the high mortality have been suggested, including prolonged exposure to polluted water near the beach, exposure to human pathogens, attack from sharks attracted by fish offal, and the poor nutritional value of the food that is handed out. In addition, it is thought the mothers may be spending so much time at the beach that their calves are not learning how to catch food for themselves. And with the mothers paying more attention to tourists offering food, the calves are easy prey for sharks (Anderson, 1994). As a result, a number of regulations have been imposed with consideration given to prohibiting hand feeding if the problems are not significantly reduced.

The manatee is another victim of water-based tourism and recreational activities. The dwindling manatee population of southern Florida is under stress from many directions, but easily the greatest threat to its survival comes from water-based recreation (Shackley, 1992). Mortality and injury rates, chiefly from boat propellers, are rising by 25% per year and 10% of the total manatee population in Florida was killed in 1989 (Shackley, 1992). A highly successful public education and awareness campaign has resulted in increased interest in manatees, with the subsequent
emergence of new forms of tourism. Manatees now face disturbance by divers, helicopters and canoeists in addition to powerboats.

Whale watching expeditions have increased dramatically during the past decade (Gaskin, 1982; Beach and Weinrich, 1989). Since 1992, the number of countries and overseas territories where whale-watching is practiced has doubled from 31 to 65. At the same time, total estimated revenues have increased from $US 318 million in 1991 to $US 504 million in 1994 (Hoyts, 1995). Concern is now being expressed over the disturbance that tourists can inflict on marine mammals, such as gray whales (Eschrichtius glaucus) in southern California and Mexico, humpbacks (Megaptera novaeangliae) in Alaska and Hawaii, Belugas or white whales (Delphinapterus leucas) in Alaska and the St. Lawrence River estuary in Canada (Evans, 1987) and sperm whales (Physeter macrocephalus) in New Zealand (Baker and MacGibbon, 1991; Gordon et al., 1992; Baxter and Donoghue, 1995).

The effects of disturbance in the form of physical presence (boat or aircraft) or noise are difficult to determine. However, reliant as they are upon sound for communication, prey detection and orientation, marine mammals, particularly toothed whales, may be especially vulnerable to noise disturbance (Reeves, 1992). An echolocating animal has the problem of discriminating between the echoes from its target and general background noise. Elevated background noise levels, such as vessel traffic, may prevent detection of sounds important to marine mammals (Gordon et al., 1992). It is thought these interruptions of normal behaviour (eg. resting, feeding, or social interactions) may lead to short or long-term displacement from an area (Richardson et al., 1995).

Coral Reefs
Coral reefs provide a major impetus for tourist development throughout the tropics. Pressure on coral reefs is on the increase with the unprecedented growth of global tourism. In recent years scuba diving has become an increasingly popular recreational activity. As coral reefs have become more accessible and as facilities for visitors have improved, the number of people diving on this potentially fragile ecosystem has risen (Hawkins and Roberts, 1993). There is now widespread concern that significant reef degradation has resulted from tourism (Salm, 1986; Ward, 1990).

Direct damage is caused by tourists kicking, trampling or holding onto corals. Once damaged they may be more susceptible to disease and algal competitors (Hawkins & Roberts, 1993). At the Hol Chan Marine reserve in Belize, the pressure of snorkeller and diver numbers is such that the coral reef is showing signs of black

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band disease, caused by an alga which attacks broken coral (Carter and Lowman, 1994). Often devastating damage also occurs when misplaced boat anchors scour a reef section (Allen, 1992). The depletion of coral for the collection of marine curios has also been well documented (Hawkins and Roberts, 1994).

### 1.2.2 Positive Impacts

Nature tourism has been promoted as a desirable alternative to mass tourism (Farrell and Runyan, 1991), with the potential to protect and even enhance resources (Salm, 1985; Ziffer, 1989; Boo, 1990; Butler, 1990; Pilgram, 1990; Agardy, 1993; Lindberg and Hawkins, 1993; Wight, 1993a; Wight, 1993b; Burnie, 1994). The potential benefits are numerous and include economic growth, job opportunities, increased environmental awareness and education.

Tourism can help contribute financially to conservation but also importantly, provide the interest and concern to do so, acting as a catalyst for conservation. Tourism and environmental protection have a long association. The first national parks in Australia, Canada, New Zealand, and the United States were created as much for the promotion of economic development through tourism as they were for the protection of landscape (Hall, 1988). An example where tourism can provide an economic incentive for governments to protect natural areas can be drawn from Kenya where tourism has justified the setting aside of about 7.5% of the country’s total wildlife area for conservation of wildlife (Hvenegaard, 1994).

The value of tourism has also enhanced the political support for marine protection in areas throughout the world. The increasing demand among visitors for reefs of high aesthetic quality has prompted the establishment of coral reef reserves worldwide, such as the Great Barrier Reef Marine Park, the Sian Ka’an Biosphere Reserve and Palau Seribu Park in Indonesia (Salm, 1985).

Nature-based tourism in the Sian Ka’an Biosphere Reserve in Quintana Roo, Mexico, is helping to protect sea turtles which use the beaches for nesting. Tourists assist in nightly beach patrols and egg relocation efforts and the revenue from tourism helps to hire local guards and scientific staff (Tambiah, 1991; Agardy, 1993).

Blue penguin watching on Victoria Island, Australia is said to be Australia’s second most popular natural tourist attraction after Ayers Rock (Hall, 1993). It adds $AUS 60 million per year to the Victorian economy with the revenue generated re-invested in the penguin reserve for the benefit of the penguins (Tennyson, 1992). The benefits of Penguin Parade have also diffused throughout the area, providing jobs
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for the community and money to fund research on other wildlife in the area and conservation management throughout the island.

The substantial economic value of recreational fisheries and the growing interest in recreational fishing as a leisure activity suggests that recreational fishing tourism could have a greater, longer lasting and more widely beneficial economic impact than the further development of commercial fisheries (Gaffney, 1990).

1.3 The New Zealand situation

New Zealand (269 000 km²) is an island archipelago situated in the southwest Pacific and comprises two main islands (North and South) at temperate latitudes (34-47°S). The country also includes, however, a number of smaller islands ranging from the subtropics to the subantarctic. New Zealand has a diverse marine environment and an intricate coastline some 15 000 km in length.

By world standards much of the country’s coastal and marine environment remains relatively unimpacted by human activity. Given the country’s abundance of relatively pristine marine environments, a sizeable proportion of the tourism growth is likely to include an increasing element of coastal and marine tourism. An estimated 483 000 international visitors participated in marine tourism-related activities in 1993 (New Zealand Tourism Board, 1992/1993). Whilst this represents only 27% of the total visitors surveyed, it is expected that coastal and marine tourism will become increasingly important. For instance, in the same survey scenic boat cruises (and short bush walks) were identified as the most popular activities.

Unfortunately, government and industry statistics worldwide are generally not compiled in a manner which clearly documents the nature of coastal zone tourism (Miller, 1990); New Zealand is no exception. The rapid expansion and diffuse nature of tourism in New Zealand has resulted in very little documentation as to the extent of marine tourism in this country. Although there is some literature which examines aspects of marine tourism (see section 3.3.1), the research is fragmented and presents no comprehensive examination of the industry. This situation has left managers with insufficient objective information on which to base decisions and actions.
1.4 Aims

An objective of this study is to document the current status of New Zealand's marine tourism industry. It is imperative that the major species and habitats targeted by tourism are identified and environmental implications assessed if the industry is to be managed sustainably.

This objective requires the following steps:

- Collate and review the literature on the current management framework relating to New Zealand's marine tourism industry.
- Collate and review the literature on the environmental planning models that have been developed and their use in marine tourism planning, and review the research that has been carried out in New Zealand monitoring the impact of marine-based tourism.
- Document the current status of the industry, including seasonality, key locations, activities and target attractions.
- Discuss the issues emerging with regard to the sustainability of the industry.
- Make recommendations for future work necessary to ensure the industry develops in a sustainable manner.

1.5 Organisation of Thesis

Chapter 2 presents an overview of the current management framework relating to marine tourism in New Zealand. Aspects included in this section are an overview of the management agencies and their roles, and the current regulatory framework. This is briefly compared with Australia's management framework.

Chapter 3 discusses the environmental planning models that have been developed to facilitate sustainable tourism, and reviews the monitoring of marine tourism that has been carried out in New Zealand to date.

Chapter 4 presents survey results. A profile of the marine tourism industry is followed by an examination of the tour operators' perception of the current and future management of the industry, and their environmental concerns.
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Chapter 5 examines in more detail the issues highlighted in the questionnaire by using responses from personal interviews held in three case study areas.

Chapter 6 discusses environmental issues and options with regard to marine tourism in New Zealand, summarises major conclusions and makes recommendations for further research necessary in New Zealand.

Figures and tables are numbered within respective chapters. Appendices are numbered consecutively with capital letters at the end of the thesis.
2 Management Framework

2.1 Introduction

A challenge facing government, conservation agencies and tourism operators throughout the world is to create a climate that fosters inter-sectorial communication, co-ordination, and planning frameworks to ensure coastal and marine tourism is developed in a sustainable manner (Thomas, 1990). Effective implementation of such planning programmes will require legislation and regulations to control activities, which include mechanisms such as environmental impact assessment, permitting and environmental monitoring. The terms 'sustainability', 'sustainable development' and 'sustainable management' have been in use for some time (IUCN, 1980; World Commission on Environment and Development, 1987), but no clear agreement of these terms has been reached (Scott, 1993). For the purpose of this study, 'sustainable tourism' means the management of the natural resources upon which the tourism industry depends, so that these resources are not impoverished and can be sustained in perpetuity.

Familiarity with the management of marine tourism in New Zealand is central to understanding the issues that will be discussed in this report. This chapter provides an overview of the management framework of New Zealand's tourism industry. It identifies the key agencies involved in the tourism industry (marine and non-marine) and examines their characteristics and functions with respect to commercial marine tourism in New Zealand. The policies and instruments currently used to regulate the industry are also examined. The management of New Zealand's marine tourism industry is then compared with strategies used in Australia, as a comparison between New Zealand's level of management and that of another country.

2.2 Characteristics and roles of administrators

The current development and management of marine tourism involves a number of agencies, representing a diversity of interests and responsibilities. The agencies primarily concerned are: the Tourism Policy Group, the New Zealand Tourism Board, and the private sector representative of the industry, the New Zealand Tourism Industry Association. The governmental body charged with conservation matters in New Zealand is the Department of Conservation.
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2.2.1 New Zealand Tourism Industry Association

The New Zealand Tourism Industry Association (NZTIA) was officially founded in September 1993 when its predecessor, the Tourism Industry Federation ceased to exist. The NZTIA is a non-governmental umbrella organisation for all the various sector groups. Its key objective is to increase the effectiveness and co-operation between different industry associations within the constraints of operating in a highly competitive marketplace.

2.2.2 New Zealand Tourism Board

The New Zealand Tourism Board (NZTB) is a crown agency, taxpayer funded, but run by a nine-member private sector board. The Board’s functions, as defined in the New Zealand Tourism Board Act 1991, are to market New Zealand as a competitive international tourism destination and to maximise the long-term benefits of tourism to New Zealand, generating employment and substantial foreign exchange earnings.

The NZTB’s targets are to achieve $NZ 9 billion in foreign exchange earnings annually and to have generated 185,000 full-time equivalent jobs by the year 2000. To fulfil this target, it was initially forecast to have required three million international tourists per year. This visitor target received wide publicity, sparking debate over New Zealand’s capacity to withstand the pressures exerted by visitors. Early in 1995 the Board revised its target and stated the three million target by 2000 is no longer a priority because tourists are spending more and therefore fewer are needed to reach the $9 billion target (New Zealand Tourism Board, 1995).

The Board acknowledges that tourism growth cannot be at the expense of New Zealand’s natural resources or environment:

"One of New Zealand’s greatest assets in an increasingly green conscious world is its spectacular and relatively unspoiled environment" (NZTB, 1994/1995).

For this reason it accepts the principles of sustainable management and environmentally sensitive development (New Zealand Tourism Board, 1992/1993). However, their marketing strategies have been based largely on the economic benefit of increased tourist arrivals and not any assessment of their environmental and social impacts (Sage, 1995). This has been attributed to the Board’s lack of expertise or funding necessary to enforce environmental regulations (Solvander, pers. comm.).
The Board is involved in a number of schemes to maintain high standards in tourism. "The New Zealand Way" Brand is a scheme that involves some environmental assessment of companies. The Brand was launched in 1993 as a joint venture between the NZTB and Tradenz (The New Zealand Trade and Development Board). Companies allowed to carry the logo as a supporting mark for their own brand must have passed a rigorous assessment of their quality and environmental management. Two companies, Fuller's Cruises Northland Ltd and the Redboat Cruises on Milford Sound, are the only marine tourism ventures currently licensed to carry the New Zealand Way Brand.

The NZTB is responsible for the strategic direction of tourism in New Zealand. However, it has little involvement in resource management, either at the national or regional level.

2.2.3 Tourism Policy Group

The Tourism Policy Group (formerly the Ministry of Tourism) functions as a unit within the Ministry of Commerce dealing with government policy issues affecting tourism. It provides independent advice and develops proposals for the Minister of Tourism, and Cabinet, works with other agencies in developing policies such as those relating to conservation, education and transport that have a significant impact on tourism, and deals with a range of other government and inter-governmental activities relevant to the tourism sector. The Policy Group seeks to ensure government policies are consistent and conducive to growth, foreign exchange earnings and job creation. It also seeks to ensure tourism is sustainable in the long term, by being sensitive to environmental and social needs.

A major component of the Tourism Policy Group’s work is directed towards developing a sustainable approach to tourism to meet the needs of tourists and host regions, while protecting and enhancing natural attractions and other assets for future generations (Sowman, 1994). The Group has sponsored developmental work in the area of establishing environmental indicators to help planners and managers of tourism anticipate and prevent impacts from tourist pressure (Ward and Beanland, 1994). I found very little further evidence to support this commitment to sustainable tourism.
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2.2.4 Department of Conservation

The governmental body charged with conservation matters in New Zealand is the Department of Conservation. Consequently it has the most significant and direct role in administering marine tourism in New Zealand. The Department of Conservation’s structure consists of a head office in Wellington which is responsible for formulating policy, strategic planning and advising the Minister, and 14 regional conservancies. The regional conservancies are semi-autonomous with each office having a large degree of decision-making power over the direction of conservation related issues in its region.

The Department of Conservation has a somewhat contradictory mandate to preserve New Zealand’s natural resources for future generations while ensuring that as many people as possible have the opportunity to enjoy New Zealand’s natural heritage.

Tourism has become one of the Department’s biggest planning challenges. The majority of New Zealand’s natural attractions and tourism activities are sited on 30% of New Zealand’s land administered by the Department of Conservation, known as the conservation estate (McSweeney, 1992). In recognition of the changing patterns of visitor use, visitor numbers and visitor expectations, the Department has produced a Draft Visitor Strategy to plan the broad direction that should be taken in managing the provision of appropriate visitor services without compromising conservation values (Department of Conservation, 1994). The working part of the document sets out principles and goals that will shape tourism in protected areas for some time to come.

2.2.5 Regional and Territorial Authorities

The involvement of regional and territorial councils in tourism development is principally one of promotion and infrastructural development. A number of tourism bodies have been set up throughout the country as part of regional councils to promote tourism on a regional basis. However, their responsibilities under the Resource Management Act, which requires assessing and monitoring the effects of development in order to protect the resource base, suggest they should certainly participate in the tourism planning process.
2.3 Policy and regulation

2.3.1 Resource Management Act 1991

The Resource Management Act provides the legislative framework for much of New Zealand's coastal policy making. This Act requires tourism and other sectors to sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; to safeguard the life-supporting capacity of air, water, soil and ecosystems; and to avoid or remedy any adverse effects on the environment. Each regional council must prepare and administer a Regional Coastal Policy which translates national policies and standards, the New Zealand Coastal Policy Statement (NZCPS), into specific policies and rules for managing the effects of activities within the region's coastal marine area. This allows regional variation to take account of different conditions in different parts of New Zealand.

Most activities in the coastal marine area, except for fisheries, are subject to the sustainability provisions of the Resource Management Act (fisheries are controlled through their own Act, as discussed below). Of direct relevance to tourism is the requirement to preserve the natural character of coastal environments, wetlands, lakes, and rivers. Most marine-based tourism activities can be undertaken with a minimum of adverse effects and are therefore permitted activities for which a resource consent is not required.

2.3.2 Conservation Acts

The key pieces of legislation that affect marine tourism and set the framework for the Department of Conservation's activities are:

(i) The Conservation Act 1987
(ii) The Marine Reserves Act 1971
(iii) The Marine Mammals Protection Act 1978
(iv) The Wildlife Act 1953

Conservation Act 1987

Under section 6 of the Conservation Act, one function of the Department is to foster the use of natural and historical resources for recreation and allow their use for tourism so long as this is not inconsistent with their conservation. "Conservation" is defined as: "the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations." Thus, under this Act the Department is clearly required to encourage
recreational use of conservation areas, as well as to protect and preserve the natural and historical resources of those areas.

Anyone wanting to take paying passengers within a national park, reserve or conservation area must have the Department's permission. This is done by way of a concession. Individuals applying for concession licences on land managed by the Department of Conservation are required to state on the application form the potential impact of their activity or development. All concession applicants are subject to thorough vetting to make sure they meet the Department's criteria (Department of Conservation, 1993). Concessions give the Department of Conservation the power to impose certain conditions requiring standards of protection or interpretation. For example, they may limit the number of clients an operator can take, or restrict visits to certain times of the year to minimise disturbance to wildlife by avoiding main breeding times. Concession fees vary around the country and are negotiated between the relevant regional conservancy and the individual concessionaire. They are most commonly set as a percentage of turnover, a direct charge per client or client day, a percentage of the land value of buildings, or as a lump sum.

**Marine Reserves Act 1971**

Most protected marine areas are administered under the Marine Reserves Act, although some protection is available under the Wildlife Act 1953. The Marine Reserves Act describes the purpose of marine reserves as preserving areas of the sea and foreshore in their natural state as the habitat of marine life for scientific study. Subject to the primary purpose (scientific study of marine life), the public has freedom of access to marine reserves, “so they may enjoy in full measure the opportunity to study, observe and record marine life in its natural habitat”. To date, 16 marine protected areas have been approved (Appendix A). Twelve of these are marine reserves: Kermadec Islands, Poor Knights Islands, Okakari/Cape Rodney, Long Bay/Okura, Motu Manawa/Pollen Island, Whanganui-a-Hei, Mayor Island, Kapiti, Long Island, Tonga Island, “The Gut” in Doubtful Sound and the north side of Milford Sound. In addition there are 2 marine parks, Mimiwhangata and Tawararanui, protected by fisheries regulations and the Sugar Loaf Islands (previously a marine park), which are now protected under their own Act as a marine protected area. The Banks Peninsula Marine Mammal Sanctuary has been established under section 22 of the Marine Mammals Protection Act. These areas will become increasingly popular for marine-based tourism (Davis and Tisdell, 1995) and will need to be managed accordingly.
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Marine Mammals Protection Act 1978

All marine mammals around New Zealand are fully protected under the Marine Mammals Protection Act 1978. The Department of Conservation administers this Act and is the Government agency responsible for marine mammal welfare in New Zealand. The Act protects all mammals from being injured, killed or molested around New Zealand’s coast and out to 200 nautical miles off-shore.

When marine mammal watching began in New Zealand, it was realised that regular and repeated approaches to whales and dolphins could have a detrimental impact on them. In 1990, regulations (promulgated under the Act) were introduced specifically for the control and management of marine mammal watching to provide a comprehensive, legally based set of guidelines for operators. These were reviewed in 1992.

The Marine Mammal Protection Regulations 1992 provide two principal mechanisms for managing the level and type of activity around marine mammals. Firstly, they establish a permit system for commercial marine mammal watching, including both shore-based and marine-based activities. The regulations define an operation as "any form of hire or reward in which persons are transported, conveyed, conducted, or guided where a purpose is to view or come into contact with any marine mammal in New Zealand or in New Zealand fisheries waters." The applicant must give a detailed plan of operation for the proposed business, including information on the type of vessel, a detailed description of the proposed operation, which species are to be viewed, and what educational material will be provided (Appendix B). Unlike concessions that can be delegated through the regional conservancy, marine mammal permits must be issued by the Director General of Conservation. Any permit holder who fails to abide by the provisions of their approved plan, or breaks other permit conditions, is liable to suspension or revocation of their permit.

The regulations also list operator conditions for commercial operators, or anyone else, when in the vicinity of marine mammals (Regulations 18 and 20, Annex 1). The regulations are based upon research conducted overseas and the results of two New Zealand studies which assessed the impact of marine mammal watching on sperm whales at Kaikoura (Gordon et al., 1992; Baker and MacGibbon, 1991).

The permit-based system has been described as a model approach for the protection of a resource without unduly restricting its sensible development (Hoyts, 1995).
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Wildlife Act 1953

A number of seabirds are protected by the Wildlife Act 1953. This Act prevents the hunting, deliberate killing, taking, trapping or capturing of any wildlife by any means and also includes pursuing, disturbing, or molesting any wildlife.

It must be noted that the Department of Conservation, as the key conservation administrator in New Zealand, has influence only over marine mammal based operations and bird based operations which are located on protected land. Where marine mammals are not encountered the Department has no powers of regulation over marine-based tourism operations, such as seabird or general aquatic viewing. Under the Wildlife Act 1953 the Department of Conservation can intervene only if the tour operation is having a direct and obvious effect upon the wildlife, or injury and harassment to wildlife is occurring. The Act makes no mention of modification of the habitat and ignores the fact that impacts of tourism on wildlife are often cumulative, or are not evident for some time (Clease, 1994).

2.3.3 Fisheries Act 1996

The purpose of the Fisheries Act includes the conservation of fish, shellfish, seaweed and other aquatic life within New Zealand and New Zealand fisheries waters. The Ministry of Fisheries is the Crown agency responsible, under the Fisheries Act, for that conservation. Fisheries regulations are the main method for controlling recreational fishing and fishing by tourist operators. These regulations differ for each area and include controls such as: catch limits; the size, sex or biological state of the species; the area from which fish may be taken; the fishing methods; and the fishing season.

The new Act has a number of environmental principles incorporated to try and ensure that the biological diversity of the aquatic environment is maintained. Additional regulations allow measures to be imposed to prevent the effect of fishing-related mortality on any protected species under the Wildlife Act or Marine Protection Act. However, it will be some time before it can be judged whether the Act achieves this goal.

2.3.4 Harbours Act 1950

The Harbours Act provides for safety and navigation matters, and the standards for vessels operating commercially within the coastal marine area. The Act is administered by the Ministry of Transport. The Harbours Act and recent amendments give the Maritime Safety Authority of the Ministry of Transport the responsibility for navigation, safety and standards of vessels operating commercially. The Maritime Safety Authority is also responsible for administering
the Water Recreation Regulations on all waters other than those covered by harbour bylaws.

2.3.5 Historic Places Act 1993

The Historic Places Act protects shipwrecks considered to be archaeological sites. No person may "destroy, damage, or modify any part of the site". New Zealand is not on any major navigational route, subsequently we have fewer shipwrecks than many other countries. However, wrecks can be found right around New Zealand and are popular dive sites for some commercial dive charters and recreational divers.

2.3.6 Industry self-management/Codes of practice

There has been a significant ‘greening’ of the tourism industry in the last ten years. The industry recognises that their prosperity and future depend on the preservation of the natural resources that attract tourists in the first place. In response, numerous codes of ethics have emerged worldwide as the industry responds to its changing market and recognises the need to maintain the quality of its product. The codes themselves take many shapes. Most of them have a relatively broad scope, often referring to the cultural and social as well as the natural environment. However, codes that specifically address the conduct of nature tour operators are emerging, for example:

- World Travel and Tourism Council’s Environmental Guidelines
- Pacific Area Tourism Association (PATA) Code for Environmentally Responsible Tourism
- Travel Industry Association of Canada (TIAC) Codes
- Ecotourism Society’s Guidelines for Nature Tour Operators
- International Association of Antarctica Tour Operators (IAATO)

Arguably the most effective example of a code in practical operation is that developed by cruise operators to the Antarctic (IAATO). In the absence of regulation, this has ensured a consistently high standard of behaviour, reflecting perhaps the smallness of the group and the very specific set of circumstances being dealt with (Enzenbacher, 1993; Bauer, pers comm).

There is, however, some debate over the usefulness of codes of practice. Adherence to codes of practice is voluntary and enforcement does not exist. Tour operators are free to promote their activities as environmentally sensitive without necessarily applying any standards (Sims, 1994). Others argue that while codes of practice may be little more than pious statements of intent, they do establish criteria
by which consumers might make comparative judgements of tour operators. However, there is little information available that indicates how codes of practice may affect clients' choice of tours. It is clear that codes will need to develop further before they become primary tools of management. In most situations, a code will provide an effective instrument only when it incorporates auditable procedures which can be policed (Plimmer, 1992).

To date there is no system in New Zealand which can be used to ensure tourism operations are ecologically sound (Russ, pers. comm.). Different sectors of the marine tourism industry are beginning to develop codes of practice. One example of an initiative taken by an emerging sector of the industry is the Sea Kayak Operators Association code of practice developed in 1993 to ensure minimum standards are maintained, including environmental standards. These standards are reviewed and revised on an annual basis, but are not policed. Dive operators must be affiliated with the New Zealand Underwater Association (NZUA) which sets dive practice with regard to safety issues, but does not include environmental standards. The Department of Conservation conservancy office in Otago has produced a draft marine mammal code of conduct for operators and the Southland Conservancy has developed guidelines for tourism on New Zealand's Sub-Antarctic Islands (Appendix C). In addition, the Department of Conservation has produced a number of codes aimed at the general public, such as, the dolphin care code, an environmental care code, and a water care code which have subsequently been adopted by some commercial operators (Appendix D).

An example of the industry becoming actively involved in setting industry-wide environmental standards is the recently established New Zealand Tourism Awards which recognise and reward excellence in tourism. One of the categories is an Ecotourism Award which judges entrants on a number of varying factors but, most importantly, environmental sensitivity.

2.4 Management in Australia

New Zealand is one of many countries throughout the world grappling with the complexities of coastal management, including the management of marine tourism. The remainder of this chapter briefly examines the management of tourism in Australia. This is followed by a comparative analysis of the differences and similarities between the two nations. Australia was selected because it is considered to be a "developing" tourist destination situated adjacent to New Zealand on the tourism life cycle (Fig. 1.1) and, like New Zealand, the natural environment is a
major drawcard for overseas visitors with most of the tourism industry based on the sea and coast (Department of the Environment, Sport and Territories, 1995a).

The Commonwealth of Australia is a Federation of six States (New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia), and two self-governing Territories (Australia Capital Territory and Northern Territory). Management of the Australian coastline, resources and offshore waters is shared between the Commonwealth, state, and local government. Current management regimes are therefore both complex and interwoven between several layers of government agencies and programmes.

Both the Australian government and the Australian tourism industry have identified the concept of sustainable tourism development, with the establishment of numerous public enquiries and development of strategy and policy documents addressing coastal resource management and tourism development in the coastal zone (House of Representatives Standing Committee on Environment Recreation and the Arts, 1991; Commonwealth Department of Tourism, 1992; Senate Standing Committee on Environment, 1992; Resource Assessment Commission, 1993; Department of the Environment Sport and Territories, 1995b; Department of the Environment Sport and Territories, 1995a). The most recent initiative has been the development of the report, "Coastal Tourism: Guiding Principles for Sustainable Development" which presents guidelines to help implement sustainable coastal tourism development (Prosser et al., 1996).

2.4.1 Tourism Agencies

In recognition of the growing economic importance of the tourist industry, the Government established a separate Ministry for Tourism in 1991. The Commonwealth discharges its direct responsibly for tourism through three main areas of government, the Department of the Environment, Sport and Territories (DEST), the Australian Tourism Council (ATC), and the Bureau of Tourism Research (BTR).

Each of these bodies has a particular role. BTR undertakes research. The ATC is the statutory authority under the Australian Tourist Commission Act 1987 that promotes and markets tourism. Its mandate is to increase the number of visitors to Australia, to maximise for Australia the benefits from overseas visitors, and to ensure that Australia is protected from any adverse environmental and social impacts of international tourism (Australian Bureau of Statistics, 1996). One of its prime objectives is to monitor the environmental impact of international tourism on
Australia, although no specific efforts in this field have yet been recorded (Grey, 1991). DEST is responsible for the broader co-ordination, regulation and planning roles, developing a viable and efficient tourism industry with due regard to the natural and social environments of Australia (Hall, 1993). The development of the aforementioned report on coastal tourism was funded by the Coasts and Marine Branch of DEST. These activities are carried out in co-operation with State and Territorial tourism authorities which have substantial responsibility for many aspects of tourism.

A National Ecotourism Strategy was released by the federal government in 1994 and a National Ecotourism Programme provides approximately $AUS 2 million annually for ecotourism projects, mostly for infrastructure and specific ecotourism developments, but also for regional ecotourism planning and research on environmental baselines and monitoring techniques (Commonwealth Department of Tourism, 1994; Osmond, 1996).

2.4.2 Conservation Agencies

The Australian Nature Conservation Agency (ANCA), formerly called the Australian National Parks and Wildlife Service, is the principal adviser to the Commonwealth government on national nature conservation and wildlife issues. It is, therefore, the main agency dealing directly with environmental management of tourism. Each of the nine jurisdictions has a government agency with the principal responsibility for nature conservation. In addition, the Australian Government has the Great Barrier Reef Marine Park Authority, which is responsible for the largest protected marine area in the world, and the Australian Fisheries Management Authority (AFMA) responsible for both recreational and commercial fisheries management.

2.4.3 Policy and Regulation

The Commonwealth's responsibilities for marine conservation are prescribed in three Acts administered by the Australian Nature Conservation Agency. The National Parks and Wildlife Conservation Act 1975 provides for the declaration and management of resources in marine areas and for the protection of a variety of marine wildlife, including dugong, turtles, seals and seabirds. The Endangered Species Protection Act 1992 provides a basis for conservation of endangered species and for mitigation of any processes that threaten them. The Whale Protection Act 1980 prohibits the killing of, or interfering with any whale, dolphin or porpoise. In addition, Whale Watching Regulations promulgated under the Wildlife Act 1975
were established in 1990 with the objective of preventing the disturbance of whales arising from commercial and recreational whale watching. These regulations govern the distances that observers must maintain when approaching whales. To date, there has been no development of guidelines specifically for the regulation of marine mammal tour operations (Saunders, 1996). The Great Barrier Reef Marine Park Act 1975 was enacted to provide for the establishment, control, care and development of a Marine Park in the Great Barrier Reef region (see section 3.2). The Great Barrier Reef Marine Park Authority has the major responsibility for this protection.

Each State and Territory has enacted legislation for nature conservation and fisheries which is managed largely by local government. A number of States have also developed coastal management policies which provide for the planning and management of the coastal zone.

2.5 Summary

The management of coastal and marine tourism is extremely difficult. Generally the areas are governmentally complex because of the dispersal of authority, the competing demands by agencies, and the amount of common property resources involved. Management of marine tourism in both New Zealand and Australia reflects similar problems. Management overlaps between different agencies with competing and conflicting objectives and priorities. Tourism agencies recognise that the environment is the indispensable basis of tourism, but are driven primarily by profit. Resource managers, on the other hand, are charged with protection of the environment.

Australia has the added problem of a three-level system of government, each with a number of agencies responsible for managing marine tourism. This makes it more difficult to co-ordinate and effectively implement the specific responsibilities of each agency. New Zealand has been protected from this problem to some extent by its small size and central government control.

In both countries, marine tourism is managed directly only if the operation is based in a protected area or if it involves the viewing of marine mammals. New Zealand has adopted a more cautious approach to marine mammal based tourism and instigated regulations much earlier in the development of the industry. Australia has developed general regulations to control marine mammal viewing, but has yet to establish a system regulating the development of the commercial marine mammal industry (Willmann de Donlea, pers. comm.).
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Australia has, however, recognised coastal and marine tourism as one of the most important uses of the marine environment and has gone further towards developing the industry. The government has funded a number of programmes that are aimed at developing sustainable tourism development in the coastal zone, including procedures for the assessment of the economic, social and environmental impacts, both positive and negative, of tourism.
3 Environmental Models & Monitoring

3.1 Introduction

Concerns about the environment, including tourism-related issues have emerged in particular since the 1960s. In recognition of the link between tourism and the environment there has been a call for the development of techniques and tools to create and implement policy and management, which has subsequently been the subject of numerous international workshops, symposia and conferences over the past three decades, for example:

- Ecology, Tourism and Recreation - IUCN, Morges 1967;
- Tourism Builds a Better Environment - PATA, Japan, 1973;
- Environmental Aspects of Tourism - UNEPP/WTO, Madrid, 1983;
- Environment and Tourism in Caribbean Development - ECLAC/UNEPP, Trinidad, 1985; and
- The World Congress on Coastal and Marine Tourism, Hawaii, 1990 and 1996.

For sustainable tourism to prevail, it is necessary that an analytical framework be in place within which decisions about the level and nature of impact can be made in a systematic, logical fashion. A number of models have been developed, but designing effective management strategies to mitigate environmental impacts has been hampered by the absence of a widely shared comprehensive framework or model for understanding the long-term effects of tourism. The Congress on Coastal and Marine Tourism held in 1990 concluded that one of the major needs for balancing resource conservation and economic development through coastal and marine tourism was the development of new models to establish limits of acceptable environmental and social change.

The following section reviews the literature on environmental tourism planning and identifies and examines the research that has been carried out to date in New Zealand to monitor the impacts of marine-based tourism.
3.2 Environmental planning models

3.2.1 Carrying Capacity

It is apparent from the literature that research undertaken in relation to visitor impacts has focused on attempting to establish recreational carrying capacities. There are a number of definitions of carrying capacity, depending on the particular focus of each author's work (O'Reilly, 1986; Cooper et al., 1993). Mathieson (1982) defines carrying capacity as the maximum number of people who can use a site without an unacceptable alteration in the physical environment and without an unacceptable decline in the quality of the experience gained by visitors.

The concept has strong intuitive appeal because it suggests that decisions about regulatory access to a resource base can be based upon an objective, biologically-founded rationale. In practice the expression is fraught with difficulties because it implies that the carrying capacity is some absolute limit. However, reducing visitor numbers is not a single solution because of behavioural patterns and political problems (McCool, pers. comm.). It is likely that carrying capacity, particularly from the social and cultural point of view will increase over time as tourist presence becomes accepted. For instance, a limit to the number of visitors to the Galapagos Islands has been set, but over the years these limits have crept inexorably upwards. Twenty years ago the limit was 12 000 visitors a year but by 1990 it had risen to 60 000. Today, the number of tourists visiting the islands is estimated to be 80 000 or more.

Carrying capacity levels have also been estimated for Barbados, St. Croix Island (Virgin Islands, US), Seychelles Islands in the Indian Ocean, and Bermuda. In addition Costa Rica has set a limit of 25 visitors per night to the turtle nesting area of Nancite beach in Santa Rosa National Park. Similarly, Queensland (Australia) limited visitors to a total of 100 at any one time at Michaelmas Cay to protect seabirds, but visitor numbers frequently exceed this limit (Muir and Chester, 1991). In all these cases the implementation of carrying capacity has been a "reactive" solution rather than a "proactive" method of environmental planning. So, although the concept of carrying capacity was born in the 1960s, the difficulties in measuring and quantifying the thresholds have restricted its use as a planning tool.

3.2.2 Recreational Opportunity Spectrum (ROS)

The ROS framework is intended to help planners and mangers provide a range or diversity of recreational areas so that peoples' varying desires, preferences and needs can be met. It estimates the demand for recreational opportunities (ranging from
wilderness areas to sites with intensive tourism development), determines the potential of a resource to provide for different recreational opportunities, identifies current use, and develops alternate plans for resource allocations (Stankey and Wood, 1982). This method is aimed at ensuring visitor satisfaction through the meeting of their expectations. ROS is an international model that has been adopted nationwide by the Department of Conservation for assessing the distribution of outdoor recreation and management options (Department of Conservation, 1995b).

3.2.3 Limits of Acceptable Change (LAC)

Carrying capacity, and later the ROS model spawned the idea of LAC (Stankey and McCool, 1984). This system was developed for use by wilderness area managers and is a process to determine what resource and social conditions are acceptable, and to prescribe appropriate management actions (Stankey, 1985; Stankey, 1990). This method recognises that change is inevitable, but determines how much change will be allowed to occur, where, and the actions needed to control it. It involves a nine-step process in which the amount of change to be allowed is defined by means of qualitative standards, the appropriate management actions needed to prevent further change are identified, and procedures for monitoring and evaluating management performance are established. The LAC process has been applied to a hypothetical wilderness area (Stankey, 1985), and has been advocated for use in the management of coastal and marine tourism (Stankey, 1990).

3.2.4 Ultimate Environmental Threshold (UET)

The process of the UET method involves an analysis of the potential environmental threats and of relations between various activities and various elements of the natural environment (Kozlowski, 1985). A UET has been defined as the stress limit beyond which a given ecosystem becomes incapable of returning to its original condition and balance. The preliminary phase determines potential environmental threats and the relations between activity and elements of the natural environment. The quality of respective environmental elements is expressed in degrees of "uniqueness," "transformation," and "resistance". On the basis of these results a number of UETs are established. Territorial UETs are defined as areas from which particular activities must be excluded. Quantitative UETs indicate environmental capacity for each activity, expressed as the maximum number of tourists which may be allowed at any one time to be in a given locality without the stress level of the environment being transgressed. Temporal UETs indicate the acceptable duration or the sensitive periods during which some activities need to be
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totally excluded. This method was tested in Tatry National Park, Poland (Kozlowski, 1985; Kozlowski et al., 1986).

3.2.5 Environmentally Based Tourism (EBT) Planning Model

The EBT planning model is based on environmental protection, community well-being, tourist satisfaction and economic integration (Dowling, 1993). A number of planning zones are defined which are designed to protect conservation values while fostering compatible tourism development and activities. The model essentially involves determining environmentally compatible tourism through the identification of significant features, critical areas and compatible activities. Significant features are either environmental attributes which are valued according to their level of diversity, uniqueness or representatives, or tourism features valued for their resource value. Critical areas are those in which environmental and tourism features are in competition and possible conflict. Compatible activities are outdoor tourism and recreational activities which are considered to be both environmentally and socially compatible. This model is hailed as a new approach to sustainable tourism planning. Its uniqueness lies in its environmental base and the incorporation of both resident and tourist opinion, a link missing in the models described previously. There are, however, no examples of the application of the model.

3.2.6 The Great Barrier Reef Example

In terms of marine environmental management and marine tourism, the Great Barrier Reef Marine Park has made some of the most important contributions. Concepts from all the planning models discussed above, in particular the limits of acceptable change, have been incorporated in the management plan. The park is divided into sections, within which a series of zones have been established. These zones range from general use to preservation zones (Kelleher and Kenchington, 1982). An important aim of the zoning plan is to separate potentially conflicting uses of the marine park.

A further level of zoning involves the designation of amenity classes, which are based on an assessment of the current use of the site and its physical and ecological characteristics. Some commercial uses which would be acceptable under the broader zoning plan for the area are prohibited. For instance, one of the amenity classes virtually dedicates a reef for private recreational use, excluding tourism (Geen and Lal, 1991). A permit system allows a measure of control over the number of visitors on commercial boats. The marine park has a permitted capacity in the order of 10 million visitor days per annum. Both private and commercial uses should be
accounted for within the total visitor quota, but at the moment there is no means of limiting private use (Vandervee, pers. comm.).

### 3.2.7 Summary

Planning for marine tourism has commonly utilised zoning for different uses and degrees of use, within the context of a marine park or other protected area and this is largely an extension of land-use planning methodologies (Salm, 1985; Agardy, 1993; Stewart, 1993). The Great Barrier Reef Marine Park example illustrates that although the philosophical underpinnings for establishing standards are the same in terrestrial and marine areas, the 'global commons' aspect of the oceans complicates attempts to establish realistic standards for marine areas (Agardy, 1993).

There are no clearly defined ownership or use rights to the resources making it very difficult to ration their use. To some extent commercial users can be allocated control by issuing permits, but it is very difficult to restrict the use of recreational users, particularly due to the fact that access is available at a multitude of sites. It has been suggested that where basic property rights cannot be assigned, government action (eg. regulations, legislation, standards or guidelines) needs to be taken to protect the quality of the resource (O'Fallon, 1994). The problems of implementing management strategies are intensified where numerous access points make it difficult to police any regulations and planning strategies that are established.

The above planning techniques all focus on the development of guidelines in relation to maintaining a quality recreational experience. These frameworks are useful for thinking about problems but have limited use as actual planning mechanisms. In practice it is impossible to set definite numbers (Moore, 1991). It is probably best to set fairly low/conservative numbers to begin with, and at the same time set in motion two different management activities: establishing a set of mechanisms to control visitors' use and a system for monitoring visitor impact. According to Kelleher (1992) the desired levels of usage of marine areas may be achieved through some or a combination of the following:

- Establishing area boundaries for specific activities (zoning);
- Enforcing closure during parts of the year critical to life histories of species or for longer periods;
- Setting size limits, maximum permitted catches, and harvest limits;
- Prohibiting or limiting the use of unacceptable equipment;
- Licensing or issuing permits to provide specific controls or to limit the number of participants in form of use;
- Limiting access by setting a carrying capacity that may not be exceeded.
3.3 Monitoring

Once models and strategies for sustainable management are in place, a major aspect of resource management must be the monitoring of the resource on which the tourism operations are based. A report by the Organisation for Economic Co-operation and Development in 1980 identified environmental resources as a major element of tourism and stated that a good environment is an essential quality of tourist areas. Recommendations were made to fully integrate environmental considerations at the earliest possible stage in their tourism development and develop practical environmental indicators and guidelines (Organisation for Economic Co-operation and Development, 1980). This involves developing a working knowledge of the relationship between the wildlife and the site and establishing behavioural and reproductive benchmarks in order that disturbance may be recognised (Duffas and Deardon, 1990).

The study of the physical impacts of tourism is comparatively recent and is generally of a reactionary nature to site-specific problems since tourism development in many places has preceded any interest and concern for the environmental consequences (Pearce, 1985). This is also to some extent a reflection of the difficulties in assessing tourism effects, for instance:

(i) isolating impacts which can be safely attributed to each one of the activities constituting tourism;
(ii) isolating the ecological impacts of tourism from those caused by natural processes or other activities occurring at the same time and place;
(iii) lack of reliable and accurate empirical evidence for measuring and explaining the impacts observed;
(iv) significant variability in the factors influencing the frequency and magnitude of impacts, for instance the type of tourism activity, its intensity of duration and spatio-temporal distribution. This results in problems of comparability among regions, and difficulties in generalising findings from specific locations and over time.

These difficulties are exacerbated when studying the impact of tourism on wildlife. The response of wildlife to disturbance is neither uniform nor consistent (Kuss et al., 1990). Sensitivity to disturbance is highly specific to species, activity and site. The impacts of tourism on wildlife can take a variety of direct and indirect forms (Fig. 3.1). Direct impacts include the various responses of wildlife to disturbance by humans. Indirect impacts on wildlife include the effects of change in
vegetation, habitat, or other environmental parameters that result from the human use of the natural environment.

**FIGURE 3.1.**
Impacts of tourism on wildlife (adapted from Wall and Wright, 1977)

### 3.3.1 Monitoring of marine tourism in New Zealand

Monitoring in New Zealand has largely been undertaken by the Department of Conservation and has involved individual conservancies recording numbers of visitors using facilities and their perceptions of crowding, noise, litter, and conflicts with other users. This has led to criticism that to date tourism research and monitoring has focused on visitor numbers, with an emphasis on maintaining a "quality recreational experience" (ie. visitor satisfaction), as opposed to ecological carrying capacity (Ward and Beanland, 1994; Sage, 1995). Research focusing on the impact of marine tourism on particular species is very sparse (Table 3.1). The following section will examine the research that has been conducted in New Zealand focusing specifically on the impact of tourism on marine wildlife.
TABLE 3.1.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Area</th>
<th>Species</th>
<th>Duration of study</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Conservation</td>
<td>Kaikoura</td>
<td>Sperm whale</td>
<td>6 months</td>
<td>Baker &amp; MacGibbon, 1991</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Physeter macrocephalus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>Kaikoura</td>
<td>Sperm whale</td>
<td>40 days</td>
<td>Gordon, et al, 1992</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Physeter macrocephalus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Bay of Islands</td>
<td>Conservation</td>
<td>Bottlenose dolphin</td>
<td>156 trips</td>
<td>Constantine, 1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Tursiops truncatus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Common dolphin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Delphinus delphis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>Kaikoura</td>
<td>Dusky dolphin</td>
<td>118 days</td>
<td>Barr, in prep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Lagenorynchus obscurus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow-eyed Penguin Conservation Reserve</td>
<td>Otago Peninsula</td>
<td>Yellow-eyed penguin</td>
<td>21 observations</td>
<td>Ratz, 1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Megadyptes antipodes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>Otago Peninsular</td>
<td>Yellow-eyed penguin</td>
<td>15 days</td>
<td>Wright, 1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Megadyptes antipodes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>Otago Peninsular</td>
<td>Hooker's sea lion</td>
<td>8 days</td>
<td>Wright, 1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Phocarctos hookeri)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>Catlins</td>
<td>Hooker's sea lion</td>
<td>16 days</td>
<td>Heinrich, 1995</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Phocarctos hookeri)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Seabirds**

Few studies have been carried out to assess the long-term impacts of visitors. Two notable exceptions are the long-term monitoring of the mainland gannet (Sula serrator) colony at Cape Kidnappers, Hawkes Bay, and the royal albatross (Diomedea epomophora sanfordi) population at Taiaroa Head, Otago Peninsula. These studies have demonstrated that significant changes in short-term and long-term breeding behaviour and distribution have been caused by nature tourism (Robertson, 1992). This illustrates the prime importance of comprehensive long-term monitoring for any nature tourism venture and the implication that rigorous environmental impact reporting must be a requirement, for even such an ostensibly passive resource use.

The Cape Kidnappers gannet colony has been an international tourist attraction for nearly one hundred years. With gannet colonies usually confined to islands Cape Kidnapper was, until recently, the only mainland gannet colony worldwide. The colony has been closely monitored and an annual count of nest sites made since 1945.
Since 1964 these ground counts have been supplemented by aerial photography. Experienced breeders are found inside the perimeter of the colonies; outside them, and thus closest to the tourists are adolescent birds who are setting up territories before breeding the following season. Continual exposure of these first-time breeders to disturbance by tourists produces poorer breeding success, and makes them vulnerable to egg predation by black-backed gulls. In 1967 a low guide wire and signs were erected on the landward side of the colony to encourage people to keep a specified distance from the birds. The guide wire has proven to be extremely successful. The number of nests increased by over 50% in the first five years following its installation and the colony has continued to consolidate, with the areas of greatest growth being at parts furthest from the guide wire (Robertson, 1993).

The Royal Albatross colony at Taiaroa Head is equally unique, being the only place worldwide where albatrosses nest close to humans, and not on a remote island. The colony has been monitored continuously since 1937 (Robertson, 1993). An analysis of nesting distribution in the colony since 1968 shows that since 1980 there has been an increasing tendency for birds to nest out of sight of both the observatory and the access track from the reception centre. The area which has proven to be the most climatically trying for the birds (highest temperatures, least wind and most blowflies) is predominantly the area out of view of the observatory. The colony only continues to exist on the mainland due to human intervention/management.

Yellow-eyed penguins are recognised as the world's rarest penguin and are regionally threatened in the South Island (Marchant and Higgins, 1990; Gaze, 1994). These birds afford an extremely good viewing opportunity for tourists because they display very predictable behaviour, coming ashore at the same beach every few nights throughout their life.

These birds have been given a very high conservation priority and have now been studied in detail for many years. Two studies have looked specifically at the impact of visitors on the penguins at two different sites (Wall and Wright, 1977; Wright, 1996). Wright (1996) found no significant difference in landing patterns between yellow-eyed penguins on a beach commonly used by tour groups and members of the public, compared with a beach with limited use. Penguins, however, were less likely to come ashore if people were present in the area of beach closest to the penguin nesting area and landing site. The Department of Conservation has interpretation signs giving information about the yellow-eyed penguins and asking people to go from the beach into the viewing hide, as their presence will inhibit penguins coming ashore.
Chapter 3: Environmental Models & Monitoring

Ratz (1996) found no significant difference in the feeding behaviour of chicks between a colony visited continually by tourists and an adjacent control colony with no public access. The viewing of penguins at this site is vastly different from the public beach site used in the previous study; it is a very controlled situation. All tourists are guided through the penguin colony and view penguins from a series of covered trenches and observation hides. This study is the only monitoring of visitor impact on wildlife in New Zealand that has been fully funded by a tour operation.

Marine mammals

Two studies have investigated the possible disturbance of sperm whales (*Physeter macrocephalus*) by whale watching vessels off Kaikoura. Baker and MacGibbon (1991) recorded that the presence of boats tended to correlate with the occurrence of shortened respiratory intervals, short submergence times and the absence of raising the tail flukes prior to submergence. When boats were present, whales tended to replace the normal unidirectional surface movement with an increase in speed, and a substantial increase in change of direction. Gordon et al. (1992) confirmed the findings of shorter surface times with boats present. The significance of short-term behavioural responses to the long-term well-being of individuals and populations is not known. Ongoing monitoring programmes are necessary to determine the threshold of disturbance, above which the whales suffer a reduction in fitness. The importance of research is highlighted by the fact that a reduction in the number of whales obviously disturbed was noted between the studies, following the implementation of a number of management recommendations made by Baker and MacGibbon (1991).

Constantine (1996) assessed the short-term response (eg. approach and avoidance behaviour) of bottlenose and common dolphins to commercial swim-with-dolphin vessels and swimmers in the Bay of Islands. It was found that bottlenose dolphins change their behaviour on 32% of approaches and common dolphins change their behaviour on 52% of approaches. There were insufficient data to make any conclusions about the impact of boat traffic on the dolphins' movement patterns and behavioural responses and recommendations were made for long-term research focusing on individual dolphins and their behavioural responses. These data were further limited because they were collected using the tour boat as the primary research platform. The lack of a control situation meant the observations could not be related to some standard of comparison. The study indicated, however, the most successful and least invasive strategy for placing swimmers in the water with the dolphins. Operators have subsequently used these findings to improve their behaviour around the dolphins.
Two short-term studies have monitored the impact of visitor approaches to Hooker's sea lion at the main sea lion tourism sites on mainland, New Zealand: the Otago Peninsula (Wright, 1996) and the Catlins (Heinrich, 1995). The animals observed on the Otago Peninsula displayed a change in behaviour (movement of head or position of body) when approached, but the actual approach distance (5, 10, 15 or 20m) did not significantly influence their behaviour (Wright, 1996). Heinrich (1995) found that 5% of sea lion/visitor encounters caused prolonged changes in behaviour (lasting longer than 5 minutes). These effects were not observed by Wright (1996). The differences in behaviour observed between the studies could be explained by the differing age of animals between the sites, the degree of habituation (Wright, 1996), and seasonal differences (McConkey, pers comm).

3.3.1 Summary

The above studies highlight the pressing need for long-term studies to determine the impact of tourism on wildlife and wildlife areas. The studies that have been undertaken to date are all relatively short in duration and are limited to identifying short-term impacts, rather than the cumulative effects of tourism.

The studies, however, have been extremely useful in identifying some of the 'instantaneous effects' of tourism on the species. Recommendations for management of tourism activities have been identified and successfully implemented following these studies. They also highlight the fact that each tourism area must be considered separately as many contributing factors make each site a specific and unique case (Kuss et al., 1990).
4 The Marine Tourism Industry: A Profile

4.1 Introduction

Government and industry statistics worldwide are generally not compiled in a manner which clearly documents the nature of coastal zone tourism (Miller, 1990; Miller and Auyong, 1991). The marine contribution is rarely analysed in isolation because there is no consensus as to the most fitting definition of marine tourism or even of tourism itself (Miller and Ditton, 1986). With the rapid expansion and diffuse nature of tourism in New Zealand there has also been very little documentation as to the extent of marine tourism in New Zealand. As a result, managers have had insufficient objective information for decision making actions. It is thus imperative that the marine species and habitats targeted by tourism are identified and environmental implications assessed if the anticipated growth in marine tourism is to be managed sustainably.

Boo (1990) notes that the ecology of an area and the style and scale of nature tourism will determine what is a sustainable level of tourism. The ability of wildlife to withstand the impacts of tourists will vary from species to species and from region to region, according to the intensity and type of development, species resilience and the ability of wildlife to adapt to the tourists' presence (Mathieson and Wall, 1982; Hill and Rosier, 1989).

Much of the research into tourism and environmental issues has consisted of ‘after the fact’ studies, for in many places tourism development has preceded an interest and concern for its environmental consequences (Pearce, 1985). The previous chapter highlighted the paucity of research on monitoring the impact of tourism on wildlife and wildlife areas. New Zealand has the opportunity to learn a salient lesson. It is imperative that information is collated now to integrate environmental considerations into the planning process at the earliest possible stage.

This chapter gives a broad appraisal of the current status of marine tourism in New Zealand and quantifies the major types of attractions and activities of the industry. Included in this synopsis are some of the issues regarding the sustainability and future growth of the industry.
Chapter 4: The marine tourism industry: a profile

4.2 Methods

4.2.1 Respondents

For this study marine tourism was defined as commercial operators visiting natural areas for the purpose of diving, fishing, marine mammal and seabird watching, tour boating and cruises. A survey of all marine tour operators was conducted during September-November 1995. The survey was timed for when the tour operators were less likely to be extremely busy running their operation and pressed for time.

Names and addresses of operators were obtained by writing to all the visitor information centres in New Zealand that have a coastal interest (Appendix E). In addition, a search was made through the Yellow Pages of all the telephone directories under the key word/phrases "charter services-boat and launch charter, divers and diving tuition, fishing trips, tourist attraction and tour services, sightseeing and excursions". A total of 376 operators was initially identified as having some type of marine attraction component included in their tour.

4.2.2 Questionnaire

A direct mail survey was selected as the most appropriate and economic method for collecting the data given the large number of tour operators dispersed throughout the country. It is widely accepted that for a given budget, mail surveys usually yield a much larger sample size than interviewing, providing the response rate is satisfactory (Alreck and Settle, 1985).

The objectives of the survey were:
(i) To obtain profile data on tour operations and the marine tourism industry as a whole (eg. location of operations, types of trips offered and key attractions).
(ii) To investigate the attitudes of the tour operators to the current and future management of the industry
(iii) To identify possible environmental concerns, specifically the species and habitats perceived as vulnerable to tourist pressure.

Given that the questionnaire consisted of three main topics, the questions were divided into three logical sections to make the task appear simpler and easier for the respondents (Appendix F). The initial section of the questionnaire contained the most general questions that were applicable to all the respondents and relatively quick and easy to answer. The final part of the questionnaire was reserved for the
most sensitive topics dealing with environmental issues. This was done because by this stage the respondents are likely to have more trust and are less likely to be sceptical or uncooperative. In addition, even if some respondents terminate the questionnaire at this point they may have provided the bulk of the data and their responses to these items may still be usable (Alreck and Settle, 1985).

Care was taken to ensure the questions were easy and relatively quick to answer. There are two basic formats for survey questions: unstructured or 'open ended' questions, and structured questions. Structured survey items ask a question and list alternative answers that respondents might choose. Structured questions were used wherever feasible because the response task is quicker and easier, the recording accuracy is increased and the data are easily compared. To be useful, it was essential that the list of responses was exhaustive and mutually exclusive. A residual "other" category was often included to increase the flexibility in the answer categories.

The "cosmetic" appearance of the survey was considered carefully because its form and appearance affect the rate of response and the quality of the data (Alreck and Settle, 1985; Department of Statistics, 1992; Bourque and Fielder, 1995). The University of Otago crest was on the front page of the questionnaire to convey an impression of legitimacy and establish the importance of the study.

Extreme care was taken when wording the questions. The survey form sent to operators used the terminology "environmental implications" rather than "impact". This somewhat more cumbersome wording was adopted because of the potentially negative connotation associated with the term "environmental impact" which indicates an acceptance that repercussions exist. In addition, section three asked respondents to identify environmental concerns with regard to a "tour like theirs" rather than their tour in particular, to try and take the onus off the individual and diminish any inherent bias in the question.

The questionnaire was pre-tested on five Dunedin operators to ensure its effectiveness and clarity. This involved the operator filling in the questionnaire while the researcher observed them and noted where they seemed to have problems. Some minor amendments were made to the questionnaire before the survey to be used in the study was finalised. As the adjustments were minor and the general character of the survey remained unchanged, the data from the pre-tests were used in the final analysis. After pre-testing the questionnaire was coded. The structured questions were all coded with a number and, together with numbers that specify 'record format', were printed on the far right hand margin of the questionnaire. Postcoding of the questionnaire was also necessary for some questions where
respondents could list several alternative response categories in an open-ended question.

The questionnaire was put together using a 'booklet' format that was saddle stapled in the binding. This created an eight-page booklet that would not separate and in which the sequence of pages was obvious. A covering letter was included with each questionnaire (Appendix G). In the absence of personal contact and interaction, the cover letter had to explain the project and win the cooperation of the recipient. Respondents are more likely to read a letter that is addressed directly to them, so wherever possible the letter was personalised (Alreck and Settle, 1985). The Microsoft word program "print merge" was used to insert the tour operator's name, company name and address into a copy of the letter.

To maximise the response, stamped return-addressed envelopes were provided, and follow-up telephone calls were made to all those who had not completed questionnaires after three weeks.

A total of 375 surveys were sent. Twenty-seven were returned as undeliverable reducing the possible survey sample to 348. A total of 190 responses were received giving an overall response rate of 55%. One late response was excluded because analysis had already been completed.

4.2.3 Data analysis

The data were collated and analysed using the program SPSS for Windows. A large proportion of the data is presented as frequency distributions. A number of responses were analysed using a five-point Likert scale. By using this method, it was possible to compute two measures: the percentage of responses agreeing with the statement, and the mean score which reflects the intensity of agreement. The latter is often used because it provides a more meaningful assessment of ranking opinions than just using simple percentages (Krausee, 1995). Responses in the 'don't know' category were excluded when computing the mean scores.

The codes initially allocated for Question 2 were recoded to make more sense to the reader. The scale 1=always to 5=never was used in the questionnaire to correspond to the layout of the question. These codes were subsequently reversed in data analysis to 1=never and 5=always, as a low score intuitively reflects a low frequency and vice versa. In addition, the categories in Question 2 were collapsed. Respondents in the 'always' and 'often' category were combined to form one group of operators offering the activity as a key component of their tour. Respondents in...
the 'sometimes,' 'seldom' or 'never' category were grouped as operations which do not incorporate the activity as a key component on their tour.

Simple statistical methods were used to analyse the data. Two sample independent $t$-tests were used to determine the difference in the mean response between respondents in the North and South Island. One sample $t$-tests were used to calculate if the mean response of all respondents to particular questions varied significantly from a test value. This value was the middle or neutral value in the Likert scale. The $t$-distribution takes into account the small sample size and the problem of working with the sample standard deviation instead of the population standard deviation. In addition, chi-squared values are quoted throughout the report when using count data.

Any analysis comparing the response of operators in different locations around New Zealand has a reduced sample size ($n=155$). Thirty-five respondents operate in more than one location and were excluded from the analysis to prevent the problem of multiple counts.
Chapter 4: The marine tourism industry: a profile

4.3 Results

4.3.1 Profile of the industry

There is a marked seasonal pattern of visitors participating in marine tourism activities, with a distinct peak over the summer months December to March (Fig 4.1). A similar pattern is shown by total visitor arrivals to New Zealand.

![Seasonal pattern in visitor numbers participating in marine tourism activities compared with the trend in total international visitor arrivals for the 1994 season](image)

**FIGURE 4.1.**

Seasonal pattern in visitor numbers participating in marine tourism activities compared with the trend in total international visitor arrivals for the 1994 season (source: Market Research New Zealand Tourism Board/Statistics New Zealand)

Forty-three per cent of the respondents indicated that they close for a period of two weeks or more during the year. The timing of this closure usually coincided with the winter months, June to August (Fig 4.2), and was primarily a result of weather restrictions or lack of tourist demand (Table 4.1).
Chapter 4: The marine tourism industry: a profile

FIGURE 4.2.
Months where operations close for a period of more than two weeks during the year (based on multiple responses of 81 respondents)

<table>
<thead>
<tr>
<th>Reason for closure</th>
<th>Counts</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable weather</td>
<td>42</td>
<td>51.9</td>
</tr>
<tr>
<td>Insufficient tourists</td>
<td>42</td>
<td>51.9</td>
</tr>
<tr>
<td>Sensitive period for species</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Movement of species</td>
<td>6</td>
<td>7.4</td>
</tr>
<tr>
<td>Other commitments</td>
<td>17</td>
<td>21.0</td>
</tr>
<tr>
<td>Maintenance</td>
<td>42</td>
<td>53.1</td>
</tr>
<tr>
<td>Other†</td>
<td>11</td>
<td>13.6</td>
</tr>
</tbody>
</table>

†Other category includes the responses, staff holiday, New Zealand off-season, and area too busy with private boaties and holiday makers.

New Zealand’s marine tourism industry is still in its infancy; 61% of operations have developed within the past 5 years (Table 4.2). The industry is characterised by a high turnover of operators. A number of operators start with the influx of tourists over the summer months and are then forced to close with the subsequent lull in tourists numbers over the winter. This was highlighted by the fact that a number of operations closed over the short period between compilation of the inventory and the questionnaire distribution.
Chapter 4: The marine tourism industry: a profile

TABLE 4.2.

Number of years marine tourism operations have been established in New Zealand

<table>
<thead>
<tr>
<th>Years of operation</th>
<th>Number of operations</th>
<th>Percent of operators</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>116</td>
<td>61.4</td>
<td>61.4</td>
</tr>
<tr>
<td>5-10</td>
<td>42</td>
<td>22.2</td>
<td>83.6</td>
</tr>
<tr>
<td>10-15</td>
<td>14</td>
<td>8.4</td>
<td>92.1</td>
</tr>
<tr>
<td>15-20</td>
<td>6</td>
<td>2.2</td>
<td>94.2</td>
</tr>
<tr>
<td>20-25</td>
<td>2</td>
<td>1.0</td>
<td>95.2</td>
</tr>
<tr>
<td>25+</td>
<td>9</td>
<td>4.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The industry is largely composed of small, locally owned and operated businesses. Overall, in 60% of the operations the owner/manager of the operation is the sole full-time staff member and over 82% employ less than 3 staff, irrespective of whether the staff are employed on a full-time or seasonal basis (Table 4.3).

TABLE 4.3.

Number of staff employed in businesses in New Zealand's marine tourism industry

<table>
<thead>
<tr>
<th>Number</th>
<th>Permanent full time (%)</th>
<th>Permanent part time (%)</th>
<th>Seasonal full time (%)</th>
<th>Seasonal part time (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>36.7</td>
<td>61.2</td>
<td>57.4</td>
<td>58.5</td>
</tr>
<tr>
<td>1</td>
<td>24.5</td>
<td>22.3</td>
<td>18.7</td>
<td>17.6</td>
</tr>
<tr>
<td>2</td>
<td>20.7</td>
<td>9.6</td>
<td>8.5</td>
<td>13.8</td>
</tr>
<tr>
<td>3</td>
<td>7.0</td>
<td>2.6</td>
<td>4.2</td>
<td>1.6</td>
</tr>
<tr>
<td>4</td>
<td>2.7</td>
<td>0.6</td>
<td>3.2</td>
<td>2.6</td>
</tr>
<tr>
<td>5+</td>
<td>9.0</td>
<td>3.7</td>
<td>8.0</td>
<td>5.9</td>
</tr>
</tbody>
</table>
4.3.2 Activities and Attractions

Marine tourism activity is centred around several key locations, with the majority of operations (68%) located in the North Island of New Zealand (Table 4.4). This is to be expected, given that nearly 75% of the population lives in the North Island (Statistics New Zealand, 1996). Responses to the survey suggest that the primary marine tourism locations are the Bay of Islands, Whangarei, Coromandel and Bay of Plenty in the North Island, and the Nelson-Marlborough region, Otago and Stewart Island in the South Island.

TABLE 4.4.
The key locations of marine tourism activity in New Zealand (based on multiple responses of 190 questionnaires). Operators may work in more than one area.

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of operators</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far North/Bay of Islands</td>
<td>34</td>
<td>17.9</td>
</tr>
<tr>
<td>Whangarei</td>
<td>24</td>
<td>12.6</td>
</tr>
<tr>
<td>Auckland</td>
<td>41</td>
<td>21.6</td>
</tr>
<tr>
<td>Coromandel</td>
<td>35</td>
<td>18.4</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>21</td>
<td>11.1</td>
</tr>
<tr>
<td>East Coast</td>
<td>7</td>
<td>3.7</td>
</tr>
<tr>
<td>Hawkes Bay</td>
<td>5</td>
<td>2.6</td>
</tr>
<tr>
<td>Taranaki</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Wellington</td>
<td>8</td>
<td>4.2</td>
</tr>
<tr>
<td>Nelson-Marlborough</td>
<td>29</td>
<td>15.3</td>
</tr>
<tr>
<td>West Coast</td>
<td>5</td>
<td>2.6</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>6</td>
<td>3.2</td>
</tr>
<tr>
<td>Canterbury</td>
<td>6</td>
<td>3.2</td>
</tr>
<tr>
<td>Otago</td>
<td>12</td>
<td>6.3</td>
</tr>
<tr>
<td>Fiordland</td>
<td>9</td>
<td>4.7</td>
</tr>
<tr>
<td>Southland</td>
<td>3</td>
<td>1.6</td>
</tr>
<tr>
<td>Stewart Island</td>
<td>11</td>
<td>5.8</td>
</tr>
</tbody>
</table>

The price of tours varied considerably depending on the activities offered, but averaged $NZ 30-35 per hour. Seventy-two per cent of operations used powered boats, 15% yachts and 16% kayaks (Table 4.5).
New Zealand’s marine tourism industry encompasses a diverse range of activities, the major ones being cruises, line fishing, seabird and marine mammal watching (Fig 4.3). The activities incorporated in marine-based operations varied between the North and South Island (Fig 4.4). In general, wildlife viewing was the dominant activity in the South Island, while fishing, diving and snorkelling were the activities characteristic of North Island operations. South Island operations offered marine mammal swimming ($t=2.15$, $df=187$, $p=0.033$), marine mammal watching ($t=6.43$, $df=187$, $p<0.0005$), penguin viewing ($t=7.14$, $df=187$, $p<0.0005$), and other seabird watching ($t=6.90$, $df=187$, $p<0.0005$) significantly more frequently than North Island operators. Fishing was an important component in both North and South Island tours and was predominantly line fishing. However, big game fishing occurred significantly more often in the North Island ($t=4.02$, $df=187$, $p<0.0005$).

The activities offered by marine tourism operators differed at the key locations throughout New Zealand (Fig. 4.5 & 4.6). The Bay of Islands, Whangarei, Auckland, Coromandel and Bay of Plenty operators all offer a variety of activities. Activity is heavily orientated toward fishing and diving in all North Island tours except in the Auckland area where cruises, sailing and kayaking were dominant. Wellington respondents showed salient differences, offering a relatively narrow range of activities. In addition it was the only area where none of the respondents identified marine mammal viewing as a common activity. Nelson/Marlborough operators offer a diverse array of activities typical of North Island operators. Kaikoura operators offer marine mammal viewing considerably more frequently than those at other locations and this is the only location where fishing is not considered a key activity. Otago operators almost exclusively note marine mammal and seabird viewing as the key activities.
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Type of activities incorporated in New Zealand's marine tourism industry (n=190, error bars represent one standard error)

FIGURE 4.3.

Type of activities incorporated in marine-based tours operating in the North Island compared with those operating in the South Island (error bars represent one standard error)

FIGURE 4.4.
FIGURE 4.5.

Type of activities incorporated in marine-based operations in the North Island's key marine tourism locations (operators offering activities 'always' or 'often' included in the analysis). 
BoI=Bay of Islands
FIGURE 4.6.

Type of activities incorporated in marine-based operations in the South Island's key marine tourism locations (operators offering activities 'always' or 'often' included in the analysis). Marl=Marlborough Sounds
Wildlife viewing is the most common activity, with 44% of respondents noting marine mammals, 18% noting penguins and 42% noting other seabirds as a key attraction on their tour (Fig. 4.7). Half the operators noted a wide range of attractions ranging from historic sites to sea caves and the general marine vista. These attractions, grouped as scenery, in Fig. 4.7, account for the large proportion of operators in this category. Significantly more North Island operators noted scenery ($X^2=13.66$, $df=1$, $p<0.01$), islands ($X^2=25.8$, $df=1$, $p<0.001$), and fish ($X^2=21.1$, $df=1$, $p<0.001$) as a target attraction than South Island operators. Figures 4.4 and 4.8 highlight the fact that fish and fishing are an important component of many North Island operations. In comparison, South Island operators note marine mammals ($X^2=22.86$, $df=1$, $p<0.01$), penguins ($X^2=33.15$, $df=1$, $p<0.001$) and other seabirds ($X^2=4.94$, $df=1$, $p<0.05$) significantly more often than their North Island counterparts.

Few respondents ($n=9$) noted marine reserves as a major attraction on their tour (Fig. 4.7). This may reflect the small number of marine reserves in the country (16 have so far been established under New Zealand's Marine Reserves Act 1971) and that their location is generally away from key tourist destinations (Appendix A). In addition, 11 of the 16 protected areas have been created within the past five years. Recovery of natural resources in an undisturbed area is a gradual process, hence changes in the environment generated by protection may not yet be clearly visible.

Dolphins were the species targeted most frequently, with 22% of operators identifying them as a key attraction. New Zealand fur seals (*Arctocephalus forsteri*) and penguins were the next most commonly targeted species. Thirteen respondents identified whales as a target attraction. Figure 4.7 shows that other seabirds are commonly targeted but very few of the respondents noted a specific species. The species identified were gannets ($n=11$), shags ($n=10$) and albatross ($n=6$).

Commercial tour operators noting these species as one of their five key attractions vary between locations (Fig. 4.9 & 4.10) and are concentrated in the South Island. Seals were noted by commercial operators at all key marine tourism locations in the South Island, but among North Island respondents were noted only by those operating off the Taranaki coast. Penguins were again widely noted by South Island operators but in the North Island, penguin viewing was restricted to the Bay of Islands, Bay of Plenty and Wellington regions. Dolphins were the group of species noted at the most sites in the North Island and were also widely noted in South Island locations. Whales were noted exclusively by respondents from the Kaikoura region in the South Island and were noted in both the Bay of Plenty and Coromandel regions in the North.
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FIGURE 4.7.
Key attractions targeted by marine tourism operators in New Zealand (n=190; error bars represent one standard error of the proportion)

FIGURE 4.8.
The key attractions noted by respondents operating in the North Island compared with those operating in the South Island (n=155, error bars represent one standard error of the proportion)
FIGURE 4.9.

Location of commercial operations in the North Island which note the key wildlife species targeted by marine-based tours.
FIGURE 4.10.

Location of commercial operations in the South Island which note the key wildlife species targeted by marine-based tours

Key to symbols
- Dolphins
- Whales
- New Zealand Fur Seals
- Penguins
- Gannets
- Albatross
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4.3.3 Environmental concerns

Given that surveys can gather information only from a sample of the population, it was decided to ask the operators to give their perception of the current number of operators within their immediate locality. The term 'environmental carrying capacity' was used to try and remove any commercial basis to the operators' response. A number of respondents operated in more than one location and for the purpose of identifying the operators' perception of the level of crowding, these operators were excluded from the analysis.

In general, operators felt that the number of operators currently in their area was 'about the right number' (Table 4.6). Notable exceptions to this perception were the responses from Auckland ($t=4.81$, $df=20$, $p<0.005$) and Wellington ($t=3.24$, $df=6$, $p=0.018$) where operators felt there was room for significantly more operators in the area, and Fiordland operators ($t=3.50$, $df=4$, $p=0.025$) who felt the area had too many operators. Whilst there was no statistical significance, results suggest that Kaikoura operators also perceive the number of other operators in the area to exceed the area's environmental carrying capacity.

<table>
<thead>
<tr>
<th>Location</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far North/Bay of Islands</td>
<td>2.8</td>
<td>0.88</td>
<td>17</td>
</tr>
<tr>
<td>Whangarei</td>
<td>3.0</td>
<td>1.25</td>
<td>10</td>
</tr>
<tr>
<td>Auckland</td>
<td>4.2</td>
<td>1.18</td>
<td>21</td>
</tr>
<tr>
<td>Coromandel</td>
<td>2.8</td>
<td>1.02</td>
<td>19</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>3.1</td>
<td>0.93</td>
<td>9</td>
</tr>
<tr>
<td>Wellington</td>
<td>4.0</td>
<td>0.82</td>
<td>7</td>
</tr>
<tr>
<td>Nelson-Marlborough</td>
<td>2.9</td>
<td>1.35</td>
<td>28</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>2.2</td>
<td>0.37</td>
<td>5</td>
</tr>
<tr>
<td>Canterbury</td>
<td>3.4</td>
<td>0.25</td>
<td>5</td>
</tr>
<tr>
<td>Otago</td>
<td>2.9</td>
<td>1.14</td>
<td>11</td>
</tr>
<tr>
<td>Fiordland</td>
<td>1.6</td>
<td>0.89</td>
<td>5</td>
</tr>
<tr>
<td>Stewart Island</td>
<td>2.7</td>
<td>0.76</td>
<td>7</td>
</tr>
</tbody>
</table>
Respondents were given a list of marine attractions and asked to note any which they considered particularly vulnerable to pressure from tourists in their locality. Table 4.7 illustrates that the species and habitats perceived as vulnerable to tourist pressure vary between different marine tourism locations. Dolphins were perceived to be vulnerable by operators in the most sites. Concern with regard to other species and habitats was very localised. Kaikoura respondents were unanimous in their concern about the impact of tourism on the whales, dolphins and fur seals in their locality. Stewart Island operators identified shellfish as vulnerable.

**TABLE 4.7.** The species and habitats perceived as vulnerable to tourist pressure in localities where more than 50% of respondents noted a concern

<table>
<thead>
<tr>
<th>Location</th>
<th>Vulnerable species/habitats (%) operators ± standard error of proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay of Islands</td>
<td>17 Rocky reef 53±10, Sand dunes 60±7, Fiords 60±7, Reef fish 53±15</td>
</tr>
<tr>
<td>Whangarei</td>
<td>10 60±7, Sand dunes 60±7, Fiords 53±15, Reef fish 100</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>8 60±7, Sand dunes 53±15, Fiords 60±7, Reef fish 100</td>
</tr>
<tr>
<td>Nelson/ Marlborough</td>
<td>22 Sand dunes 50±17, Fiords 60±15, Reef fish 100</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>4 75±17, Sand dunes 100, Fiords 100, Reef fish 100</td>
</tr>
<tr>
<td>Canterbury</td>
<td>4 60±10, Sand dunes 100, Fiords 60±15, Reef fish 64±9</td>
</tr>
<tr>
<td>Otago</td>
<td>11 60±15, Sand dunes 55±10, Fiords 60±25, Reef fish 80±13</td>
</tr>
<tr>
<td>Fiordland</td>
<td>5 100, Sand dunes 60±25, Fiords 80±13</td>
</tr>
<tr>
<td>Stewart Is</td>
<td>7 57±9, Sand dunes 71±8, Fiords 85±6, Reef fish 71±8</td>
</tr>
</tbody>
</table>

In addition respondents were asked to identify how much of a detrimental environmental effect they felt a list of 10 different scenarios could potentially have on the species or habitats visited during a tour like theirs (responding on a four-point scale from 1=major detrimental effect, to 4=no detrimental effect). These environmental impacts were drawn from the literature documenting the impact of tourism on wildlife and wildlife areas elsewhere in the world. The only action considered to be of any concern was increasing amounts of litter (Table 4.8). Typically, all other actions were considered to have a very minimal detrimental effect (median=3), or no effect at all (median=4).
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TABLE 4.8.

Respondents’ level of concern about tourist actions that could have a detrimental environmental effect on species and habitats (rated on a scale from 1=major detrimental effect to 4=no detrimental effect)

<table>
<thead>
<tr>
<th>Action</th>
<th>Median</th>
<th>Operators identifying a major to moderate effect (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Noise &amp; vibration disturbing animals</td>
<td>3</td>
<td>25.3</td>
</tr>
<tr>
<td>• Trampling of plants and animals</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>• Removal of plants and animals through collecting</td>
<td>3</td>
<td>33.1</td>
</tr>
<tr>
<td>• Flash from cameras disturbing animal behaviour</td>
<td>4</td>
<td>10.4</td>
</tr>
<tr>
<td>• Feeding of animals by tourists changing their natural behaviour</td>
<td>4</td>
<td>25.7</td>
</tr>
<tr>
<td>• Animals being disturbed by touching</td>
<td>3</td>
<td>28.9</td>
</tr>
<tr>
<td>• Animals scared off by the presence of tourists</td>
<td>3</td>
<td>24.7</td>
</tr>
<tr>
<td>• Attractive natural sites becoming overcrowded with tourists</td>
<td>3</td>
<td>47.2</td>
</tr>
<tr>
<td>• Construction of barriers, fences and trails deterring from the environment</td>
<td>3</td>
<td>34.5</td>
</tr>
<tr>
<td>• Increasing amounts of litter</td>
<td>2</td>
<td>62.3</td>
</tr>
</tbody>
</table>

Further analysis grouped respondents on the basis of their target attraction. This enabled me to examine the degree to which the operators felt their particular key attraction was vulnerable to tourist pressure and the actions during a tour like theirs, which may have a notable detrimental environmental effect on the key species or habitat identified. None of the key taxa noted above was regarded as being particularly vulnerable to tourist pressure (Table 4.9). Concern about actions that might affect the species or habitats targeted related mainly to: increasing amounts of litter, and overcrowding by tourists spoiling the 'naturalness' of the sites visited (Table 4.10). Operators targeting seabirds also showed concern about noise and the presence of tourists adversely affecting the birds.
### TABLE 4.9.
The number of operators targeting the four most frequently identified animal attractions and the proportion of those operators indicating the target attraction was vulnerable

<table>
<thead>
<tr>
<th>Target Attraction</th>
<th>Number of operators targeting the attraction (n=190)</th>
<th>% of operators indicating species vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolphins</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Seals</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>Penguins</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Whales</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Gannets</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Shags</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Albatross</td>
<td>6</td>
<td>33</td>
</tr>
</tbody>
</table>

### TABLE 4.10.
Actions that operators identified could have a major to moderate environmental effect on the animals or habitats visited during a tour like theirs (only includes actions of concern identified by >50% of the operators)

<table>
<thead>
<tr>
<th>Target Attraction</th>
<th>Action of concern</th>
<th>Operators identifying concern (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolphins</td>
<td>Increase in litter</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Overcrowding of natural sites</td>
<td>54</td>
</tr>
<tr>
<td>Seals</td>
<td>Increase in litter</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Overcrowding of natural sites</td>
<td>50</td>
</tr>
<tr>
<td>Penguins</td>
<td>Increase in litter</td>
<td>52</td>
</tr>
<tr>
<td>Whales</td>
<td>Overcrowding of natural sites</td>
<td>50</td>
</tr>
<tr>
<td>Gannets</td>
<td>Increase in litter</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Overcrowding of natural sites</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Animals scared off by presence of tourists</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Noise disturbing animals</td>
<td>55</td>
</tr>
<tr>
<td>Shags</td>
<td>Increase in litter</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Overcrowding of natural sites</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Noise disturbing animals</td>
<td>50</td>
</tr>
<tr>
<td>Albatross</td>
<td>Animals scared off by presence of tourists</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Noise disturbing animals</td>
<td>67</td>
</tr>
</tbody>
</table>
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4.3.4 Management of the industry

Most operators (58%) felt that, in general, the current management of the marine tourism industry at the national/political level and at the level of local authority was inadequate (Table 4.11). A relatively large proportion of operators (17%) were uncertain as to the current level of management at the national level. However, despite this view, the majority of respondents (58%) did not believe the industry should be regulated more than the current level.

<table>
<thead>
<tr>
<th>Management Level</th>
<th>Adequate (%)</th>
<th>Inadequate (%)</th>
<th>Don’t know (%)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>National/political</td>
<td>25.1</td>
<td>58.3</td>
<td>16.6</td>
<td>187</td>
</tr>
<tr>
<td>Local Authority</td>
<td>34.6</td>
<td>58.0</td>
<td>7.4</td>
<td>190</td>
</tr>
<tr>
<td>Self management</td>
<td>43.4</td>
<td>46.6</td>
<td>10.1</td>
<td>190</td>
</tr>
</tbody>
</table>

There was some discrepancy over the adequacy of self-management throughout the country. Respondents' perception of the adequacy of self management varied considerably between different locations and operations within each location (Fig. 4.11). All operators in the Fiordland area were dissatisfied with the current level of self management. The large variability in response between and within each location indicates that there is no industry-wide self regulation. In addition, the survey targeted a wide cross section of very diverse operations with different goals and operating procedures.
Respondents in the key marine tourism locations that perceive the current level of self-management to be adequate (error bars represent one standard error of the proportion).

Respondents were asked to rate the usefulness of various management techniques that could be used to manage the industry on a scale from 1=extremely useful to 5=not at all useful. These management techniques were hypothetical scenarios from the literature on strategies for sustainable tourism development. Operators clearly favoured particular strategies (Table 4.12). Most of the operators rated self-management and quality-control mechanisms as the most useful techniques. Techniques which curb the development of tourism, such as quotas on visitor numbers and charges, were the least preferred. This reflects the operators’ general view that a significant increase in tourist numbers to New Zealand would be of benefit to New Zealand and would not have an undue detrimental effect (Table 4.13) and that further regulation was unnecessary.
TABLE 4.12.
Respondents' ideas on the type of management techniques that may be useful in managing New Zealand's marine tourism industry (1=extremely useful to 5=not at all useful). An asterisk (*) marks values which deviate significantly (p<0.05) from the neutral response numbered as three on the Likert scale.

<table>
<thead>
<tr>
<th>Management Technique</th>
<th>Mean Response</th>
<th>S.D.</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Useful</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ongoing environmental impact assessments to monitor the effect of tourism on the environment</td>
<td>1.85*</td>
<td>0.92</td>
<td>184</td>
</tr>
<tr>
<td>Removal of operating licences after several transgressions</td>
<td>1.96*</td>
<td>1.02</td>
<td>180</td>
</tr>
<tr>
<td>Quality control and surveillance of tourist operations with penalties and bonds placed on operators that do not meet a certain environmental standard</td>
<td>2.19*</td>
<td>1.18</td>
<td>186</td>
</tr>
<tr>
<td>Industry self-management through private operators developing voluntary standards with appropriate recognition for the operator</td>
<td>2.24*</td>
<td>1.07</td>
<td>183</td>
</tr>
<tr>
<td>All tours must have an approved educational component to increase the tourists' appreciation and understanding of the natural environment</td>
<td>2.48*</td>
<td>1.22</td>
<td>184</td>
</tr>
<tr>
<td>Restrictions limiting the number of operators</td>
<td>2.69</td>
<td>1.27</td>
<td>185</td>
</tr>
<tr>
<td>Limit the number and size of vessels</td>
<td>2.71</td>
<td>1.28</td>
<td>181</td>
</tr>
<tr>
<td>New legislation that relates specifically to managing the environmental impact of tourism</td>
<td>2.83</td>
<td>1.26</td>
<td>175</td>
</tr>
<tr>
<td>Charge international tourist a green tax to be used to help protect the environment</td>
<td>2.90</td>
<td>1.45</td>
<td>184</td>
</tr>
<tr>
<td>DoC concession or permits to view species other than marine mammals</td>
<td>2.94</td>
<td>1.29</td>
<td>179</td>
</tr>
<tr>
<td>Allocation of resource quotas to private operators with the fee paid into a conservation fund</td>
<td>3.01</td>
<td>1.26</td>
<td>173</td>
</tr>
<tr>
<td>Disperse tourist activity to provide more sites catering for a smaller number of tourists</td>
<td>3.02</td>
<td>1.16</td>
<td>178</td>
</tr>
<tr>
<td>All tours must conform to a 'tour guide to tourist ratio' set by an outside authority so individual tourists can be controlled more readily and their impacts minimised</td>
<td>3.17</td>
<td>1.28</td>
<td>180</td>
</tr>
<tr>
<td>Allow tourism at designated sites only</td>
<td>3.26*</td>
<td>1.14</td>
<td>182</td>
</tr>
<tr>
<td>Increase the price of tours to limit the number of tourists</td>
<td>3.89*</td>
<td>1.15</td>
<td>183</td>
</tr>
<tr>
<td>Charge all operators a levy to be used to help protect New Zealand’s environment</td>
<td>4.02*</td>
<td>1.14</td>
<td>183</td>
</tr>
<tr>
<td>Quotas limiting the number of tourists to New Zealand</td>
<td>4.18*</td>
<td>1.12</td>
<td>180</td>
</tr>
<tr>
<td><strong>Not at all useful</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 4.13.
Response to the question: some people suggest that the number of tourists could be significantly increased from the current 1.3 million tourists a year to 3 million by the year 2004. How strongly do you agree with the statements?

<table>
<thead>
<tr>
<th>Statements</th>
<th>Agree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>An increase in tourist numbers will:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• increase foreigners' awareness of New Zealand</td>
<td>89</td>
<td>&lt;1</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>• be of significant economic benefit to New Zealand</td>
<td>90</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>• generate increasing employment opportunities</td>
<td>94</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Negative impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• lead to noticeable deterioration of New Zealand’s environment</td>
<td>34</td>
<td>45</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>• decrease the quality of the &quot;New Zealand experience&quot; for the individual tourist</td>
<td>36</td>
<td>44</td>
<td>19</td>
<td>&lt;1</td>
</tr>
<tr>
<td>• result in tension between locals and tourists in your locality</td>
<td>36</td>
<td>52</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>• lead to local communities becoming overwhelmed by the number of tourists</td>
<td>27</td>
<td>53</td>
<td>16</td>
<td>2</td>
</tr>
</tbody>
</table>
Respondents clearly favoured particular regulatory agencies ($X^2=149$, df=5, $p<0.005$), in particular the formation of a new management body consisting of representatives from the New Zealand Tourism Board, Department of Conservation, local government and private operators (Table 4.14). When respondents were divided into wildlife (operators that always or often note marine mammals, penguins and seabirds) and non-wildlife operators (remaining operators), it appeared that wildlife operators felt the Department of Conservation was the most appropriate existing regulatory authority, while non-wildlife operators favoured regulation by the New Zealand Tourism Board and private operators in addition to the Department of Conservation.

**TABLE 4.14.**

Respondents’ view on the major agency that should have prime responsibility in regulating marine tourism in New Zealand (n=183)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Wildlife operators (%)</th>
<th>Non-wildlife operators (%)</th>
<th>Total operators (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand Tourism Board</td>
<td>2.5</td>
<td>8.7</td>
<td>6.0</td>
</tr>
<tr>
<td>Private operators</td>
<td>2.5</td>
<td>12.5</td>
<td>8.2</td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>29.1</td>
<td>8.7</td>
<td>17.5</td>
</tr>
<tr>
<td>Local government</td>
<td>5.1</td>
<td>2.9</td>
<td>3.8</td>
</tr>
<tr>
<td>New management body consisting of</td>
<td>45.6</td>
<td>49.0</td>
<td>47.5</td>
</tr>
<tr>
<td>representatives from all of the above groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other†</td>
<td>15.2</td>
<td>18.3</td>
<td>16.9</td>
</tr>
</tbody>
</table>

†Other category included; Ministry of Fisheries, Maritime Safety Authority, a marine environment control authority, regional government, local tangata whenua, Department of Commerce, New Zealand Underwater Association (diving), association of private operators.
Chapter 4: The marine tourism industry: a profile

4.4 Discussion

4.4.1 Profile of the industry

New Zealand's marine tourism industry is still in its infancy and is an industry composed largely of small, locally owned and operated businesses. Results from the survey show that like the entire tourism industry, marine tourism is a very seasonal activity with a peak over the summer months, December to March. A number of operators actually close over the winter months primarily as a result of weather restrictions or a lack of tourist demand. It is an industry characterised by a high turnover of operators, a number of which start with the influx of tourists and, unable to remain viable over the winter lull, are subsequently forced to close.

Seasonality has been acknowledged as contributing to the problems of maintaining standards and professionalism within the tourism industry (New Zealand Tourists and Publicity Department, 1988). This is perhaps exacerbated within the marine tourism industry because of the number of small operators which to date are relatively uncontrolled except by market forces. It is a problem of particular concern to the marine tourism industry because the industry is dominated by tours offering some type of nature-based experience and thus raises the issue of new operators visiting areas without an adequate knowledge of the resources.

4.4.2 Activities and Attractions

As could be expected the majority of operations use powered vessels. The use of powered vessels provides access to locations and wildlife previously inaccessible to visitors, extending pressure to areas formerly protected by their remoteness. This highlights a concern expressed widely in the literature that, increasingly, nature tourism activity constitutes travelling to relatively undisturbed locations with fragile ecosystems and threatened wildlife (Butler, 1980; Boo, 1990; Cellabos-Lascurian, 1991; Hawkins and Roberts, 1993; Jacobson and Lopez, 1994). In addition, species in these areas are unused to human presence and often more sensitive to disturbance (Klein et al., 1995).

New Zealand's marine tourism industry encompasses a diverse range of activities; the major ones were found to be cruises, line fishing, seabird and marine mammal watching (Fig. 4.12). Individual operations range from specialised nature tours that view particular seabird or marine mammal species, to operations which incorporate a broad spectrum of activities. Operations were of a more general nature in the North Island, typically a cruise offering sightseeing, fishing and/or diving. In
comparison South Island tours offer significantly more wildlife viewing of marine mammals, penguins and other seabirds.

In general it was found that wildlife viewing was the most common activity. Dolphins were the species targeted most frequently, followed by New Zealand fur seals, penguins, and lastly whales. Most of these excursions, however, also view a large variety of other marine wildlife.

There are four dolphin species commonly sighted in New Zealand waters: common (Delphinus delphis), bottlenose (Tursiops truncatus), dusky (Lagenorhynchus obscurus) and Hector's dolphin (Cephalorhynus hectori), the latter endemic to New Zealand (Slooten and Dawson, 1994).

The New Zealand fur seal (Arctocephalus forsteri) was the next most commonly targeted species. Four species of seal can be found in New Zealand waters. New Zealand is near the northern limit of the Southern Hemisphere seal distribution. However, New Zealand fur seals can be found as far north as the Three Kings Islands at the tip of the North Island. The largest populations are found in the South Island. They come ashore at breeding rookeries and hauling grounds along areas of rocky coast at all times of the year making them a very good commercial viewing opportunity. Increasing interest has been expressed in establishing swim-with-seal enterprises as an alternative to dolphin and whale watching (Gill, 1993).

New Zealand has a diverse marine bird fauna with a large number of endemic birds living and breeding within the coastal zone. Penguins were the birds targeted most often. Of the 17 species of penguin in the world, 6 live in New Zealand's territorial waters. The viewing of penguins involves blue penguin (Eudyptula minor), Fiordland crested penguin (Eudyptes pachyrhynchus) and the yellow-eyed penguin (Megadyptes antipodes), recognised as the world's rarest penguin.

New Zealand waters straddle the traditional migration routes of at least three of the large whales. These are the sperm (Physeter macrocephalus), humpback (Megaptera novaeangliae) and right (Balaena australis) whales which arrive in New Zealand waters in the spring and autumn months. The killer whale (Orcinus orca) is found year round in coastal waters.
Figure 4.12

An example of some of the activities offered in New Zealand's marine tourism industry: (A) fishing; (B) marine mammal watching; (C) sea kayaking and; (D) seabird watching.
Chapter 4: The marine tourism industry: a profile

4.4.3 Environmental Concerns

One objective of the survey was to ascertain the operators' environmental concerns, with the hope that the results may indicate areas that need monitoring. Estimating the pressures that different uses place on the physical environment is not straightforward. Much depends on the ecological sensitivity of different environments, the exact nature of use(s), and the extent of existing development. Fiordland was the only area identified by the survey in which operators considered user pressure to be significantly beyond its environmental carrying capacity. Results indicate (although not statistically significant) that Kaikoura respondents also were concerned about the current level of activity in the area. Both of these locations have been identified elsewhere as regions sensitive to tourist pressure (Department of Conservation, 1988; Baxter and Donoghue, 1995; Department of Conservation, 1995a).

Fiordland is a fragile area of particular significance. Fiordland's Milford Sound has long been promoted as one of the tourist attractions in New Zealand. However, the capacity of the physical, cultural and ecological environments to absorb tourism is limited by a number of factors (Department of Conservation, 1988; Department of Conservation, 1995a). Anecdotal accounts suggest disturbance to dolphins is occurring. There has been suggestion of avoidance of some boats by bottlenose dolphins, and that the pod(s) now visit Milford Sound less frequently. In addition, there is increasing pressure to expand tourist operations in Doubtful Sound (Department of Conservation, 1995a). Any increase in activity may result in disturbance noted above.

Kaikoura is unique in being the only site in the world where resident sperm whales are close enough to shore to be viewed on a commercial basis. Many wildlife enthusiasts have a particular fascination for marine mammals (Kovacs and Innes, 1990; Simonds, 1991). The number of resident whales, dolphins and fur seals that can be viewed in the area will continue to attract increasing number of visitors, creating commercial pressure to expand the current level of activity. All respondents from the Kaikoura area perceived marine mammals in the area to be vulnerable to tourist pressure.

Very few operators in other localities considered that the species or habitats in their area were vulnerable to tourist pressure. Notable exceptions were respondents from Stewart Island where more than half the operators identified the major species of shellfish harvested (both commercial and recreational) to be vulnerable.
Concern about actions that might affect the species or habitats targeted related mainly to: increasing amounts of litter and overcrowding by tourists spoiling the naturalness of the sites visited. Very few operators considered that detrimental effects would arise from such actions as touching, noise, or the general presence of tourists, even though these have been identified elsewhere as potential problems associated with wildlife viewing. Reliant as they are upon sound for communication, prey detection and orientation, marine mammals may be especially vulnerable to noise disturbance (section 1.2.1) yet none of the operators targeting marine mammals identified noise as a potential concern.

This indicates that targeted animals are either not affected by current levels of marine tourism activity, or that operators are unaware or not prepared to acknowledge an impact. The terms "potentially" and "tour like yours" were used to try and take the onus off the individual and remove any inherent bias in the question. If in fact operators do not perceive their type of tour to have any potential effects on the species or habitats targeted it may raise an issue of concern to managers as they encounter the problem of trying to effect change in the industry without willing participants. A key ingredient in conservation plans is the co-operation and co-ordination of operators (Groom, 1991).

4.4.5 Management issues

It was generally felt that the level of management of the marine tourism industry at both the local and national level was inadequate. Self-regulation was identified as one of the most useful strategies for managing the industry. The current level of self-management, however, varied considerably between locations and between the operations within a location. This indicates that there are no industry-wide or even sector-wide standards. It becomes difficult, however, to make general rules of conduct because of the diversity of operations, activities and attractions. It is largely a matter of common sense and the operators' discretion.

The issue of sustainable tourism has become an increasingly topical subject, resulting in a wealth of literature discussing the management of the industry. Numerous techniques, with advocates for each, exist. Management actions can generally be considered in four main categories: (i) policy, enforcement and regulatory activities, (ii) economic tools of regulation, (iii) planning and management activities, and (iv) industry or self-regulation. Most authors agree that effective management calls for a variety of strategies. There need to be some measures with a legal basis, incorporated with education and self-regulation.
Respondents were given a list of management actions and asked to rate their value as a strategy. This list was by no means exhaustive because of the constraints imposed by a questionnaire. The list included strategies that are currently in use, or could be applicable to the marine tourism industry in New Zealand. Respondents clearly favoured particular strategies. Increased quality-control and surveillance of operating standards were perceived to be the most useful strategies, together with regular environmental impact assessments. As expected, strategies which limit tourism development in any way were perceived to be the least useful strategies.

4.5 Limitations and Recommendations

4.5.1 Limitations

There are limitations to surveys that need to be borne in mind when interpreting the results. The single most serious limitation to direct mail data collection is the relatively low response rate (Alreck and Settle, 1985). Mail surveys with response rates over 30% are rare and the expected response rate from a survey of this kind is often only about 5-10%. In this study the response rate was a remarkably high 55%, indicating a high level of interest in marine tourism and suggesting a high degree of commitment and responsibility on the part of operators. While the study is not representative of all marine tourism operations throughout New Zealand, it does provide insight into tour operations in general.

Another common problem associated with mail surveys is non-response bias. People most interested in the topic of environmental sustainability are more likely to complete the questionnaire and will thus be over-represented. In addition, those who are highly involved with the topic, and feel either strongly positive or negative about the issues, are more likely to respond. The more neutral the respondents, or the less experience they have, the more likely they will be to discard the questionnaire.

The quality of the mailing list was not particularly good. The survey had a 7% rate of non-deliverable mail. This problem, however, is difficult to overcome because the industry is characterised by a high operator turnover.

In general, however, the survey instrument used in the study worked extremely well. The major difficulty that arose from the data collected and one that was completely unforeseen was the use of the term 'tourists' throughout the survey. This term was not clearly defined at the start of the questionnaire so the interpretation varied across respondents. Some interpreted the meaning of "tourist"
as international visitors only and failed to take account of New Zealand visitors in their answers. In future studies, the term "tourist" should be replaced by "people" or "visitors".

Care must also be taken to ensure all questions are constructed correctly. Question 18, number 2 was "double barreled." It asked respondents to comment on how useful they think "limiting the size and number of vessels involved in tourist operations" would be as a management technique. Two questions are contained within one item, so respondents did not have the opportunity to vary their opinions. A further difficulty in interpretation occurred with Question 21. Respondents were asked to note only those species or habitats they felt were vulnerable to tourist pressure by ticking the appropriate box. Boxes left blank were assumed to be not vulnerable. This assumption may not be the case for all responses. Some respondents left all boxes blank, which could either indicate they did not perceive any of the species or habitats listed to be vulnerable, or they chose not to answer the question.

4.5.2 Recommendations

The level of non-response is an issue which should be addressed in future studies of this type. To reduce this bias, more intensive efforts could be made to pursue the non-respondents. A three-tiered approach could be taken. An advance letter sent to respondents has been shown to produce significant (19%) increases in response rates (Kalsbeek and Joens, 1995), followed by two waves of personalised questionnaires, with reminder postcards between waves one and two. Finally, telephone interviewing could be used to follow-up the remaining non-respondents. The cost of repeated follow-ups to raise the response rate by a few points must be assessed and justified when planning the study.

In addition, analysis of non-response needs to be completed so appropriate adjustments can be made. Numerous procedures have been developed to minimise non-response bias. In a study such as this, whether there is any difference between respondents to the first mailing and respondents following a telephone call (effectively non-respondents) should be assessed. Alternatively, a pilot study could be conducted which focuses directly on the issue of non-response, or the mail survey could be run in association with a number of personal interviews. By comparing various variables of the non-respondents and respondents, it can be determined if a correlation exists between certain variables and non-response. Thus, sample-weighted measures can be used to correct for the non-response bias (American Statistical Association, 1995).
Amendments to Results

The comparison of North Island and South Island operators (pp 46) was performed using a *t*-test. A *t*-test is one which compares means of measured data. However, the data used in this example are frequencies so would have been more appropriately analysed by tests of frequencies such as Chi-square, log-likelihood ratio (G-test) or Fisher's Exact test. In addition, a Bonferroni adjustment is required to compensate for the large number of comparisons. This amendment is also required for the analysis of each operator's perception of the current number of operators within their immediate locality (pp 54).

A further amendment is needed for Figs 4.3, 4.4, 4.7 and 4.8 which report percentages but also show standard error bars. The aforementioned figures should simply report what the operator said, a response that does not have the variability necessary to generate error bars.
5 Case Studies

5.1 Introduction

The mail-out questionnaire sent to all marine tour operators provided generalised insights into operations. To achieve a more detailed examination of the marine tourism industry it was decided to use a case study approach to augment the results, conclusions and implications obtained from the mail-out survey. An important strength of the case study approach is that the researcher can obtain detailed knowledge of the day-to-day practices of the operations involved. The method, if well conducted, provides the optimum conditions to illuminate the workings of an operation, in a manner that cannot be achieved through questionnaire survey and formal interviews (Edwards, 1996).

This study aims to identify the way in which marine tourism operations are managed and executed and take a closer look at current management and objectives of administrators. Through examination of a number of case studies, the research identifies issues being confronted in the marine tourism industry, reveals areas needed for analysis and proposes recommendations that may help guide marine tourism policies towards sustainability in the industry.

It was resolved to focus on three different centres of marine tourism activity in New Zealand, covering a range of activities offered in each area. Personal interviews were held with tour operators and resource managers. There are numerous types of qualitative research and as many techniques for their analysis (Strauss and Corbin, 1990). No methodological 'recipe' exists that includes all the ingredients and directions for combining them. The only agreement among qualitative researchers is that analysis is the process of making sense of narrative data. So this chapter is organised as follows: the operators' and administrators' interviews are discussed for each case study area and, as the chapter progresses, the discussion moves from specific to more generic issues, with conclusions presented in the final section. Tables summarising the information are presented at the end of the chapter.
5.2 Methods

In order to gain information about the critical issues involved in the industry, a threefold approach to information collection was adopted. Personal interviews were the major method of information collection. Interviews were held with conservation administrators, and the operators of the marine tourism ventures. In addition, a description of the operation was gathered by observation.

The interviews were conducted from February to March, 1996. This time frame was selected because it falls in the peak visitor season (Fig. 3.2), yet is a period when it was anticipated that the operators would have time to participate in the interview.

The interviewer asked prepared questions (Appendix H). Standardised questionnaires were designed to reduce error that could be attributed to the interviewer (Alreck and Settle, 1985; Bourque and Fielder, 1995). The interview, however, followed a relatively informal path to keep it at a 'conversational level'. If additional issues were mentioned by respondents during the course of the interview they were also discussed. All interviews were conducted by the researcher.

A telephone pre-call was made to selected respondents to schedule a time for the interview and ensure the person's consent. All of the respondents initially selected agreed to an interview.

5.2.1 Selection of case sites

The areas selected were all classified as centres of marine tourism activity based on the number of questionnaire respondents in each area. Table 4.4 was used as an index of marine tourism activity throughout New Zealand. Discrete centres of activity were evident in the Bay of Islands, Nelson-Marlborough and Southland/Stewart Island areas. The Otago area was excluded because the operators had already been involved in pre-testing the questionnaire. The questionnaire grouped operations on a regional scale (Appendix F, Question 1). It was initially anticipated that operations would be selected at random from within these categories. However, it was decided that the geographic units were too large, making the logistics of travelling between sites prohibitive. The locations were therefore divided further to the level of town or city and the respective centres with the greatest number of questionnaire responses were selected. These centres were Paihia in the Bay of Islands, Picton in the Nelson-Marlborough region and Stewart Island in the Southland region.
5.2.2 Administrators

The most prominent administrator and resource manager in the context of marine tourism in New Zealand is the Department of Conservation (DoC). The devolution of power within the Department means that conservancies (regional administrative areas) exercise considerable authority over local issues of resource management and the provision of tourism opportunities. While general policies are often developed by the head office in Wellington, it is up to the regional staff to administer both policy and legislation as they see fit. Much direct administration of tourism operators occurs, therefore, at the local level.

In each case study area a Departmental official in the regional conservancy office, with a role in species management and the management of concessions and permits was interviewed. The major objective of the DoC interviews was to investigate the level of involvement the Department - as the key marine tourism administrator - had in the management of marine tourism in the area.

5.2.3 Operators

In order to gain information about the operations and the people that manage them, an operator survey was also conducted. The operations studied were selected randomly from the returned questionnaires once they had been grouped into the respective area categories. In addition, observation of the operation involved filling out a pre-prepared form which enabled a closer examination of the operating procedure.

The major aims of the operator survey were:

(i) to obtain background information on the operator and operation: their target resources, scale, the history of the operation and motivations for establishing the business;
(ii) to obtain information about the operator's attitudes towards the management of the operation, aspects such as: monitoring of wildlife, the nature of any possible environmental impacts and steps taken to avoid or mitigate environmental impacts, concerns for the area, and their relationship with the Department of Conservation;
(iii) to establish the operator's commitment to ecological integrity, and;
(iv) to identify the level of interpretation and educational material offered on the tour.
5.3 Paihia Case Study

The Bay of Islands Maritime Park is situated on Northland’s east coast (Fig. 5.1). Northland lies in the warm temperate zone of New Zealand and has a wet, mild climate with a mean annual air temperature at sea level of 14°C and an average of 1500 mm of rain each year. Hydrological observations of the Bay of Islands show monthly mean sea surface temperature to range between 15°C and 23°C with a gradual change from estuarine to oceanic conditions within the bay (Booth, 1974).

It is a large bay (240 km²) with several large estuaries, approximately 200 islands, secluded beaches and an abundance of marine life. The bay has a variety of coastal and marine habitats, including mangrove wetlands, mudflats, salt-marsh areas, sheltered soft-shore beaches, semi-exposed and exposed rocky reefs, offshore reefs and islets.

Estuaries with mudflat, mangrove and salt-marsh habitat support threatened species (Bell, 1986) such as the fernbird (Bowdleria punctata vealeae), brown teal (Anas aucklandica chlorotis), banded rail (Rallus philippensis assimilis), reef heron (Egretta sacra sacra), New Zealand dotterel (Charadrius obscurus) and a diverse array of more common species such as terns and gulls (Olge, 1984). Mangroves are only found around Auckland and in the north (Moon, 1995). They fringe the inner reaches of the bay (10.5 km²) and are the basis of a complex detritus-based food-web and play an important role in providing a nursery for juvenile fish.

Shallow coastal marine habitats in the outer Bay of Islands contain a number of species of subtropical fish such as lizardfish (Synodus similis), blue knifefish (Labracoglossa nitida) and clown toado (Canthigaster callisterna). Subtropical invertebrates, including the gastropods Bursa verrucosa, Phillipia lutea, and Terebra circumcincta are also present. Eelgrass (Zostera capricorni) beds support scallop (Pecten novaeezelandiae) and juvenile snapper (Pagrus auratus) populations.

Bottlenose (Tursiops truncatus) and common (Delphinus delphis) dolphins frequent the bay throughout the year. Killer whales (Orcinus orca) are often sighted and large whales species such as Bryde’s (Balaenoptera edeni), sei (Balaenoptera borealis), fin (Balaenoptera physalus), pilot (Globicephala sp.) and humpback (Megaptera novaangliae) are seen from August to December (Parrish, pers. comm.).

The climate and natural qualities of the Bay of Island’s combine to make the coastline, waters and islands particularly attractive for a wide variety of recreational activities. Paihia is the main centre for the Bay of Islands and subsequently
Northland's most popular holiday resort (Fig. 5.2). The Bay of Islands became renowned as a game fishing resort when American writer Zane Grey caught marlin there in 1926. Continued international competitions have kept the Bay of Islands a premier destination. However, now the attraction is more than just fishing. Many water activities are available, including sailing, diving and cruises around the bay. Luxurious hotels and motels have been established to cater for those who wish to go big game fishing, or participate in the other activities offered in the Bay of Islands.
FIGURE 5.1.
Bay of Islands
FIGURE 5.2.

Paihia wharf
Chapter 5: Case studies

5.3.1. Administrators

The Bay of Islands lies within the jurisdiction of DoC's Northland conservancy. The head office is in Whangarei and the field centre is in Russell. The Fauna and Flora officer for the conservancy was interviewed. The following paragraphs are the results from this interview.

Waterborne activities and marine tourism are an important focus in the area. The only guidelines set by the Department for the regulation of marine tourism activity are the marine mammal regulations and associated permits. There are currently marine mammal permits issued to three operators in the area, allowing a total of five boats. The permits include all marine mammals and entitle the operator to interact with any species they encounter. The permits are based upon the Marine Mammal Regulations 1990, but have a number of conditions specific to the area. These conditions include restrictions on: the area of operation, the frequency of trips (a maximum of two, four-hour trips per day), the number of visitors per boat and, if swimming with dolphins, a maximum of 12 swimmers in the water at one time.

Monitoring of the resources

All marine mammal operators in the area pay a royalty of $2 per passenger to fund research and monitoring of the regulations, a system initiated by the operators. These royalties have funded one study monitoring swim-with-dolphin operations (Constantine, 1995). There are plans to initiate an ongoing study to continue the photographic identification catalogue of over 200 bottlenose dolphins established by Constantine. However, no indication was given when this monitoring programme would be established.

The direct, daily monitoring of operators is carried out only during the intensive holiday period, Christmas to 4 January. Over this period a DoC boat controls both recreational and commercial boat users. In addition, funding allowed Project Jonah (a charitable organisation dedicated to the protection of marine mammals in New Zealand) to run a boat on a full-time basis over the 1995/96 season, regulating activity on the water. In accordance with the Marine Mammal Regulations, the Department is also required to undertake compliance monitoring. This involves the random undercover assessment of operators. A DoC staff member participates in the tour without the operator's knowledge, assessing operating procedures.

An initiative taken by an officer in the Russell field centre was to review the information included in tourist brochures, checking to ensure the material was factual and up-to-date.
Chapter 5: Case studies

Liaison with operators

The officer interviewed felt that the Department had a significant level of contact with the operators. A Scientific Advisory Committee has been established to decide how the money received from operator royalties will be spent. Two huis have been held with presentations by researchers to the operators, iwi and general public. More direct interaction between operators and DoC was established through monthly meetings. These have been discontinued because it was felt "they were simply a forum for operators to voice their grievances about other operators".

Concern has been expressed about the number of 'illegal' operators that take paying passengers to see marine mammals. These operators do not advertise marine mammal watching on promotional material and therefore do not require a permit. They are typically charter boat operators. The Department subsequently tried to initiate meetings with the Swordfish Club to which a number of charter boat operators are affiliated. To date they have had no success as "the charter boat operators are not interested in being told what they cannot do".

Issues surfacing in the area

The Bay of Islands has been the focus of much recent media attention (eg. 60 Minutes documentary TVNZ Channel 1, 5 May 1996; Fishing News, February 1996; Listener, 6 July 1996). This interest has largely been sparked by the prosecution of two boat operators for infringements of the Marine Mammal Regulations.

A major problem faced by managers in the Bay of Islands is the interpretation and enforcement of the regulations. They were initially tailored for Kaikoura, which does not have a problem of high recreational use. At the height of the season it is estimated there are "over 1000 private boa: users in the Bay of Islands and more than 100 charter boats that unofficially take people out to view the dolphins". During this period, sightings have been made of "60 or more boats surrounding one pod of dolphins". DoC have tried to mitigate the problem by erecting signs at public boat ramps informing public of the correct behaviour around the animals (Fig. 5.3). They have also tried to remedy the problem of 'illegal' operators to some extent by erecting a sign at the commercial wharf informing visitors that only three operators are legally allowed to take people out to view marine mammals (Fig. 5.4). These problems are exemplified by the general difficulties that arise in the interpretation of the regulations. The ill-defined terms 'juvenile', 'pod' and 'disturbance' make it difficult for operators to interpret the regulations and for managers to enforce them.
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FIGURE 5.3.
Sign erected by the Department of Conservation at the Waitangi public boat ramp

FIGURE 5.4.
Sign erected by the Department of Conservation at Paihia's commercial wharf
At the time of the interview the Department felt that the Bay of Islands was operating at its maximum capacity with regard to marine mammal viewing. Applications for permits were pending, but were not going to be issued. Opportunities for growth in marine tourism were identified for areas elsewhere in Northland, in particular the harbours and bays north of the Bay of Islands. In the intervening months however, the Department has subsequently reviewed this policy and is considering allowing two or three more boats to operate in the bay (Otago Daily Times, 1996).

Three areas were identified as inappropriate for marine tourism, the Te Puna, Kerikeri, and Waikare Inlets (Fig. 5.1). These mangrove channels are thought to be important feeding grounds for the dolphins and areas where they should not be disturbed. Precautions have subsequently been taken to designate these channels as off-limit areas in the permits.

5.3.2. Operations

Operation 1

The first operation is a subsidiary of a company that has operated in the Bay of Islands since 1886. The marine mammal tour assessed is a relatively new addition to the company, beginning in 1992. Visitors on the tour are able to view a variety of marine species. However, their primary target and thrust of advertising is focused on bottlenose and common dolphins. A typical tour involves viewing common and bottlenose dolphins and seabirds that are often associated with a pod of dolphins. Statistics show that the tour encounters dolphins and offers swim-with-dolphin experiences 90% and 48% of the time, respectively. The tour observed encountered a pod of over 300 common dolphins with juveniles and associated birdlife consisting of Australasian gannets (Sula serrator) and fluttering shearwaters (Puffinus gavia). In addition, a stop was made at Otehei Bay where schools of snapper (Pagrus auratus) and kahawai (Arripis trutta) were observed from a semi-submersible vessel moored permanently in the bay.

Operating procedures

The operation was established following the transfer of a marine mammal permit from an existing holder in their employment. The other regulations required to operate are outlined in Table 5.1.

The company adheres to a formal code of conduct in accordance with the Marine Mammal Regulations. However, additional, self-imposed guidelines have been designed covering safety aspects and behaviour around the dolphins. These
guidelines largely follow the Dolphin Care Code produced by the Department of Conservation (Appendix D). It was mentioned that a code of ethics has been developed in conjunction with the other swim-with-dolphin operator in the area. They work together to find the dolphins and have tried to prevent competition between the companies that might encourage operators to pursue dolphin pods or allow swimming in unsuitable conditions (such as pods resting or swimming with juveniles) in order to satisfy the visitors.

A monitoring scheme has been established. This monitoring involves completion of a sighting report after every trip noting: the behaviour of the animals and their reaction to the vessel, the duration of the encounter, distinguishing features and individual identifications if possible (Appendix I). To date, these data have been used solely by the company to predict the dolphins movements within the bay.

The operators are aware of the resource upon which their operation is based. Passengers on the tour are clearly told how to behave in order to reduce disturbance to the animals and enhance the quality of their swim. A card is distributed to all those wishing to participate in a swim, giving information on appropriate behaviour to ensure a good swim, and safety and care of the dolphins. The cards are printed in English, German, Japanese and Chinese. This information is reiterated in a commentary by the tour guide.

Each tour has a maximum of 35 passengers and two crew. The staff have an intimate knowledge of the resources in the area. A large number of staff are locals with over 20 years experience in the industry, or are Project Jonah medics. Considerable effort was taken to employ the right staff. "It was difficult to find people with the right skills and knowledge". "They may have had the right qualifications, but not the ability to communicate with the clients". This commitment to staff quality was evident on the tour. An informative commentary throughout the trip gave details on all wildlife encountered.

Identified threats
The operations manager interviewed did not perceive the operation to have any negative effects upon the wildlife, a claim they felt was substantiated by the results from Constantine's (1995) study. A fundamental concern was the threat of an increasing number of people and boats pressuring the resource. Observations have been recorded of dolphins becoming disturbed and moving away when 10 or more boats are present. It was felt the Department of Conservation have a responsibility to ensure the number of licensed operators does not exceed the capacity of the resource. It was noted that the problem of inappropriate behaviour by private boat users had
been reduced compared with previous years because of the DoC and Project Jonah policing identified previously. This suggests that a system of enforcement does work and is an essential component of management.

**Liaison with administrators**

The role of DoC was viewed with some criticism. However, the appointment of a new field centre manager in Russell has renewed hopes for improved management. It was felt the Department had been slow to react to the number of illegal operators dolphin watching. In addition, operators had absorbed the $2 per passenger levy without any accountability by DoC as to where the money was spent. This complaint led to the establishment of the Scientific Advisory Committee noted previously. The operators were hoping to see a continuation of the monthly meetings held with DoC so they could have some input into the management of the resources.

**Operation 2**

The second operation was primarily a fishing excursion that also offers sightseeing tours around the bay. The major wildlife resources are predominantly snapper and then other gamefish such as trevally (*Caranx georgianus*), John Dory (*Zeus faber*), tarakihi (*Nemadactylus macropterus*), kahawai (*Arripis trutta*) and maomao (*Caprodon longimanus*). On an average trip four/five of the fish species noted above are seen, half a dozen bird species - including gulls (*Larus spp.*), Australasian gannets (*Sula serrator*) and shearwater species - and marine mammals - common and bottlenose dolphin - on about 50% of the trips. The trip assessed caught snapper (*Pagrus auratus*), mackerel (*Trachurus novaezelandiae*) and kahawai (*Arripis trutta*). The seabirds seen were fluttering shearwaters (*Puffinus gavia*), blue penguins (*Eudyptula minor minor*) and gulls. A stop was also made on Urupukapuka Island where visitors could snorkel in a small lagoon. DoC have erected interpretive signs on the bottom of the lagoon identifying the marine life.

**Operating procedure**

In addition to the regulations outlined in Table 5.1, the operator must adhere to the recreational fish quotas set out by the Ministry of Fisheries.

The operator does not conduct any monitoring of the resource.

Visitors are told how to behave in order to reduce their potential impacts. The owner tried to instil the importance of only catching enough fish for a feed, encouraging tour participants to have a sustainable outlook. On the tour assessed one passenger caught an eagle ray, an inedible and relatively unusual species in the
bay. As their first catch of the day they were eager to keep it, but were encouraged to throw it back. This environmentally responsible attitude may have been prompted by the presence of a researcher on the tour.

The owner of the operation employs one other skipper and additional crew on a seasonal basis. The staff are transitory and generally stay less than one year. However, little difficulty in finding staff with the right skills and knowledge of the environment was acknowledged. Staff are left to train themselves on the area and the resources by reading and doing their own research. The tour included a commentary throughout the day giving a historic account of the Maori and European settlement in the area. Little information was given on the wildlife encountered.

Identified threats

The operator did not perceive the operation to have any negative environmental effects. It was noted that "we are very aware of looking after the resource". "If a large amount of snapper are being caught we will move off the school". In addition, it was stressed that they tag and release 74% of the gamefish caught, a policy they will continue to enforce as this side of the operation expands. The major threat identified was commercial fish operators depleting stock in the bay.

Liaison with administrators

The operator had little liaison with the Department. In general, it was felt they could not criticise the Department because of the limited funds available to it. The ideas for improved management largely applied to the Ministry of Fisheries, with a suggestion for tougher quota restrictions on commercial fishers.

Operation 3

The third operation was a fishing tour, focusing on all pelagic fish species in the area. However, the main aspect of the operation is snapper trips. Additional income is earned through dive charters and a water-taxi service to Otehei Bay. The tour I participated in was a dusk fishing trip that caught a variety of species: rock cod (Lotella rhacinus), snapper (Pagrus auratus), maomao (Caprodon longimanus), trevally (Caranx georgianus), yellowtail mackerel (Trachurus novaezelandiae) and kahawai (Arripsis trutta). This was described as ‘typical’ of the type of catch caught during a trip.

Operating procedure

The regulations that the operation must comply with are shown in Table 5.1. In addition, recreational fishing regulations are set by the Ministry of Fisheries.
There was no monitoring of the resources undertaken by the operation.

Since purchasing the operation, the owner has taken on other commitments and now employs one full-time skipper to run the tour. There was no stringent staff selection policy. Staff are simply required to have a good knowledge of fishing. They have found it difficult to employ the right staff, having employed "six skippers in the last two years". The tour does not include any environmental interpretation or education. It is a trip that largely attracts keen fishers with a goal to catch as many fish as legally allowed.

*Identified threats*

This operation itself was not perceived to have any negative effect on the wildlife but it was felt there was a general cumulative problem with fishing leading to depletion of fish stocks. Concern was expressed about the lack of restrictions regulating the number of charter boat operators. "The council sells as many licences as possible to receive an income. This results in operators setting up with big profits in mind. When tourists numbers drop they have to close, leaving the established operators to try and maintain a regular service through the quiet period".

*Liaison with administrators*

This operation had no significant liaison with DoC. The operators will approach DoC if they see harassment of marine mammals, set-nets, or rubbish problems. The operator felt that DoC "goes overboard with dolphins to protect licensed operators". This animosity may stem from an incident where the vessel used in the operation was involved in an inquiry, following the reported harassment of a dolphin. No particular ideas for improved management of the resource base were given. Any thought of improved management was with regard to their operation: raising the standard of the vessel and improving the presentation, marketing and general running of the operation.
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5.4 Picton Case Study

The Marlborough Sounds lie at the north-east of the South Island (Fig. 5.5). The area has a daily mean temperature of approximately 13°C. Rainfall throughout the year varies from about 1200-2000 mm per year.

The Marlborough Sounds is a ria - an ancient drowned river valley system that has been submerged - opening into Cook Strait. The coastline is convoluted and contains numerous islands, peninsulas, bays and inlets. There is a diversity of coastal types with sheltered beaches varying from cobbles to sand and broken shell separated by rocky points and sections of hard shore. Salt-marsh and mud-flats are found at the head of the Sounds. Exposed rocky headlands, small rocky islands and reefs are important features of the outer Sounds (King, et al., 1985).

Queen Charlotte Sound is approximately 45 km in length and has an average depth of 35 m. All major orders of New Zealand's seabirds are found in the waters of the Sounds (Schellhorn, 1984). The islands in the Sound are particularly important refuges for threatened species eg little spotted kiwi (Apteryx owenii), reef heron (Egretta sacra) and Caspian tern (Hydroprogne caspia) and are also important breeding areas for more common species such as blue penguins (Eudyptula minor minor), gulls and shags. The small wetlands around Picton are valuable habitats for waders and waterfowl, while the generally rocky coastline further seaward is frequently used by variable oystercatchers (Haematopus unicolor), reef heron (Egretta sacra) and shag species. The endangered king shag (Leucocarbo carunculatus carunculatus ) is unique to the Sounds.

Marine mammals are regularly seen in the Sound, including four species of dolphin (bottlenose, common, dusky and Hector's); the rare Hector's dolphin appears to have a resident population in the area. Fur seals (Arctocephalus forsteri) utilise a number of haul-out sites scattered through the area. Killer whales (Orcinus orca) are occasionally sighted and larger whale species appear to be returning to the area, with sperm (Physeter macrocephalus) and humpback (Megaptera novaeangliae) whales passing along traditional migration routes through Cook Strait.

Notable benthic fauna include dense beds of horse mussel (Artina zelandica), scallops (Pecten novaeanzlandiae) and New Zealand's largest brachiopod (Neothyris lenticularis), recorded from relatively shallow depths. This species is only recorded elsewhere in New Zealand from depths of 60-70 m (Davidson, et al., 1990).
Numerous fish use the Sounds for spawning and juvenile nursery areas, including commercially fished species such as elephant-fish (*Callorhynchus milii*), snapper (*Pagrus auratus*) and trevally (*Pseudocaranx dentex*).

A significant proportion of New Zealand’s marine farms occur within the Marlborough Sounds. Long-line mussel (*Perna canaliculus*) farming is predominant, with smaller numbers of salmon farms also present.

The Sounds are best explored by water with many of the scenic places in the area accessible only by sea or foot. Picton is the Marlborough Sounds main port, and the link between the North and South Islands of New Zealand (Fig. 5.6). It is also a centre for the Sound’s sightseeing trips.
FIGURE 5.5.
Queen Charlotte Sound
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FIGURE 5.6.
Picton wharf
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5.4.1 Administrators

Picton lies within the administrative boundaries of DoC's Nelson-Marlborough Conservancy. The regional office is located in Nelson with a field centre in Picton. The Senior Conservation Officer for the conservancy was interviewed. The following discussion is the result of the interview.

Again the management of marine tourism in the conservancy is focused toward marine mammal watching. The Department's sole regulatory functions involve the permitting process. This conservancy has been, and remains, at the forefront of marine mammal policy development. Commercial whale and dolphin watching began in New Zealand in 1988 at Kaikoura (part of the Nelson-Marlborough Conservancy). It was concern over this activity that prompted the development of the Marine Mammal Regulations (Baxter and Donoghue, 1995). Thus, the Conservancy has had a large input into the regulations.

There are currently 28 permits issued in the Conservancy which cover: all marine mammals, swim and watch activities, boat and aircraft. Picton had three permitted operators at the time of the interview. However, another permit has subsequently been issued, one application was pending and one amendment to a permit was being processed. All permits in the area are formulated on an individual basis and are boat specific. In addition, the skipper's name is attached to all permits issued, making it easier to act upon any infringement without revoking the entire permit.

Monitoring

Monitoring the impact of tourism on marine mammals in this Conservancy has been restricted to Kaikoura (Baker and MacGibbon, 1991; Gordon et al., 1992; Barr in prep.) and there are plans to further this research before additional permits are issued. There have been no studies in the Picton area. However, the field centre, in conjunction with one marine mammal operator, have compiled an accurate record of dolphin and whale sightings since 1990.

General compliance monitoring in the area operates on two levels, depending on the scale of activity. 'Low key' operators in the Sounds are targeted once every two years, whereas high profile operations, such as those operating in Kaikoura, are assessed up to six times per year. The Department also has a vessel that can actively police the area, regularly visiting DoC estate around the Sounds and the Long Island Marine Reserve. The Department has received a number of complaints with regard to tour operators from the public and other operators. However, few are taken further because they are often a mis-interpretation, or in more serious cases, the...
complainant wants full confidentiality and will not testify in court. Subsequent to any complaint considered serious, a random surveillance check is undertaken.

Field staff in the Picton office mentioned the need to monitor operators to ensure that the information given to passengers is correct.

**Liaison with operators**

The Marlborough and Kaikoura areas have no regular liaison with the Department. Meetings occur only if specific issues or agenda need to be discussed. The operators often contact the regional office. However, in general it is the field centre staff who are directly involved with the operators and responsible for compliance. The Picton office has taken an 'open door' approach to facilitate liaison with the operators.

**Issues surfacing in the area**

A key issue currently being addressed is the number of unlicensed operators taking paying passengers to view marine mammals. In a number of cases the operators were simply unaware of the regulations and are now undergoing the permitting process. The most pressing issue identified was the need for public education. The area becomes very busy during the holiday period with recreational boat users. The signs shown in Fig. 5.3 have also been erected in the area. However, the usefulness of the signs was felt to be limited to some extent by the clutter of other signs around marinas and boat ramps. The Conservancy is also in the process of developing two information pamphlets. One will be a low-budget facts sheet giving information on the behaviour, feeding and distribution of marine mammals that will be distributed through dive and boat clubs, and marine tourism operators. The second will be a general guide to watching marine mammals in New Zealand. It is anticipated that this will be a more expensive pamphlet produced in association with a sponsorship deal.

Relatively limited expansion of marine tourism in the area was anticipated: "the greatest amount of growth has already been recognised". Potential for expansion in the Marlborough Sounds was thought to be limited to some extent by their remote locality, the resulting cost of travel and the lack of predictable animals in the area. "The Sounds have very small pods, generally less than 20 and often only pairs of dolphins. They have unpredictable patterns of movement which is exaggerated by the general complexity of the Sounds". Discussion with field staff, however, revealed that they had been surprised to discover how accurately the regular marine mammal operator in the area can pinpoint the position of Hector dolphins.
One area considered inappropriate for marine tourism is the viewing of king shags at their nesting sites located on a few of the rocky islets at the outer margins of the Marlborough Sounds. King shags are one of the rarest shags in the world and are endemic to New Zealand. The birds are flighty and easily disturbed while roosting. They will leave their nesting or roosting sites long before a boat is close (Ellis, 1987).

Increasing potential was seen for tour operators to capitalise on other scenic attractions of the Sounds, such as by rafting, guided fishing, and wildlife tours on the DoC estate that also incorporate some history of the area.

5.4.2 Operators

Operation 4

Operation 4 is a sightseeing tour based upon marine mammals (Hector's, dusky, bottlenose and occasionally common dolphins and vagrant whales) and birds (both land and sea) in Queen Charlotte Sound. The primary focus is marine mammal viewing, but the tour also incorporates trips to Mctuara Island, and other scenic and historic sites around the sound. A variety of activities are offered because they do not have a regular pod that can be targeted and thus do not want any requirement to see dolphins. Opportunistic swim-with-dolphins is offered, but this is not included in the initial price of the tour (wetsuits and snorkels are available on the boat and can be hired for an additional fee). The tour participated in observed: spotted (Stictocarbo punctatus punctatus) and pied (Phalacrocorax varius varius) shags, red-billed (Larus novaehollandiae scopulinus) and black-backed (Larus dominicanus) gulls, white-fronted terns (Sterna striata), gannets (Sula serrator), fluttering shearwaters (Puffinus gavia), a pair of Hector's dolphins and a king shag (Leucocarbo carunculatus).

The operation began in 1993. The owners had been interested in establishing a marine mammal tour for many years. They felt a number of prerequisites were necessary for a successful operation including: a large readily accessible population base, sheltered or enclosed water, more than one species of marine mammal, and the ability to access the animals all year round. The first idea and one which fulfilled most of the preceding requirements, was a whale-watch operation in Kaikoura. However, the permit application was declined. Fiordland was also considered but political considerations, with one large company dominating the industry, were a concern. Picton was finally settled upon, after which a permit application was filed.
Operating procedure

The regulatory requirements needed to operate include a marine mammal permit that has a number of conditions and is specific to the boat (Table 5.1). This was noted as a potential problem because if the boat breaks down they cannot continue operating until the permit is altered. In addition, swimming with Hector's dolphins is prohibited. The dolphins appear to be comfortable in the vicinity of boats but become disturbed around swimmers (Baxter, pers. comm). The operators have also been granted permission from DoC to take paying passengers to the Long Island Marine Reserve and Motuara Island Scenic Reserve. However, to date this has not involved payment of a concession fee.

Stringent monitoring of the resources is carried out. Sighting reports are made following each trip and are plotted at monthly intervals on a map of the area. These charts enable the operator to accurately predict dolphin movement within the Sound. The records are given to DoC on the premise that the information will not be given to other commercial operators.

The owners of the operation are committed to conservation and the environment. They had gained an appreciation for the area and its wildlife through more than 20 years' experience sailing in the Sounds and more specific knowledge was acquired while working as a wildlife officer for Internal Affairs (predecessor of DoC). Their knowledge of the resources in the area and good communication skills were reflected throughout the trip. The commentary was educational and supplemented by reference material on board the vessel. The boat was handled to minimise any disturbance to the animals encountered, slowing on approach and remaining at least 10 m away from any wildlife (no attempt was made to approach the king shag). The wildlife showed no apparent adverse reaction to the boat.

Identified threats

The operation was not perceived to have any negative effect upon the wildlife. A threat identified was the number of applications for permits to watch and swim-with-dolphins. "In less than one year there has been a change from one permit to nine". The operators have opposed the application of some permits. One particular case involved the issue of a summer permit to a fishing boat operator. It was felt the vessel used was not well-suited to marine mammal watching.

Additional pressure exerted by the large number of boats in the Sound over the holiday period is a concern. "More than 200 boats can be on the Sound during a day in the weekend", and the occasional problem of private boat users' behaviour disturbing the dolphins has been recorded. However, it was felt that people take a
lead from their boat and improve their behaviour when they are around. They have adopted a policy to show by example and wherever possible distribute information on the animals and the correct etiquette around them.

Liaison with administrators

In general the operators had a good relationship with DoC, particularly with the field staff. They assist DoC in the transportation of scientists and conservation workers to the inaccessible areas of the DoC estate and in return are given material and information to include in the tour. Their view of head office was more contentious. This was largely the result of changing the regulations without prior notification. Renewal of their permit was reduced from 5 years to 3 years and a clause prohibiting swimming with Hector’s dolphins was added following its issue.

It was felt the management of the resources could be improved by more rigid policing of the Marine Mammal Regulations with regard to unlicenced commercial operators. It was acknowledged that this is restricted somewhat by the limited resources available to the Department.

Operation 5

Operation 5 is a fishing operation. The operation was established nine years ago and was purchased by the current owner in 1992. The primary species targeted are blue cod (Parapercis colias), sea perch (Helicolenus percoides), gurnard (Chelidonichthys kumu) and tarakihi (Nemadactylus macroptera).

Operating procedures

The operation must adhere to the recreational fishing regulations stipulated by the Ministry of Fisheries and the regulations outlined in Table 5.1. In addition, the operation uses a common-sense procedure to try to reduce the potential for overfishing by systematically shifting around the area to prevent overfishing a particular site.

Monitoring involves recording a rough estimate of the number of each species caught.

The only staff employed are additional crew during the peak months. No specific training is necessary because they are only involved with general labouring jobs. The owner maintained a keen recreational interest in the area prior to buying the operation. The tour is used as a platform to advocate sustainable fishing. Visitors are clearly told why the regulations restricting catch size are essential and procedures for removing undersized fish to reduce handling damage are
demonstrated. In addition, the operator has adopted a policy to return any tarakihi under 30 cm even though the legal size is 28 cm.

Threats

The operator did not perceive their tour to have any negative effect on the resource base, because in their view, they do not catch enough fish. It was, however, noted that the survival rate of released fish is unknown. A low survival rate could have a significant detrimental effect on fish stocks that has not been accounted for. Commercial fishing does not occur in the Tory Channel so was not identified as an immediate threat in the area. The heavy seasonal recreational use of the area was not identified as a particular problem. However, a "wall of boats spanning the Tory Channel" was identified as detracting from the aesthetic value of the tour.

Liaison with administrators

The operation generally has little liaison with DoC. Their main regulatory body is the Ministry of Fisheries. A number of ideas were expressed for improved management. The main concern was the lack of communication between operators and the Ministry, for example, the lack of effort made to inform operators of new regulations with regard to catch size and quota. It was also stressed that policing of fishing regulations should involve all sector groups - recreational, charter and commercial - rather than targeting charter boat operators in particular. The need for more rigorous policing of unlicensed operators was highlighted. It was felt these unlicensed operators "take the cream of the tourists and leave established operators to struggle through the quiet season".

Operation 6

This operation is a sea kayaking venture run in Queen Charlotte Sound. Visitors may either take a one-day guided trip or kayak independently around the Sound. The operation is a general outdoor experience and is not based on any particular wildlife. "The sighting of wildlife simply enhances the experience". A variety of seabird species were encountered during the trip, including pied (Phalacrocorax varius) and spotted (Stictocarbo punctatus) shags, gulls (Larus spp.) and a reef heron (Egretta sacra). The tour also included a guided walk through native bush.

Operating procedure

Considerable time and effort was spent researching the most appropriate type of kayak for the operation prior to establishing the business, deciding upon Southern Light double kayaks. No specific agencies had to be approached to set up the operation and they are bound by no legal operating requirements. However, the operation is affiliated with the New Zealand Sea Kayak Operators, Association and
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as members they follow their code of practice (Appendix C). In addition, they have obtained a concession to guide on DoC land.

Identified threats

The operation was not perceived to have any adverse effect on the wildlife or habitats in the area, and no other threats to the resource were identified at this stage. Sea kayaking is an unobtrusive activity. None of the wildlife encountered showed a visible disturbance on approach.

Liaison with administrators

In general, the operator had a good relationship with DoC and were particularly positive about the field centre manager in Picton. It was felt that the Department did fulfil their conservation mandate to the best of their ability given the limited resources available. The main idea for the improved management of the resource was an increase in public education with regard to appropriate behaviour around wildlife.
5.5 Stewart Island Case Study

Stewart Island lies across the Foveaux strait, 32 km from the south tip of the South Island (Fig. 5.8). The island is small (1 746 km²), and largely unspoilt, with, clear waters teeming with marine life. Ninety per cent of the Island's land area is administered by the Department of Conservation, with 28% of the land area being freely available for public access.

The Island has a southern oceanic character. The mean annual temperature is 10.3°C and average yearly rainfall is 1 600 mm. Its coastal waters are derived mainly from the Subtropical Convergence with some admixture of subantarctic waters; this mixing has produced a distinct southern marine flora and fauna (Heath, 1975). It is the southern extreme of many mainland species and communities (Department of Conservation, 1995b).

The marine environment of Stewart Island is one of the largest areas of unmodified marine habitats in New Zealand (Department of Conservation, 1995b). The seaweed communities are especially rich and diverse because high water clarity allows them to grow to great depths. One of the highlights of Stewart Island is the large number of offshore islands and rock stacks. They are habitats for a variety of seabirds, with yellow-eyed penguins (*Megadyptes antipodes*), Fiordland crested penguin (*Eudyptes pachyrhynchus*), muttonbirds (*Puffinus griseus*) and mottled petrels (*Pterodroma inexpectata*) being of particular note. Fur seals (*Arctocephalus forsteri*) haul out and breed on many of the islands. The rare Hooker's sealion (*Phocarctos hookeri*) breeds on Ernest Island.

Marine tourism is concentrated in Paterson Inlet and coastal areas off Halfmoon Bay. Paterson Inlet is 16 km long and encloses 100 km² of water and several islands. It contains a variety of marine habitats ranging from the exposed outer coastline to sheltered, rocky shores, pocket beaches of sand, and tidal estuaries with eelgrass flats.

The inlet is known for its abundance of wildlife (Hare et al., 1990). Local, rare and threatened (Bell, 1986) species present include variable oystercatchers (*Haematopus unicolor*), Stewart Island shags (*Leucocarbo carunculatus chalconotus*), yellow-eyed penguin (*Megadyptes antipodes*), Fiordland crested penguins (*Eudyptes pachyrhynchus*) and reef herons (*Egretta sacra sacra*).
Dolphins (bottlenose and occasionally dusky) are often seen feeding in the inlet. Fur seals are frequently seen in small numbers and Hooker's sealions are occasionally sighted.

The inlet is also an important habitat and nursery area for marine fish. Blue cod are common, particularly around reefs and islands in the outer inlet. It also contains quantities of paua (Haliotis spp.), scallop (Pecten novaezelandiae), kina (Evechinus and Pseudechinus sp.), mussel (Mytilus edulis aoteanus and Perna canaliculus), cockle (Austrovenus stutchburyi) and pipi (Paphies australis). Brachiopod communities in the inlet are of considerable scientific interest (Richardson, 1981; Stewart, 1981).

Salmon farms have been operating in Paterson Inlet since 1980.

In the mid-1870s the first organised sightseers arrived on Stewart Island from the mainland. In recent years there has been an increase in the number of tourists visiting the island. These tourists are attracted by the area's unspoilt natural beauty and wildlife. The only settlement on the island is Oban at Halfmoon Bay. The 500 inhabitants of the town have 3 stores, a hotel, and more than 30 000 visitors a year. Access to the island is by plane or boat. An airstrip caters for small planes only and a regular ferry service runs from Bluff to Oban.
FIGURE 5.7.
Stewart Island
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5.5.1 Administrators

Stewart Island lies in DoC’s Southland Conservancy. The regional office is in Invercargill and a field centre is located on the island itself. The concessions manager for the conservancy was interviewed. Tourism (both marine and non-marine) is a big issue in the Conservancy. It has the largest number of concessions issued in the country, numbering 160 in total. It was estimated that approximately one third of these had some marine component included in the operation. There are currently 15 marine mammal permits issued. The conditions pertaining to the concessions and permits vary with each application and are case specific. It was felt that beyond the role of administering permits and concessions it is not the Department’s function to develop standards and regulations with regard to the tourism industry. "This should come from the industry, not DoC".

Monitoring

The monitoring of marine mammal operators by the Conservancy has a three-pronged approach (Department of Conservation, 1995a): (i) compliance monitoring (noted previously); (ii) meeting with the operators to educate them on marine mammals and the correct operating procedures; and (iii) impact monitoring. Research is to be fully funded via a royalty levy collected from operators. There is currently one study in progress measuring the impact of tourism on Hector’s dolphins at Porpoise Bay in Southland. In addition it was anticipated that monitoring of the animals by the operators will eventually become a requirement of the permit, developing a database of information to assist management. Stewart Island was not identified as a priority for research because the viewing is opportunistic and relatively 'low key'.

Liaison with operators

In general it was felt the Department had a good relationship with the operators, a view reflected during discussion with the operators. A meeting between the Department and boat operators in Milford Scund was held in October 1995 following a number of complaints with regard to tour operators and marine mammal viewing. The success of the meeting, in raising awareness levels and educating the operators, has highlighted the need to initiate annual or biannual meetings between DoC, operators and their staff. It was felt that infringements are generally attributable to ignorance. With the exception of this meeting, contact with operators has been through informal discussion and a newsletter (Southern Airwaves) sent to concessionaires three times annually. Plans to improve liaison with operators in the marine mammal viewing industry are outlined in the Southland Conservancy Management Discussion Document (Department of Conservation, 1995a).
**Issues surfacing in the area**

There was a large potential for growth seen in the marine tourism industry, in particular the viewing of rare species such as Hooker's sea lions and southern right whales (*Eubalaena australis*). Southern right whales were severely decimated by whaling in the early nineteenth century. They migrate north to winter breeding grounds which traditionally were in sheltered harbours around New Zealand but are now restricted to the Sub-Antarctic Islands. Given their low population and potential sensitivity, the Sub-Antarctic breeding grounds were considered inappropriate for marine tourism. The yellow-eyed penguin is another species considered to be inappropriate for marine tourism activity, simply because their viewing is already well catered for in Otago. An application to view yellow-eyed penguin on Stewart Island had been denied because of local complaint and the relatively pristine nature of the site (Hare et al., 1990).

**5.5.2 Operators**

**Operation 7**

The operation has two distinct components, a night tour to view the Stewart Island brown kiwi (*Apteryx australis lawryxi*) at Ocean Beach and a scenic day trip around Paterson Inlet. Visitors on the scenic trip participate in a variety of activities such as seabird watching, fishing, and visits to Ulva Island and a salmon farm. The seabirds encountered included Buller's (*Diomedea bulleri*) and shy (*Diomedea c. cauta*) mollymawks, muttonbirds (*Puffinus griseus*), gulls (*Larus* spp.), white-fronted terns (*Sterna striata*) and spotted (*Sictocarbo punctatus*), pied (*Phalacrocorax varius*) and Stewart Island (*Leucocarbo carunculatus chalconotus*) shags. Bottlenose dolphins (*Tursiops truncatus*) were also encountered, although the operator does not have a permit so no attempt was made to initiate contact or follow them.

**Operating procedure**

In addition to the standard operating requirements the operator holds a concession to take guided tours or hunting parties (for which an additional permit must be attached) on any of the DoC estate on Stewart Island (Table 5.1). This concession makes them the only concessionaire able to take regular trips to view the kiwis (two additional parties have concessions to view kiwis six times throughout the year). It was noted that DoC had approached them about the need for a marine mammal permit because seals are regularly viewed on the tour. It was firmly stated that no application has, or will be made because the operation does not advertise seal watching, "they are simply seen because we fish in the area". The operation also adheres to a code of practice when fishing in Paterson Inlet (Appendix C). This code
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was initiated by the operator and subsequently adopted by all other charter boat operators.

The operator has an extensive knowledge of the resource base in the area, having lived on the island throughout his life, working as a commercial fisher. A number of common-sense strategies are used to reduce impacts, such as: the use of large hooks to minimise injury to undersized fish, and personally unhooking and checking the size of all fish caught. The seabirds encountered were attracted to the boat while fishing and no negative impact was identified.

Threats

The operation itself is not perceived to have any negative effect upon the wildlife or habitats targeted. The threats that were identified focused specifically on the behaviour of recreational users. The abuse of fishing regulations in Paterson Inlet was of particular concern: "a number of these people have the attitude of, we will collect our year's quota in one go because we only visit the island for a limited period of time". In addition, problems arise with private boat parties viewing kiwis. However, it was felt this behaviour may be one of ignorance rather than apathy. A sign outlining the rules for kiwi spotting has been erected by DoC on one of the tracks leading to the beach but there are three additional access points to the beach without signs. The operator actually encourages independent visitors to join the tour group, so they can be controlled and have the benefit of learning about the kiwis. In this way a regular concessionnaire to the area can alleviate some of the pressure exerted by the public.

Liaison with administrators

The operator had problems with a number of DoC's policies but, in general felt their liaison with the Department was good. Ideas for the improved management related mainly to the need for upgrading of facilities, wharves and tracks in the area. It was also suggested that the behaviour of private users around the kiwis could be improved by sending a memo to all New Zealand boat clubs giving them his name and contact details. If people contact the operator, a time can be arranged to ensure the visit coincides with a visit by the operator, ensuring the birds are viewed only every second night (a condition of the concession).
Operation 8

Operation 8 was a sea kayaking business set up in 1991. The operation is based on the natural beauty of the environment and not on specific wildlife resources. "Wildlife are simply an added bonus to the wilderness experience". Visitors may either hire kayaks independently and construct their own trip itinerary, or participate in guided day trips. A day trip around Paterson Inlet encountered blue penguins (*Eudyptula minor*) and yellow-eyed penguins (*Megadyptes antipodes*), shags nesting along the shore, terns, gulls and fur seals (*Arctocephalus forsteri*).

Operating procedure

Although no regulatory requirements are needed to operate (Table 5.1), they have chosen to operate under the New Zealand Sea Kayak Operators, Association Code of Practice (Appendix C). As the operation grows and incorporates more guided trips it was anticipated that an agreement may have to be arranged with the local Maori land wardens, and a concession granted from DoC.

The operator has lived on the island for 20 years and become very familiar with the resource base through experience sailing and kayaking in the area. The operation was run well with regard to behaviour around the species. Kayakers were told to stop paddling and remain a reasonable distance away from the seabirds and fur seals encountered. However, in general the tour incorporated little environmental interpretation.

Threats

This operation was not perceived to have any negative effect on the resource base. It was mentioned that kayakers often collect rubbish off the beaches, returning from their trip with more than they started with. The major threat identified was the potential for over-development. At present the area is relatively untouched. However, development brings with it the problem of people targeting wildlife on a regular basis. In addition, concern was expressed about the potential for DoC to view concessions, such as seal swimming and kiwi spotting, as a money making venture leading to the issue of too many concessions and increased pressure.

Liaison with administrators

The operator and DoC have a formal meeting once a year to determine the areas most frequently used by kayakers. This meeting enables the Department to control kayakers' impacts, keeping them away from sensitive sites and providing facilities at the well-used sites. With the exception of this meeting, contact is limited to when the operator approaches DoC with problems.
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Operation 9

The operation is primarily a scenic tour which incorporates fishing and occasionally diving excursions. The type of wildlife encountered is very seasonal, but seabirds are the major wildlife resources upon which the operation is based, including: mollymawks, shags, prions, petrels and penguins. Each trip is customised to suit the interests of the tourists. The tour participated in was a ‘typical’ scenic cruise around Paterson Inlet, with a trip to a Stewart Island shag colony. White-fronted terns (*Sterna striata*), gulls, blue penguins (*Eudyptula minor*), white-faced herons (*Ardea novaehollandiae novaehollandiae*), pied (*Phalacrocorax varius*), spotted (*Stictocarbo punctatus*), and Stewart Island shags (*Leucocarbo carunculatus chalconotus*), Buller’s mollymawks (*Diomedea bulleri*), variable oystercatchers (*Haematopus unicolor*) and a New Zealand fur seal (*Arctocephalus forsteri*) were seen.

Operating procedure

The operation currently runs without a Marine Mammal Permit or concession. However, an application has been lodged for a permit because trips to view seals are advertised.

No monitoring of the resources is carried out. However, simply by regularly visiting areas in Paterson Inlet the operator is now capable of predicting the movement of the main target species throughout the year.

The operator had a good practical knowledge of the environment, mainly from reading about the area. An informal commentary described all the species encountered during the tour and gave an introduction to the history of the area. This was supplemented by folders of material illustrating the saw-milling and whaling history of the area. The operator felt that visitors on the tour do not need to be told how to behave because they are in a controlled environment on the boat. The vessel was slowed to a no-wake speed when approaching, or passing any wildlife. In general, the boat did not appear to elicit any strong reaction from the wildlife (one exception saw a pair of oystercatchers become distressed when approached too closely and fly away).

Threats

The owner perceived the operation to be an unobtrusive method of viewing wildlife with no negative effects. No other threats to the resources in the area were identified.
Liaison with administrators

The operator's liaison with DoC is limited to occasionally approaching them for information on current research and interesting facts to include on the tour. In general it was felt the Department were doing the best they could under their financial constraints. Ideas for the improved management of resources in the area related to reducing visitor pressure on Ulva Island. The island lies in the middle of Paterson Inlet and must be reached by boat. A water-taxi that runs regularly to the Island allows very open public access. The high level of recreational use was perceived to be contributing to habitat destruction and loss of tranquillity on the island. However, no studies have been conducted to monitor these impacts. A need to develop strategies to control the level of visitation was identified.

5.5 Discussion

5.5.1 Operator characteristics

The marine tourism industry is complex and multi-faceted. However, despite their diversity, the operations presented share similarities, notably their recent establishment and their small scale (Table 5.2). Fishing and sightseeing operations were typically older, more established businesses whereas the marine mammal operations and sea kayaking businesses were less than five years old. Warren (1994) notes that operators usually take three to five years to become established and must be able to survive this period before visitors provide them with steady incomes.

Most operators have entered the industry for lifestyle reasons, hoping to make a living from a hobby. An additional factor in the establishment of more specialised trips (eg. marine mammal watching, sea kayaking and water taxi services) was the response to a perceived demand. With the exception of one operator (who had established the business as a retirement venture and wanted the operation to remain small), all the operators had plans to increase tourist numbers either by: utilising the current facilities to their full potential, diversification of the business, or through purchasing of a larger boat. Thus, the primary driving force in the industry is profit and increasing tourist numbers. In general, the fishing and scenic cruise operators felt the potential for growth in their market was limited. However, the sea kayaking and marine mammal operators saw a lot of potential for expansion.
5.5.2 Regulatory Requirements

The main controls on the industry to date are the requirement for vessel surveys and licences from local authorities (Table 5.1). Operators using boats less than 6 m in length are not required to undergo a vessel survey. However, at the time of writing, the Maritime Safety Authority regulations were under review. It was anticipated that a commercial vessel of any size will be required to undergo a survey. The only constraint on the number of operators is provided by limitations set for marine mammal watching permits. In fact, there is potential for local authorities to view the licensing of operators as a mechanism for generating revenue.

All operators in the Bay of Islands and Picton areas identified the problem of operations (many of which operate without a licence) starting with the influx of tourists each summer and closing during the winter lull. They leave the regular operators to service the market on an ongoing basis in the off-season. This problem was also identified in the questionnaire, highlighting the need for industry protection. Boats operated for personal use should not be permitted to charter, and charter boats (of any size) should be required to meet MSA regulations for equipment.

The sea kayaking operators are not legally required to adhere to any regulations. However, both operators were voluntary members of the New Zealand Sea Kayak Operators’ Association and operate under the association’s minimum safety standards. This suggests that in a small, specialised sector of the industry, voluntary codes of practice can be very useful tools for regulation and quality control.

The only restrictions governing the behaviour around marine wildlife are the guidelines set out in the Marine Mammal Regulations. These provide standards for environmental compliance but only in a small sector of the marine tourism industry. Fishing operators must simply comply with the Ministry of Fisheries regulations restricting catch size and quota, which are applicable to all recreational users. Sea kayaking operators have no restrictions at all. However, even such an ostensibly low impact activity as sea kayaking may have a disturbing effect. Kayaks can be manoeuvred very close to wildlife and access otherwise relatively inaccessible areas, thereby potentially causing disturbance (Seabrooke, 1981; Richardson et al., 1995). Richardson (1995) notes that reactions of harbour seals (Phoca vitulina) in California to canoe and kayaks are at least as great as those to motorboats.

The problem of ‘illegal’ marine mammal operators was a particular issue raised in the Bay of Islands. A number of operators take passengers to view marine mammals
without advertising this on promotional material and thus not needing a permit. Two operators interviewed in Stewart Island run general sightseeing tours that view marine mammals on an opportunistic basis without a permit. However, the small number of operators and their opportunistic nature have meant this has not been such a problem.

5.5.3 Monitoring

Data monitoring the impact of tourism on marine wildlife are meagre, highlighting the need for further research (see section 3.3). The Southland Conservancy has taken the first step in remedying this, preparing a management document that clearly outlines future research requirements with regard to marine mammals (Department of Conservation, 1995a). The primary concern DoC is faced with, and the focus of their monitoring to date, has been the impact of marine mammal viewing operators. However, a number of the seabirds encountered are rare or locally threatened. Thus long-term monitoring is required in all areas where any wildlife or habitats are targeted on a regular basis.

Both the quality and quantity of ecological monitoring conducted by each operator varies considerably (Table 5.3). All marine mammal operators undertake monitoring strategies that involves completing a sighting report after every trip. The records kept by the Marlborough Sounds operator have contributed to an extensive data base used by DoC. The data collected by the Bay of Islands operators are currently used only by the operators themselves for predicting the distribution and location of the dolphins. It appears that operators recognise the need for monitoring and are prepared to help fund research and contribute data. Standardised procedures will need to be developed to enable comparisons to be made between past and present states and between studies of the same species.

5.5.4 Issues arising in the industry

The present study deals primarily with marine-based tour operations. There were no land-based operations to view marine wildlife along the coast at the three case study sites. Not surprisingly, all operators felt that their ventures were managed in an environmentally sensitive manner and did not perceive their operation to have any direct negative effect on the resource base. However, one marine mammal operator in the Bay of Islands did note that the operation may indirectly affect the resource by "drawing more attention to dolphins through the company's advertising and marketing campaigns".
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Respondents were also asked to identify any threats to the resource. Response to this question varied considerably (Table 5.4). A problem raised repeatedly was the behaviour of private boat users who disturbed marine mammals and abused fishing regulations. All of the fishing operators identified the threat of depletion of fish stocks through overfishing, particularly by commercial fishers. In addition to these generic issues, site-specific threats were identified at each locality. Operators in the Bay of Islands noted the threat of pollution from the Marsden Point Oil refinery and oil spills from passing tankers. A concern to all Stewart Island operators was the threat of increasing development attracting more people to the island and increasing the stress placed on the natural environment.

Closer examination of measures taken to protect the environment showed that operators use common-sense procedures to help mitigate environmental impacts. In general the tour leader or skipper of the vessel has full control over visitors. Wildlife tour operators have direct control in regulating the separation distances between visitors and wildlife, and fishing operators directly control the number of fish caught. This reliance on the ecological integrity of operators and their knowledge of the resource base again highlights the need for some mechanism to control the number and quality of operators.

One of the most positive aspects of tourism noted widely in the literature is the education of tour participants, making people become more sensitive to wildlife and conservation needs (Boo, 1990; Lindberg and Hawkins, 1993; Wight, 1993a; Wight, 1993b; Nelson, 1994). However, very little empirical research has tested this assumption (Orams, 1996). Tour leaders, as role models for visitors, must exhibit environmentally responsible behaviour, must hold environmentally responsible attitudes, and most importantly must have the skills and abilities to promote these attitudes in visitors (Weiler, et al., 1991). Most of the operations were run by the owner and in general they had a good practical knowledge and attitude toward the environment. However, only one operator had any formal training on conservation and the natural environment (Table 5.5).

The operators provide varying amounts of information. In all operations the primary method of information exchange was through personal contact by an informal commentary. Typically, the marine mammal operators provided the most extensive commentaries on the species encountered (both marine mammals and other species). The Marine Mammal Regulations state that the operation should have an educational component and an outline of the interpretation must be detailed in a permit application. All other operations focused their commentary on the
history of the area. One fishing operator in the Bay of Islands offered no interpretation at all.

Due to their small size and high degree of personal contact, marine-based tours are well placed to educate and help change peoples' attitude toward the environment. However, many of the operators observed missed the opportunity to advocate sound conservation practice.

All DoC managers highlighted the need to ensure the information used by operators during a tour is accurate. The Department should operate workshops modelled on a successful Otago Conservancy Marine Mammal Symposium, held in 1995. The symposium was attended by tour operators, DoC staff and researchers with the aim of fostering a good working relationship between operators and DoC, educating operators on marine mammals, and discussing ways to reduce the impact of tourism on marine mammals.

In general, however, tourists may have a lesser impact than the general public. Regular tour operators in the area can help alleviate some of the pressure imposed on resources by the public, by policing behaviour and educating people.

5.5.5 Liaison between the Department of Conservation and operators

One of the key reasons for the close analysis of a select group of operators was an attempt to assess the relationship between the operators and the key administrative body, the Department of Conservation.

Most liaison between operators and the Department of Conservation is informal and irregular. The Department has taken an 'open door' approach to facilitate a good working relationship with the operators and encourage them to approach staff with any concerns or requests. The one exception to this was a trial of monthly meetings held between DoC and marine mammal operators in the Bay of Islands. These had been discontinued because the DoC staff involved felt they were simply a forum for the operators to voice their grievances of each other. However, the operators felt the meetings allowed them to have some input into the management of the resource and want to see them reinstated. The Southland Conservancy has identified the need for increased liaison between operators and DoC and proposes to hold annual meetings with operators. One or two meetings a year may be a more appropriate time interval than monthly meetings, with additional meetings scheduled if a specific agenda needs to be discussed.
Operators in the Marlborough Sounds and Stewart Island generally had a good relationship with the Department and field staff in the area. Friction between DoC and operators was evident in the Bay of Island (Table 5.6). Much of the contention stemmed from the Department's approach to the management of marine mammal viewing in the area. Operators felt the Department was slow to react to the number of unpermitted operators in the area, and had been receiving royalties from the operators to fund research for 2 years before any indication was given as to where the money would be spent. However, both parties anticipated that the appointment of a new field centre manager may improve this situation. This is a reflection of personalities and personal differences in approach between conservancies. It is very much up to individual DoC staff involved as to how helpful (or not) they are to operators. This reflects a need for the Department to ensure 'front-line' staff are highly professional and perhaps specifically trained in dealing with concessionaires and other tourism operators.

Despite these differences, most operators had approached DoC at some point, which places the Department in a good position to control marine tourism. While there is general support for the Department's current role and for its possible extension, there is concern about the inadequacy of current funding. All ideas for improved management, such as more rigorous policing of unlicensed operators and increased public education, involve the use of resources that the Department does not have.

DoC staff did stress that their sole function with respect to marine tourism is control of the marine mammal permitting process. It has neither the power nor resources to be involved in monitoring or administration of operating standards. The Department felt additional operating standards should come from within the industry. However, DoC has the most direct role in administering marine tourism in New Zealand and should be involved in the development of any standards. This will require increased co-ordination between DoC and the tourism industry, a recommendation also made following a number of other studies (Moore, 1991; Wilson, 1993; Clease, 1994; Edwards, 1996).
5.5.6 Conclusion

This study addresses only some of the complex problems arising in the marine tourism industry. Whilst each area has a unique set of problems, the foregoing discussion focuses on generic issues involved in the industry. The major concerns that the case studies highlighted and issues that must be resolved are:

- The lack of restrictions limiting the number of operators in the industry. Ultimately restrictions should be environmentally driven so they are in place before 'problems' occur;
- The number of illegal operators, both private boats operating without a licence and charter boats operating without a Marine Mammal Permit. Further investigation is needed to determine the impact of operators that observe marine mammals incidentally but do not target marine mammals;
- The lack of public awareness and general knowledge of behaviour around marine wildlife, and;
- The need for more regular meetings between DoC and operators to facilitate a good working relationship between the two parties, and provide up-to-date information on marine wildlife for operators to incorporate in their tour commentaries.

5.5.7 Limitations

The single most serious limitation of this study, and of personal interviews in general, is the tendency for respondents to answer in a manner perceived to be pleasing to the interviewer (Alreck and Settle, 1985; Bourque and Fielder, 1995). This 'interviewer effect' is again a problem when observing the operation. Ideally an undercover surveillance approach should be taken to prevent the tour leader being influenced by the presence of an observer. An undercover approach was not taken because contact had already been made with the operators to organise a time to hold the interview and obtain consent to distribute questionnaires among the passengers. The passenger questionnaires were not included in the analysis due to the small sample size. In addition, the observation should have been repeated more than once. However, the study was only exploratory to obtain a general perception about the issues arising in the industry and the constraints of cost, personnel and time precluded this more ideal approach.
<table>
<thead>
<tr>
<th>Operation</th>
<th>Vessel description</th>
<th>Maritime Safety Authority Survey</th>
<th>Commercial Launch Masters qualification</th>
<th>Licence to ply for hire (Regional council)</th>
<th>Licence to use commercial wharf (District council)</th>
<th>Marine mammal permit (DoC)</th>
<th>Concession (DoC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12m vessel; 35 passengers</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>2</td>
<td>14m vessel; 22 passengers</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>3</td>
<td>10m vessel; 10 passengers</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>4</td>
<td>9m vessel; 16 passengers</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>5</td>
<td>14m vessel; 25 passengers&lt;sup&gt;1&lt;/sup&gt;</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>6</td>
<td>Southern Light double kayaks&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>7</td>
<td>17m vessel; 27 passengers</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>8</td>
<td>Seabear double kayaks&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>9</td>
<td>9m vessel; 13 passengers</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup>Licensed to carry 60 passengers, but will carry a maximum of 25

<sup>2</sup>Voluntarily adhere to the operating standards set out by the Sea Kayak Operators, Association of New Zealand
### TABLE 5.2.

Characteristics of operators (source: operator interviews)

<table>
<thead>
<tr>
<th>Location</th>
<th>Operation</th>
<th>Type of tour</th>
<th>Year established</th>
<th>Reason established</th>
<th>Future plans</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paihia</td>
<td>1</td>
<td>Marine mammal tour</td>
<td>1992</td>
<td>In response to demand</td>
<td>Increase tourist numbers</td>
<td>Subsidiary of a company</td>
</tr>
<tr>
<td>Paihia</td>
<td>2</td>
<td>Fishing &amp; sightseeing tour</td>
<td>1987</td>
<td>Lifestyle opportunity</td>
<td>Increase the gamefishing component of the tour</td>
<td>Owner &amp; 1 part-time skipper</td>
</tr>
<tr>
<td>Paihia</td>
<td>3</td>
<td>Fishing tour</td>
<td>1993</td>
<td>Create a resaleable asset</td>
<td>Upgrade the operation</td>
<td>1 full-time skipper</td>
</tr>
<tr>
<td>Picton</td>
<td>4</td>
<td>Marine mammal tour</td>
<td>1993</td>
<td>Lifestyle opportunity</td>
<td>Remain small</td>
<td>Partners</td>
</tr>
<tr>
<td>Picton</td>
<td>5</td>
<td>Fishing tour</td>
<td>1992</td>
<td>Lifestyle opportunity</td>
<td>Remain small</td>
<td>Owner &amp; 1 part-time (seasonal)</td>
</tr>
<tr>
<td>Picton</td>
<td>6</td>
<td>Sea kayaking tour</td>
<td>1992</td>
<td>Lifestyle opportunity</td>
<td>Expand &amp; diversify</td>
<td>Owner</td>
</tr>
<tr>
<td>Stewart Is</td>
<td>7</td>
<td>Fishing &amp; sightseeing tour</td>
<td>1986</td>
<td>Lifestyle opportunity</td>
<td>Increase tourist numbers</td>
<td>Owner &amp; 1 guide (very occasionally)</td>
</tr>
<tr>
<td>Stewart Is</td>
<td>8</td>
<td>Sea kayaking tour</td>
<td>1991</td>
<td>In response to demand</td>
<td>Incorporate more guided trips</td>
<td>Owner &amp; 1 guide (seasonal)</td>
</tr>
<tr>
<td>Stewart Is</td>
<td>9</td>
<td>Fishing &amp; sightseeing tour</td>
<td>1992</td>
<td>Retirement venture</td>
<td>Remain small &amp; personal</td>
<td>Owner</td>
</tr>
</tbody>
</table>
## TABLE 5.3

Level of monitoring conducted by marine tourism operators (source: operator interviews)

<table>
<thead>
<tr>
<th>Operation</th>
<th>Type</th>
<th>Location</th>
<th>Method</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marine mammal watching</td>
<td>Paihia</td>
<td>Marine mammal sighting report</td>
<td>Every trip</td>
</tr>
<tr>
<td>2</td>
<td>Scenic cruise</td>
<td>Paihia</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>Paihia</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Marine mammal watching</td>
<td>Picton</td>
<td>Marine mammal sighting report</td>
<td>Every trip</td>
</tr>
<tr>
<td>5</td>
<td>Fishing</td>
<td>Picton</td>
<td>Estimate of daily fish catch &amp; time taken to catch</td>
<td>Random</td>
</tr>
<tr>
<td>6</td>
<td>Sea kayaking</td>
<td>Picton</td>
<td>General observation-no records kept</td>
<td>Random</td>
</tr>
<tr>
<td>7</td>
<td>Scenic cruise</td>
<td>Stewart Island</td>
<td>Kiwi sighting report</td>
<td>Every trip</td>
</tr>
<tr>
<td></td>
<td>Fishing</td>
<td>Stewart Island</td>
<td>Record daily fish catch</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Sea kayaking</td>
<td>Stewart Island</td>
<td>General observation-no records kept</td>
<td>Random</td>
</tr>
<tr>
<td>9</td>
<td>Scenic cruise</td>
<td>Stewart Island</td>
<td>General observation-no records kept</td>
<td>Random</td>
</tr>
</tbody>
</table>
### Table 5.4

Major environmental threats identified in the area (source: operator interviews)

<table>
<thead>
<tr>
<th>Operation</th>
<th>Type</th>
<th>Location</th>
<th>Major concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marine mammal watching</td>
<td>Paihia</td>
<td>Increasing numbers of recreational users pressuring the resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number of unlicensed marine mammal operators</td>
</tr>
<tr>
<td>2</td>
<td>Scenic cruise &amp; Fishing</td>
<td>Paihia</td>
<td>Commercial fishers depleting stock</td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>Paihia</td>
<td>Commercial fishers depleting stock</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lack of restrictions limiting the number of operators</td>
</tr>
<tr>
<td>4</td>
<td>Marine mammal watching</td>
<td>Picton</td>
<td>Increasing number of applications for marine mammal permits</td>
</tr>
<tr>
<td>5</td>
<td>Fishing</td>
<td>Picton</td>
<td>No immediate threats identified</td>
</tr>
<tr>
<td>6</td>
<td>Sea kayaking</td>
<td>Picton</td>
<td>No immediate threats identified</td>
</tr>
<tr>
<td>7</td>
<td>Scenic cruise</td>
<td>Stewart Island</td>
<td>Behaviour of recreational users viewing kiwis</td>
</tr>
<tr>
<td></td>
<td>Fishing</td>
<td></td>
<td>Abuse of Paterson Inlet fishing regulations</td>
</tr>
<tr>
<td>8</td>
<td>Sea kayaking</td>
<td>Stewart Island</td>
<td>Development of the area</td>
</tr>
<tr>
<td>9</td>
<td>Scenic cruise</td>
<td>Stewart Island</td>
<td>No immediate threat identified</td>
</tr>
<tr>
<td>Operation</td>
<td>Activity</td>
<td>Environmental Interpretation</td>
<td>Environmental Education</td>
</tr>
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</tr>
<tr>
<td>1</td>
<td>Marine mammal</td>
<td>Description of the ecology of common and bottlenose dolphins</td>
<td>Information given on how to behave when swimming with dolphins</td>
</tr>
<tr>
<td></td>
<td>watching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Scenic cruise</td>
<td>Historical account of the area</td>
<td>Passenger encouraged to throw back inedible species</td>
</tr>
<tr>
<td></td>
<td>Fishing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>Nil</td>
<td>Told to check the size of all fish</td>
</tr>
<tr>
<td>4</td>
<td>Marine mammal</td>
<td>Description of the ecology of all wildlife</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>watching</td>
<td>Historical account of the area</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fishing</td>
<td>Description of the common fish species caught in the Sounds</td>
<td>Instruction given on correct catch and release techniques</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advised to throw back tarakihi under 30 cm</td>
</tr>
<tr>
<td>6</td>
<td>Sea kayaking</td>
<td>Description of the ecology of all wildlife encountered</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Historical account of the area</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Scenic cruise</td>
<td>Description of the ecology of the Stewart Island spotted kiwi</td>
<td>Detailed instruction on kiwi viewing guidelines</td>
</tr>
<tr>
<td></td>
<td>Fishing</td>
<td>Historical account of the area</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Sea kayaking</td>
<td>Brief identification of the species encountered</td>
<td>Told to stop paddling and remain a reasonable distance away from all wildlife</td>
</tr>
<tr>
<td>9</td>
<td>Scenic cruise</td>
<td>Detailed description of the ecology of all wildlife encountered</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Historical account of the area</td>
<td></td>
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<tr>
<td>Operation</td>
<td>Activity</td>
<td>Location</td>
<td>Type of liaison</td>
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</tr>
<tr>
<td>1</td>
<td>Marine mammal watching</td>
<td>Paihia</td>
<td>Regular meetings held monthly</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>2</td>
<td>Scenic cruise Fishing</td>
<td>Paihia</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>Paihia</td>
<td>None unless identifies a problem</td>
</tr>
<tr>
<td>4</td>
<td>Marine mammal watching</td>
<td>Picton</td>
<td>Informal meetings on a regular basis</td>
</tr>
<tr>
<td>5</td>
<td>Fishing</td>
<td>Picton</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>Sea kayaking</td>
<td>Picton</td>
<td>Informal discussion on an irregular basis</td>
</tr>
<tr>
<td>7</td>
<td>Scenic cruise Fishing</td>
<td>Stewart Is</td>
<td>Informal meetings on a regular basis</td>
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</tr>
<tr>
<td>8</td>
<td>Sea kayaking</td>
<td>Stewart Is</td>
<td>Formal meeting annually</td>
</tr>
<tr>
<td>9</td>
<td>Scenic cruise</td>
<td>Stewart Is</td>
<td>Informal discussion on an irregular basis</td>
</tr>
</tbody>
</table>
6 Conclusions and Recommendations

6.1 Introduction

The tourism industry is flourishing throughout the world and now qualifies as the world’s largest business sector. New Zealand has followed this trend with the 1980s witnessing a remarkable growth in our tourism industry. As the quality of the marine environment deteriorates elsewhere in the world, New Zealand’s relatively pristine marine habitats will assume even greater importance for the tourism industry.

The rapid expansion and diffuse nature of tourism in New Zealand has resulted in very little documentation of marine tourism. This thesis has sought to provide a profile of New Zealand’s marine tourism industry and identify critical issues with regard to the sustainability and future growth of the industry. A mail-out survey was used to give a broad analysis of the industry documenting: (i) the level, extent and concentrations of activity, (ii) the main species and habitats of interest, (iii) the current management framework, and (iv) the operators’ perceptions of environmental aspects. The issues arising in the industry were examined in more detail through analysis of operations and discussion with managers in three key marine tourism locations. Identifying the key issues allows some recommendations to be made relating to the sustainable management of the industry.

The industry is a complex and multi-faceted one, encompassing numerous forms of tourism - ranging from physically exerting activities such as sea kayaking to relatively passive scenery and wildlife viewing - which use marine resources. The industry is still in its infancy and is composed of small, locally owned and operated businesses. Operations are dispersed throughout the country although activity is concentrated in several main geographic areas. The types of activities and key attractions vary between these.

Wildlife viewing is the most common activity undertaken by marine tourism operators, with 44% of operators noting marine mammals, 18% penguins and 42% noting other seabirds as a key attraction. Operations located in the South Island tend in particular to focus on the wildlife viewing of specific species. By comparison most North Island operations offer a more general experience, typically a cruise incorporating fishing, diving, and snorkelling.
Marine mammals are a key attraction in all areas where they are resident or frequently sighted. This reflects the particular fascination many people have for marine mammals (Kovacs and Innes, 1990; Simonds, 1991). Commercial whale-watching worldwide has grown spectacularly over the past decade, almost doubling annually in terms of revenue and passengers (Hoyts, 1995). The abundance of marine mammals inhabiting New Zealand's coastal waters will continue to attract increasing numbers of visitors, creating commercial pressure to expand the current level of activity. The primary concern managers are faced with is the impact of marine mammal viewing; it is currently the key marine tourism activity and an activity that targets animals on a regular and repeated basis.

However, New Zealand's abundant marine habitat, wildlife and fishery resources provide many additional marine tourism opportunities. Several of the seabird species of interest to marine-based nature tours are rare, for example, the yellow-eyed penguin, or endemic to New Zealand. It is in fact this "unusualness" that makes them particularly marketable. Care must be taken to weigh up the threats and opportunities of the growing interest in all types of marine tourism.

6.2 Obstacles and opportunities

While minimal environmental impact due to marine tourism was identified at the sites studied, comprehensive scientific studies of environmental impacts from tourism have yet to be conducted. The few studies that have been done have assessed short-term behavioural reactions. The significance of short-term behavioural responses to the long-term well-being of individuals and populations is not known. It is imperative that the cumulative effects of numerous seemingly independent, small-scale, low intensity operations are monitored. In particular, operations that target species and habitats on a regular basis.

The majority of people holidaying in New Zealand, both as domestic and international visitors tend to do so in a coastal location. Increasing numbers of visitors are inevitably going to cause increased levels of damage and disturbance. There is a need to commit some resources to the long-term protection from development, so as to provide a measure of security for investments in sustainable tourism.

Given the Department of Conservation's current funding it is not feasible to run long-term monitoring programmes and implement the additional recommendations made below. A percent of the tourism revenues should ideally be used to support
the preservation and improvement of the coastal and marine environment, considering New Zealand's tourism industry is to a large extent founded on the natural attractions of these areas. As an earner of foreign exchange, tourism might be regarded as an 'export industry'. However, unlike most export industries, the sale of tourism products and services are not exempt from Goods and Services Tax (GST). The Government earns an estimated $NZ 339 million per annum in the form of GST from tourism-related sales (Edwards, 1996). It has been suggested that a proportion of this revenue should be channelled towards funding of DoC, as a contribution towards the costs of managing the tourism industry (McSweeney, 1992; Edwards, 1996). Alternatively, a portion of the $20 departure tax paid by every international visitor could be channelled into research and monitoring.

There is a major opportunity for DoC to work in partnership with operators in developing monitoring and management programmes. A supportive relationship should be developed between tourist operators and DoC/scientists. Where feasible, tours can be used as a platform to gather data. In exchange, scientists on the boat can give an introduction to the wildlife. The involvement of scientists in marine-based tours has been initiated successfully overseas (Cousins, 1991; Crabtree and Gibson, 1991; Agardy, 1993).

Alternatively, operators could be used to collect data. Operators access areas on a daily basis and can collect data and monitor wildlife on a continuous basis. The Department of Conservation would need to assist operators in developing standardised techniques to ensure the data collected are reliable and sufficiently detailed to detect any impact. Data are currently being collected by marine mammal operators, collecting similar information about particular species, but there is no method of data collection to ensure results can be compared. It would perhaps be useful to choose a set of standard procedures and indicators. This would involve a comprehensive review of the international literature monitoring the impact of human disturbance and tourism activities on wildlife.

Another practical and economic means of achieving long-term monitoring will be increasing use of students undertaking research.

With the exception of marine mammal operators, or operators that must travel over DoC estate, there are no controls over the number of operators licensed to run marine-based tours. New operators start every summer with a short-term economic interest in mind and very little, if any environmental consideration. They close over the quiet winter season, leaving established operators to service the market on an
ongoing basis. This is of particular concern because new operators are continually visiting natural areas without an adequate knowledge of the resources.

In the absence of clearly defined regulations, interaction with marine wildlife largely depends on the integrity and expertise of the operators. This problem is exacerbated by the number of illegal operators. In view of the inadequate long-term monitoring available, a very precautionary approach must be taken to any increased tourism activity, particularly those focusing on wildlife. Controls need to be set on numbers and enforcement of illegal operators initiated to reduce environmental impacts and protect existing operators. New Zealand has a 'free-market philosophy' which encourages competition in the market place, to improve standards and ensure delivery of a high quality product. Competition, however, can result in action that is detrimental to the environment and is described in Hardin's (1966) 'tragedy of the commons'. Operators will try to provide their clients with the 'best' experience that often translates into number of fish caught or close proximity to wildlife. To control the number of operators in the industry may mean abandoning these free-market expectations. The local authority licencing requirements could be used to implement these constraints.

To date, there is no system in New Zealand which can be used to ensure operations are ecologically sound. To achieve sustainable management there is a need for environmental standards, ensuring operators have adequate guidelines and knowledge about the ecosystem in which they are operating. The diverse array of small, independent and locally controlled businesses may preclude the successful implementation of industry-wide standards advocated by others (Warren and Taylor, 1994). The most successful approach may be the use of industry-sector standards (for instance, the sea kayaking operators' code of practice), which incorporate environmental standards. These standards will need to take account of regional variation which may mean the establishment of local groups under an umbrella organisation. This will involve collaboration between all interested parties, (operators, DoC, Ministry of Fisheries, iwi and local authorities). If operators are directly involved in the production of standards they will be more likely to adhere to them and encourage others to do the same.

New Zealand's permit-based system has been hailed as a model approach to marine mammal watching (Hoyts, 1995) and has shown New Zealand's commitment to sustainable management. However, this study highlights a number of problems associated with the permits. In particular the number of illegal operators and the inappropriate behaviour of recreational users around marine mammals. On-site patrols need to be implemented to enforce compliance with the Marine Mammal
Chapter 6: Conclusions & Recommendations

Regulations. An equivalent to the Marine Mammal Regulations for other wildlife may become necessary, particularly as tourism focusing on seabirds continues to grow. It is important to note, however, that any regulations are without value if they are not adequately administered and enforced.

One of the most fundamental issues identified in this study is the lack of public awareness and general knowledge of behaviour around wildlife, in particular the problem of recreational boats interacting with dolphins. Water resources in New Zealand have long been a major element in the enjoyment of many forms of outdoor recreation. The high ratio of length of coast to land area (1 km of coast to every 1 800 ha of land) and proximity of populations to the coast promotes a close association of water and recreation. As this activity continues to increase, public education with regard to appropriate behaviour around marine wildlife must become a priority. Suggested mechanisms include: a sponsored television slot that could reach a wide audience, articles in fishing, diving and boating magazines and announcements over local radio. Locally, emphasis should be placed on reaching key user-groups (eg. boat clubs), seeking their cooperation/involvement in distributing information. Another approach could be the implementation, by the Maritime Safety Authority, of a licensing system for all recreational boat owners. To receive a licence, the attendance of a simple course outlining safe boating procedures and education on appropriate behaviour around marine wildlife would become mandatory. The latter mechanism, however, would be very expensive and require some system of policing.

A number of examples from the case studies highlight the positive benefit of marine tourism. Participation in the nature experience can stimulate an awareness, appreciation and understanding of the ecosystem and has the potential to create a growing group of advocates for the environment. Marine tourism operations generally take small groups and have a large degree of personal contact, providing an ideal opportunity to educate tour participants.

Operators in Stewart Island have initiated a code of ethics to promote the wise use of fish resources, acting as role models for visitors and recreational users to adopt an environmentally responsible attitude. The effective management of fisheries in the future will require active support and involvement of fishers given the limited enforcement resources, the geographic size of marine areas, and the large number of fishers involved. The adoption of a fishers' code of ethics will only be effective if it is embraced by a majority of fishers. Education by operators can be the first step in achieving this support. In addition, tours can be used to educate people on proper catch and release techniques to enhance the chance of fish survival. Operators could assist with educating the general public/recreational user by offering a few tours at a
cheaper price or having 'local rates'. Furthermore, anecdotal accounts suggest that the presence of operators in an area may deter others from actions harmful to the environment.

However, the benefit of educating visitors is largely untapped and is an issue which must be addressed. The Department of Conservation should assist tour operators in the establishment of interpretive programmes. Annual, short, intensive workshops should be run early in the tourist season, including components on introductory biology of key species, methods of interpretation and strategies to reduce the environmental impacts of tourism. Further research is needed to develop educational programmes which effectively manage tourists' behaviour and which result in longer-term attitude and behaviour change.

The management of coastal and marine tourism is extremely difficult. The approaches to environmental-tourism planning found in the literature are better suited to discrete areas under the authority of one control agency such as parks and reserves (section 3.2). However, the marine tourism industry in New Zealand is very diverse, encompassing numerous different activities over a wide geographical area. Despite this, New Zealand is well placed to plan for a sustainable marine tourism industry. It does not have the complex web of agencies and regulations characteristic of other countries. The Department of Conservation is the key conservation administrator and the New Zealand Tourism Industry Association and the New Zealand Tourism Board are the key industry players. These agencies must work in partnership to develop monitoring and education programmes, and to help develop industry-sector standards; DoC have the expertise to conduct impact monitoring and the NZTB have experience with industry standards.

6.3 Conclusions

New Zealand is endowed with spectacular coastal scenery and unique marine wildlife. Thus, marine-based tourism is likely to become increasingly important in New Zealand. Increasing potential exists for active pursuits such as sea kayaking and excursions that offer both natural history and historic interpretation. There is also potential for more passive tourism — diving, snorkelling, glass-bottomed boats, underwater observatories — given the number of newly created marine reserves.

Fortunately New Zealand has not suffered the extreme adverse impacts of tourism seen in coastal and marine environments in many parts of the world, although concern has been expressed about the impact of marine-based tourism in Milford Sound and Kaikoura. The relatively successful management of marine
tourism to date is potentially a result of the industry still being in its early stages of development. As the industry continues to grow there will be an increasing need for proactive, co-ordinated planning if negative impacts are to be minimised and the environmental, social and economic returns maximised.

This study gives an introduction to New Zealand's marine tourism industry. It covers a very diverse industry and does not attempt to give a definitive account of the environmental impacts of marine tourism. However, it is useful for providing generalised insights into marine tourism operations. If sustainable tourism is to be maintained it is vital that research and monitoring keep pace with rising tourist numbers. This research is needed as an input into management decisions and should incorporate social, economic and environmental parameters. Knowing the motives of users for visiting a place or engaging in particular recreational activities is essential for determining strategies for visitor impact management. More data on the economic benefits of marine tourism are needed if the industry is to be persuaded of the importance of channelling resources into conservation. Resistance to regulation by operators and the general public will be alleviated if management objectives are clear and polices are based upon robust, scientifically defensible research.

The main issues pertaining to the marine tourism industry are:

- The lack of studies monitoring the impact of marine tourism on wildlife;
- The lost opportunity to use resource interpretation as a management tool to enhance visitor experience;
- The lack of controls restricting the number of operators running marine-based tours; and,
- The lack of standards within each group of the industry.

Initiatives that could be taken include:

- Establish workshops to ensure operators have accurate information to include in a commentary;
- Allocation of financial resources by the tourism industry to supplement DoC funding of ongoing monitoring programmes assessing the industry on a case by case basis;
- Use the council licensing requirement to control the number of operators. A precautionary approach should be adopted until research can determine if any detrimental impacts are occurring; and,
- Encourage the development of industry-sector associations and codes of practice.
References


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Constantine, R. 1995. "Monitoring the commercial swim-with-dolphin operations with bottlenose (Tursiops truncatus) and common dolphins (Delphinus delphis) in the Bay of Islands, New Zealand". MSc Thesis, School of Biological Sciences, University of Auckland, Auckland.


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Heath, R.A. 1975. Oceanic circulation and hydrology off the southern half of South Island New Zealand. *NZOI Memoir No 72*.


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McCool, S.F. 1996. pers. comm. Recreation Management, School of Forestry, University of Montana, Montana.

McConkey, S. 1996. pers. comm. Department of Marine Science, University of Otago, Dunedin.


References


References


References


References


Wright, M. 1996. Ecotourism on Otago Peninsula. Preliminary studies of two species, yellow-eyed penguin (Megadyptes antipodes) and Hooker’s sea lion (Phocarctos hookeri). Department of Conservation, Dunedin.

Appendices

Appendix A

Marine Reserves, Proposals and Investigations (April 1996)

- Marine Reserve
- Formal Marine Reserve Application
- Marine Reserve Investigation
- Other Marine Protected Area

- Three Kings Islands
- Tarotui
- Bay of Islands
- Mimiwhangata Marine Park
- Poor Knights Is
- Motu Karoro I
- East Coast, Great Barrier I
- Cape Rodney–Okakari Pt
- Waitheke I, Hauraki Gulf
- Whanganui–a-Hei
- Tuhua (Mayor I)
- White IO
- Kaloura
- Paririnihi
- Sugar Loaf Is
- Marine Protected Area
- Westhaven (Te Tai Tapu)
- Kapiti I
- Te Angiagi
- Pukerua Bay
- Pauatahanui Inlet
- Wellington South Coast
- Kaikoura
- Eanks Peninsula
- Marine Mammal Sanctuary
- Akaroa Harbour
- Moeraki
- Jackson Head
- Inner Fiords & Sounds
- Nuggetts
- Paterson Inlet
- Ploplotahi (Milford Sound)
- Te Awaatu Channel
- (The Gut)

Department of Conservation
Te Papa Atawhai

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Kermadec Islands

Auckland Islands
Marine Mammal Sanctuary
APPLICATION FOR A PERMIT TO UNDERTAKE A COMMERCIAL MARINE MAMMAL OPERATION

Marine Mammals Protection Regulations 1992

NOTE: Pursuant to Sections 60A and 60B of the Conservation Act 1987, the Department of Conservation is authorised to recover all reasonable costs incurred in processing this application. You will be provided with an estimate of these costs once the application has been received by the Department. The Regional Conservator may also recover all reasonable costs under s. 60B of the Conservation Act 1987 that are incurred in administrating and monitoring the operation intended in this application, subject to its approval.

NOTE: When applying for this permit you should bear in mind that your application will be assessed under regulation 6 of the Marine Mammals Protection Regulations 1992, as set out below.

Criteria for issuing permits - Before issuing a permit, the Director-General shall be satisfied that there is a substantial compliance with the following criteria:

(a) That the commercial operation should not be contrary to the purposes and provisions of the Act;
(b) That the commercial operation should not be contrary to the purposes and provisions of the general policy statements approved under section 3B of the Act, conservation management strategies approved under section 3C of the Act, or conservation management plans approved under section 3D of the Act;
(c) That the commercial operation should not have any significant adverse effect on the behavioural patterns of the marine mammals to which the application refers, having regard to, among other things, the number and effect of existing operations;
(d) That it should be in the interests of the conservation, management, or protection of the marine mammals that a permit be issued;
(e) That the proposed operator, and such of the operator’s staff who may come into contact with marine mammals, should have sufficient experience with marine mammals;
(f) That the proposed operator, and such of the operator’s staff who may come into contact with marine mammals, should have sufficient knowledge of the local area and of sea and weather conditions;
(g) That the proposed operator, and such of the operator’s staff who may come into contact with marine mammals, should not have convictions for offences involving the mistreatment of animals;
(h) That the commercial operation should have sufficient educational value to participants or to the public.

NOTE: All information provided in this application will be used in a public submission process and will therefore be made available for public viewing.

NOTE: All aircraft and vessels, and their pilots and masters, must meet the statutory requirements relating to licensing and qualifications, as the case may require.

PLEASE attach any supporting documents and further pages if space is not adequate for the details required.
1. Name (Company, Partnership or Individual): ____________________________
__________________________________________________________________
Address: ____________________________________________________________
__________________________________________________________________
Postal Address (if different from above): ________________________________
__________________________________________________________________
Telephone - Business: _______ Private: _______ Fax: ________________
__________________________________________________________________
2. Species of all marine mammals with which the operation will have contact with: __________
__________________________________________________________________
__________________________________________________________________
3. Method of transport: (Tick)

☐ Boat       ☐ Aircraft       ☐ Other (Specify)

Details of proposed operation.

4. If transport is to be by boat, specify:
   (a) Total number of boats: ______
   (b) Maximum number of boats operating at any one time: ______
   (c) Description of boat(s): size, make, model, construction, motive power, carrying capacity:

   Boat 1: __________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

   Boat 2: __________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
Appendices

Boat 3:

________________________________________________________________________

(d) Details of all masters to be engaged in the commercial operation:

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<thead>
<tr>
<th>Surname</th>
<th>Given Names</th>
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(e) Please supply any known information relating to the noise level of each vessel both above and below the sea:

________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________

5. If transport is by aircraft, specify:

(a) Total number of aircraft: __________________________

(b) Maximum number of aircraft operating at any one time: __________________
(c) Type of aircraft (tick):

- [ ] Fixed wing
- [ ] Helicopter

(d) Make and model of aircraft, and identification number:

Aircraft 1: ________________________________
Aircraft 2: ________________________________
Aircraft 3: ________________________________
Aircraft 4: ________________________________

(e) Details of all pilots to be engaged in the commercial operation:

<table>
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<th>Surname</th>
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NOTE: Include the number of the air service certificate or other document under which the aircraft will be operating:

__________________________

(f) Please supply any known information relating to the noise level of each aircraft both above and below the sea:

__________________________

__________________________

__________________________

__________________________

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6. If application is for a shore-based operation, specify:
   (a) Total number of vehicles intended to be used: __________________________
   (b) Maximum number of vehicles operating at any one time: ________________
   (c) Make and model of vehicle, and registration number:
       Vehicle 1: ___________________________________________________________
       Vehicle 2: __________________________________________________________
       Vehicle 3: __________________________________________________________
   (d) The proposed route of persons to be guided to the colony of marine mammals:
       _________________________________________________________________
       _________________________________________________________________
       _________________________________________________________________
       _________________________________________________________________
   (e) Details of the guides to be engaged in the commercial operation:
       Surname             Given Names
       ___________________ _____________________
       ___________________ _____________________
       ___________________ _____________________
       ___________________ _____________________
       ___________________ _____________________
       ___________________ _____________________

7. Base of operation:
   ____________________
   ____________________

8. Please define the proposed area of operation (a map must be included), and where appropriate, the specific locations where contact with marine mammals is proposed:
   ____________________
9. (i) Frequency of trips (number of trips in a 24 hour period after 12am midnight. Specify times where possible):

(ii) Duration of trips:

(iii) Time of year:
Appendices

(iv) Maximum number of passengers or persons per trip:

________________________________________________________________________

10. Does your intended operation involve diving or swimming with dolphins or seals?
   □ Yes  □ No

11. Describe in detail a typical trip for your intended operation (this will include the type of activity, and contact with marine mammals):

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________

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12. Please set out the experience with marine mammals of the proposed operator and such of the operator's staff who may come into contact with marine mammals:
13. Please set out the knowledge of the local area and sea/weather conditions of the proposed operator and such of the operators staff who may come into contact with marine mammals (not applicable to shore-based operations):
14. Please set out details of any convictions of the proposed operator and of those employees of the operator who may come into contact with marine mammals, for offences against the Marine Mammals Protection Act 1978 or any other Act involving the mistreatment of animals:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

15. Please supply details or examples of any educational material to be provided, or educational aspects of the proposed operation:

________________________________________________________________________
16. Name, occupation, address and telephone number of two independent persons who will vouch for the applicant:

________________________________________

________________________________________

________________________________________

________________________________________

Signed: ____________________

Date: ____________________

POST TO: Your nearest Department of Conservation office, addressed to the Regional Conservator.
STATUTORY DECLARATION

This declaration must accompany the application and is to be signed by the applicant, or in the case of a company, by the Managing Director or Chief Executive. Where the application is being made by a partnership, each and every partner should make and sign the declaration in the form indicated below.

I/We

(i) ___________________________

(ii) ___________________________

(iii) ___________________________

(iv) ___________________________

(v) ___________________________

(Full Name[s])

of

(i) ___________________________

(ii) ___________________________

(iii) ___________________________

(iv) ___________________________

(v) ___________________________

(Place) (Occupation)

do [severally] solemnly and sincerely declare that all the information contained in this application form is true and correct, and I [we severally] make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths and Declarations Act 1957.

(i) ___________________________ (iv) ___________________________

(ii) ___________________________ (v) ___________________________

(iii) ___________________________

Signature(s) of declarant(s)

Declared at _______ this ______ day of ____________ 19__.

A Justice of the Peace or
A Solicitor of the High Court
(or other person authorised to take a statutory declaration)
Appendices

Appendix C

Codes of Practice for Tourism Operators
SEA KAYAK OPERATORS ASSOCIATION OF NEW ZEALAND

CODE OF PRACTICE FOR SEA KAYAK OPERATORS

INTRODUCTION

- These are minimum standards to be maintained by members of the Association. Individual operators can, and are encouraged to, exceed these standards to suit their specific conditions of operation.

- These standards will be revised on an annual basis by the Association.

THE OPERATOR SHOULD

- Screen all customers to ensure adequate experience/skill level.
- Brief all members of the group to which gear is being supplied, or which is being taken on a guided trip.
- Ensure all members of the group understand the trip plan.
- Ensure all members of the group are suitably equipped. Including adequate food, water, warm clothing, shelter and cookers.
- Provide kayaks and equipment suitable for the conditions possible in the paddling area.
- Have personal knowledge of the area, local conditions (incl. weather, tides and navigational hazards), and translate this into advice on trip planning and safety.
- Brief clients on safety and emergency procedures
- Explain the accepted "Environmental Impact Code", and explain the need for this.
- Get written and signed trip intention plan and written record of names and addresses of all members of the group.
- Make a clear statement of risks, and responsibilities of hirers
- Not to rent to solo paddlers.
- Ensure that guides and instructors briefing clients have the appropriate knowledge and experience for the area, and the conditions possible in the paddling area.

BRIEFING

A briefing is necessary for all members of a group. The briefing should cover all the following points, as a minimum.

- Appropriate clothing for the trip, both while paddling and camping.
- Use and fitting of kayaking gear, including; clothing, spraydeck and buoyancy aid.
- Food and shelter. Ensure adequate food and shelter for the nature of the trip, including emergency supplies.

Instruction should be given on the following:

- Use of equipment; kayak, rudder and foot pedals, flares, bailing devices, and other safety equipment as is provided.
- Landing and emergency techniques
- Emergency procedures and rescue techniques, including Deep Water Re-Entry.
- Paddling strokes
- Rafting up
- Weather, tides and wind.
- Local hazards.
- Local landing areas and camp areas
- Camp etiquette.
- Environment care.
- Rules of the road.
EQUIPMENT
All equipment provided must be of a design and material suitable for the conditions, and maintained in good order.
Equipment provided should include;
• Properly fitted personal flotation device, with a whistle.
• Spare paddle per group.
• Bailing device per kayak.
• Appropriate emergency flares per group.
• Paddle per person.
• Waterproof map, minimum of 2 per group.

KAYAKS
• All sea kayaks must be of a design suitable for the trip or activity, and the conditions it is possible to encounter.
• Must be built of suitable materials, to a high standards of workmanship.
• Must have either;
  • Positive buoyancy, or
  • Bulkheads and watertight hatchcovers, or
  • Pod cockpit and watertight hatchcovers.
• Must have sufficient attachment on the deck for all emergency equipment.

GUIDED TRIPS
There should be a Guide to Client ratio of no more than 1 : 8.

The operator is responsible for providing extra equipment including;
• 1st Aid Kit
• Repair Kit
• Emergency Food.
• Emergency Shelter.
• Emergency Clothing.

The guide is responsible for the safe operation of the trip, including;
• Safety
• Communication
• Route planning

OTHER
Appropriate licenses must be held if VHF radios are used.

*Adopted by the Sea Kayak Operators Association of New Zealand, 12 August 1993.*
A CODE OF PRACTISE FOR PATERSON INLET

For Charter Boats and Other Recreational Fishers

Paterson Inlet is a special area in the South. Highly regarded for it's natural beauty, clean, clear waters and rich marine life, it is a place to be enjoyed and valued.

In recognition of the special nature of Paterson Inlet, charter boat skippers have developed a code of practice for the Inlet. Charter boat skippers operating in the Inlet have agreed to follow the code of practise and encourage other recreational fishers to do the same. This code of practise provides guidelines that will ensure Paterson Inlet continues to hold its reputation as a place that offers a unique fishing experience in a beautiful and relatively undisturbed location.

1. Take only what you need - restrict your catch to 2-3 fish per person.
   Take a feed from the Inlet and leave some for another day. The long term sustainability of the resources is in everyone's interests.

2. If you want the daily bag limit, fish outside the Inlet.
   Enjoy the Inlet and sample it's fishers but don't abuse your right to fish. If you want to catch large quantities of fish, go outside the Inlet where fish stocks are more abundant and catch rates higher.

3. Remember that daily bag limits include the fish you eat at sea or at your campsite.
   The fish you eat are part of your daily bag limit. Don't abuse these limits. Catches are limited to ensure sustainability of the resource and ensure a future fishery for all to enjoy.

4. Discourage accumulation of catch.
   Encourage your clients to enjoy and appreciate the beauty and special nature of Paterson Inlet. Fishing should be part of this experience but don't spoil it by removing large quantities of fish and shellfish. Leave some for your next trip.

5. Your daily bag limit is the fish you catch yourself.
   Remember if you take the daily bag limit, you have to catch it yourself. A friend or relative can give you his/her catch but he/she cannot catch for you in addition to his/her own.

6. Fish in different places.
   By fishing in different areas you will avoid localised depletion. Spread your effort and be rewarded with good catches of quality fish.

7. Measure all fish and return undersize to where you got them (especially shellfish).
   It is important that fish and shellfish be carefully returned from the location you caught them. They may have specific habitat requirements that affect their survival. For example, undersize paua should be returned to the reef surface by hand the right way up.

   TIP: Put a mark on your knife so you can measure shellfish underwater. This will avoid the need to take them on deck to measure.

8. Take the first few legal size fish you catch.
   Don’t take large numbers of fish and shellfish and sort out only the largest. Take the first few legal size you catch. You will have less chance of killing or damaging fish you don't want.

9. Return small fish carefully, alive and unharmed.
   You should return fish as quickly and carefully as possible. These fish are next year's catch, so it is important to ensure their survival.

10. Take all rubbish home.
    Don’t spoil the beauty of Paterson Inlet by thoughtlessly discarding rubbish. Take it back home and dispose of it appropriately.

This poster has been produced by the Paterson Inlet Charter Boat Operators and the Paterson Inlet Fisheries Working Group in conjunction with MAF Fisheries South, and is sponsored by the Stewart Island Fisheries Association.
INTRODUCTION

New Zealand’s subantarctic islands comprise of 5 island reserves: the Antipodes, Bounty, Auckland, Campbell and Snares Island Groups.

Each of the reserves has a distinctive flora and fauna of international scientific importance.

These island reserves contain some of the world’s last remaining areas of vegetation unmodified by man or introduced animals.

They provide habitat and breeding areas for birds and marine mammals peculiar to the subantarctic regions.

The over-riding aim of management for these National Nature Reserves is to safeguard numbers, natural distributions and interactions of indigenous plants and animals.

Management plans have been prepared, approved and published for the Auckland, Campbell and Snares Island Groups. Management plans for the Antipodes and Bounty Island Groups have been prepared and approved.

These guidelines have been prepared to elaborate on the policies on tourism contained within the management plans.

The guidelines are intended to assist the Department of Conservation as managers of the reserves, tourism operators, and others wishing to visit the reserves.

DEFINITIONS

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 or interpretation capacity at the discretion of the Regional Conservator.

Guide: Is an individual employed by the tourism operator and responsible for persons visiting each island reserve in terms of their guidelines on tourism.

GUIDELINES

1  General Summary

1.1 All visits require an Entry Permit for which a permit fee and a visitor impact fee is charged by the Department of Conservation.

1.2 Tourist landings are excluded from the Antipodes, Bounty and Snares Island groups. Zodiac cruising without landing is permitted off these island groups.

1.3 Within the Auckland Island group tourism visits are only permitted on the main island (Auckland Island) and Enderby Island.

1.4 Within the Campbell Island group, tourist visits are restricted to the main island (Campbell Island).

1.5 Helicopter landings and overflying are not permitted without separate prior approval.

1.6 All tourist operators are required to carry $5 million NZ Public Liability Insurance as a condition of their entry permit to cover any eventuality that the NZ Government may be involved with (eg fire on islands, Search and Rescue, evacuation).

1.7 No tourist operators will be permitted to visit a tourist site on same day as another tourist operator.

2  General Conditions

2.1 The Department reserves the right to revoke any landing authority or change any landing site prior to departure.

2.2 All tour boats and tour ships must be accompanied by a departmental representative.

2.3 Yachts (non profit-seeking) must be accompanied by a representative or person accredited by the department.

2.4 Client safety/risk management is specifically the responsibility of the tourist operator and each operator is required to develop a safety plan which will set standards and practices to be followed by all principals and employees.
Appendices

(If requested, the operator will be required to submit their safety plan to Department of Conservation).

2.5 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).

2.6 Maximum of 600 people will be permitted to land at any one visitor site per year.

2.7 A maximum ratio of 20 visitors: 1 guide is to be maintained.

2.8 Each day’s programme must be approved by the Departmental representative prior to landing.

2.9 All tourist operations will be ship based with no overnight stays on the islands except in an emergency, or specifically authorised.

2.10 No collecting of specimens or souvenirs is permitted.

2.11 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 daypacks prior to landing on each island and immediately following their return from that island for quarantine purposes. The representative will not permit a visit until this has occurred.

2.12 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: 15 feet (5 metres) to all wildlife and seabirds, and 20 feet (7 metres) to marine mammals.

b) Give animals the right-of-way.

c) Stay on the edge of, and not walk through, animals groups.

d) Back-off where necessary. For example, if seabirds are exposing their nests (particularly while incubating eggs) there is a 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.
2.13 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 subantarctic bird populations.

2.14 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.

2.15 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.

2.16 No toilets are provided at any landing site for tourist use.

2.17 No rubbish (eg film wrappers, orange peel, tissues) must be left at any visitor site.

2.18 Smoking is not permitted whilst ashore on islands.

2.19 Historic sites and huts may only be entered when accompanied by the representative.

3 Auckland Island Group

3.1 Enderby Island

i) Due to the sensitivity of Hooker’s sea lions breeding at Sandy Bay, the representative may be required to place restrictions on party size and movements according to the location of breeding sea lions.

ii) All people are to keep off 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.

3.2 Main Auckland Island

i) 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, Epigwaitt and Lake Hinemoa.

4 Campbell Island Group

4.1 All landings are to be restricted to Perserverance 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.
Appendices

4.2 All access to the Campbell Island Meteorological Station is at the invitation of the Officer in Charge (OIC).

4.3 All tour operators are required to seek prior approval for visits to Campbell Island Met Station from NZ Meteorological Service.

4.4 Access north of Mt Fizeau and to Beeman Hill is restricted.

4.5 Parties of visitors are only permitted travel overland as approved by representative.

Approved
Kerry Mawhinney
Regional Conservator

Date: ____/____/____
Introduction

Under the Marine Mammal Protection Regulations 1992 (promulgated under the Marine Mammal Protection Act 1978) the Department of Conservation is responsible for the regulation of human behaviour around marine mammals. The behaviour of all persons around marine mammals is governed by these regulations. In particular a system of Marine Mammal Permits has been set up for commercial tour operators.

Regulations 18 to 20 specifically list conditions governing the commercial operations, and the behaviour of all persons. Regulation 6 states criteria which require substantial compliance before the Director-General will issue a permit under these regulations. Commercial marine mammal operators should be fully conversant with all requirements of regulations 18-20.

This code of conduct defines in more detail the conduct of operators and the people within their responsibility that is expected by the Otago Conservancy in order to protect the welfare of all marine mammals on the coast.

The code reflects the intent of the Act and Regulations, but is not in itself a legal or policy document. Conditions on any permit (including details given in any approved application) and the Marine Mammals Protection Regulations have legal authority and would prevail in the event of any conflict. Compliance with the code is therefore not a requirement (unless it is included as part of an approved application). However, Regulations 6 and 12(3) require the Director-General to be satisfied with a number of specified matters before issuing any permit, and agreement to comply with this code will help to ensure that these matters are satisfied. The Otago Conservancy recommends that any applicant for a marine mammal watching permit includes the code as part of their application.

As an alternative, it may be possible, through consultation with the Conservancy for operators to develop their own code of conduct or further develop or modify the existing one.

An agreed Code of Conduct for marine mammal watching is in the interests of the animals, the operators and the Department. The Department therefore invites all applicants and permittees to give their agreement in writing to abide by this code. Comments on the code from interested parties are also welcomed.

[ Note: The following code should be read in conjunction with the Marine Mammals Protection Regulations 1992 ]
The operator must exercise special caution when approaching pods containing juvenile dolphins, including slowing the boat to speeds less than 10 knots, and avoiding "reluctant" pods. [Note: Juvenile Hector's dolphins are recognised by a darker grey body coloration, a yellowish tinge to the white areas, and 4-6 pale vertical bands on their flanks which disappear 3-6 months after birth] "Reluctant" pods refers to dolphins which actively avoid approaches by boats, i.e. swim away.

Vessel operators should avoid getting between a mother and her calf.

The vessels shall not approach closer than 10 metres to the shore where seals are known to be present.

Swimmers must not climb onto rocks where seals are known to be, except in an emergency.

The operator shall promptly move the boat away from "reluctant" dolphin pods or individuals that are not attracted by the presence of a boat. Should there be no response from any one of the group, a restriction of three approaches applies. After three approaches with no response, the vessel shall refrain from further approaches.

Loud horns to call swimmers back to the boat should not be used around seal colonies. The present regulations do allow this, but this should only be in an emergency.

The permittee shall ensure that the vessels and their masters meet the statutory requirements relating to the licensing and safety of the vessels and to the qualifications and licensing of the masters.

Shore-based operations

Where several persons approach or pass a fur seal or colony or a New Zealand sea lion or colony, they shall move together in a close group or one after the other, all taking the same route.

All persons shall approach fur seals or colonies by walking along the upper shore, to allow the seals free access to the sea.

All persons shall move no faster than walking pace within 100 m of any seal, except in an emergency.

All persons must not walk through fur seal colonies. If the situation allows persons to pass a colony by walking along the upper shore, operators shall ensure that all persons walk directly, while keeping a low profile.

If en-route across reefs to see seals, select a path that avoids or detours away from breeding seals or young pups.
Appendix D

General Codes of Practice
(developed by the Department of Conservation)
WATER CARE CODE
10 POINT CHECKLIST

FIND OUT FIRST
Find out and follow the regulations governing recreational use of waterways and access. They are designed to minimise conflict between users and protect everyone's health and safety.

STAY ON ESTABLISHED TRACKS AND USE EXISTING FACILITIES
By using existing facilities, where these are provided, you run less chance of disturbing wildlife and damaging riverbanks and foreshores.

TAKE CARE OF YOUR GEAR
Careless use of equipment can harm wildlife and other users.

REMOVE RUBBISH
Litter is unattractive, harmful to wildlife and pollutes water. Plan your visit to reduce rubbish, and carry out what you carry in.

DISPOSE OF TOILET WASTE PROPERLY
Improper disposal of toilet waste can contaminate water, damage the environment, and is culturally offensive. Use disposal facilities where provided or bury waste in a shallow hole at least 50 metres away from waterways.

BE CAREFUL WITH CHEMICALS
Use chemicals sparingly, and refuel with care. Dispose of cooking and washing water well away from the source.

RESPECT OUR CULTURAL HERITAGE
Many New Zealand waterways have special cultural, spiritual or historical values. Treat these places with consideration and respect.

TAKE ONLY THE FOOD YOU NEED
When taking food from the sea or freshwater don't overdo it. Sustain life in our waterways by taking only what you need and no more than the legal limit.

CONSIDER PLANTS AND ANIMALS
Remember we are only visitors to water environments. Other animal and plant species live there all the time.

CONSIDER OTHER PEOPLE
Respect other visitors ... everyone has the right to enjoy the environment in safety.

Toitu te marae a tane
Toitu te marae a tangaroa
**DOLPHIN CARE CODE**

Dolphins are wild animals and should not be fed, as this may encourage them to take other foreign and potentially harmful objects.

Only interact with dolphins if they want to play. If they avoid contact or move away, respect their wishes and observe them from a distance.

Let the dolphins come to you. Lunging or grabbing will only frighten them away.

Please be gentle. A dolphin's skin, tail and dorsal fin are easily damaged. If they let you touch them, gently touch the side of their body, but not their bead, fins or tail.

Help keep their home clean. Do not throw rubbish into the sea. If you find rubbish floating in the sea or on the shore, take it home with you for disposal. Take particular care when refuelling boats, as spill petrol or diesel can burn a dolphin's skin. If your vessel has a holding tank, please refrain from emptying it while in enclosed waters.

If operating a boat, be particularly careful when around dolphins. Keep your speed to a minimum and avoid making sudden or repeated changes in direction. Approach a dolphin from a direction parallel to its course and slightly to the rear. Travel no faster than the slowest dolphin in the pod.

Nets can be lethal to dolphins. Please avoid setting nets where dolphins are known to be.

Co-operate with others so that all may see the dolphins without putting them at risk. Please do not approach any closer than 300 metres to a pod if three or more vessels are already within this zone. Wait for the dolphins to come to you.

Avoid wearing suntan lotions and insect repellent if swimming with the dolphins as chemicals can irritate a dolphin's eyes.

Remember that dolphins have sensitive hearing. Banging objects together or throwing things will not attract them but rather, frighten them away.

Enjoy your encounter with the dolphins, but remember they are wild creatures and it is a privilege to be with them. Respect this privilege.

NOTE: Under the Marine Mammals Protection Act 1978 it is an offence to disturb or harass any marine mammal.

Sponsored by: Fullers Northland Mobil
New Zealand Environmental Care Code

10 point checklist

Protect Plants and Animals. Treat New Zealand’s forests and birds with care and respect. They are unique and often rare.

Remove Rubbish. Litter is unattractive, harmful to wildlife and can increase vermin and disease. Plan your visits to reduce rubbish, and carry out what you carry in.

Bury Toilet Waste. In areas without toilet facilities, bury your toilet waste in a shallow hole well away from waterways, tracks, campsites, and huts.

Keep Streams and Lakes Clean. When cleaning and washing, take the water and wash well away from the water source. Because soaps and detergents are harmful to water-life, drain used water into the soil to allow it to be filtered. If you suspect the water may be contaminated, either boil it for at least 3 minutes, or filter it, or chemically treat it.

Take Care with Fires. Portable fuel stoves are less harmful to the environment and are more efficient than fires. If you do use a fire, keep it small, use only dead wood and make sure it is out by dousing it with water and checking the ashes before leaving.

Camp Carefully. When camping, leave no trace of your visit.

Keep to the Track. By keeping to the track, where one exists, you lessen the chance of damaging fragile plants.

Consider Others. People visit the back country and rural areas for many reasons. Be considerate of other visitors who also have a right to enjoy the natural environment.

Respect Our Cultural Heritage. Many places in New Zealand have a spiritual and historical significance. Treat these places with consideration and respect.

Enjoy Your Visit. Enjoy your outdoor experience. Take a last look before leaving an area; will the next visitor know that you have been there?

Toitu te whenua
(Leave the land undisturbed).

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Wellington
1991

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Appendix E

List of Visitor Information Centres

- Kaitaia Visitor Information
- Dargaville Visitor Information
- Whangarei Visitor Bureau
- Thames Information Centre
- Whitianga Information Centre
- Warkworth Visitor Information Centre
- Auckland Information Bureau
- Tauranga Information Centre
- Mount Maunganui Information Centre
- Whakatane Information Centre
- Opotiki Visitor Information Centre
- Eastlands and Gisborne District Information
- Napier Visitor Information
- Hastings Visitor Information
- New Plymouth Information Centre
- Wellington Information Centre
- Picton Information Centre
- Nelson Information Centre
- Marlborough District Council
- Motueka Information Centre
- Kaikoura Information Centre
- Westland Visitor Information
- Westport Visitor Information Centre
- Greymouth Information Centre
- Punakaiki Visitor Centre
- Christchurch/Canterbury Visitor Centre
- Timaru District Promotions
- Dunedin Visitor Centre
- Fiordland Travel Ltd
- Invercargill Visitor Information Centre
Survey on

THE ENVIRONMENTAL IMPLICATIONS OF MARINE TOURISM IN NEW ZEALAND

This questionnaire is divided into three sections:

Section 1 - contains a series of questions about your tour operation

Section 2 - deals with your perception of how the tourism industry can be sustained

Section 3 - deals with environmental issues involved with marine tourism

Please begin at question number one, Section 1, and proceed through the questionnaire following the instructions that accompany each question. In nearly all cases you are simply asked to circle the appropriate number, tick the appropriate box or write an answer. Your answers will be treated in the strictest confidence and will only be presented in the form of a statistical summary.

Thank you most sincerely for the time and effort you spend in assisting this research. The questionnaire takes about 15 minutes to complete.
Section 1: Details regarding your tour operation

1. Please tick the appropriate box/boxes to show where your tour operates?

1) Bay of Islands
2) Whangarei
3) Auckland
4) Coromandel
5) Bay of Plenty
6) East Coast
7) Hawkes Bay
8) Taranaki
9) Wellington
10) Nelson-Marlborough
11) West Coast
12) Kaikoura
13) Canterbury
14) Otago
15) Fiordland
16) Southland
17) Stewart Island
18) Sub Antarctic Islands
19) Other

2. The following activities may be undertaken by marine tourists. For each activity please circle the appropriate number to show how often the people you take on your tour participate in the activity.

<table>
<thead>
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<th>Activity</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Never</th>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Beachcombing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Visiting aquaria</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Other (what kind?)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

3. What are the key attractions people on your tour have the chance to see? (Please mention up to five)
4. How many years has your tour operation been in business?

______ years

5. How many tourists have been on your tours in the past 12 months?

______ tourists

6. What is the price of a fare for one adult? Please fill in any of the boxes that may apply to your tour. If you have more than one type of tour just give information for the most popular tour.

<table>
<thead>
<tr>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 hour tour</td>
</tr>
<tr>
<td>2 hour tour</td>
</tr>
<tr>
<td>1/2 day tour</td>
</tr>
<tr>
<td>1 day tour</td>
</tr>
<tr>
<td>2 day tour</td>
</tr>
<tr>
<td>1 week tour</td>
</tr>
<tr>
<td>other (please specify)</td>
</tr>
</tbody>
</table>

7. Please tick the boxes to show which months are your peak times for tourist numbers.

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[ ]</td>
<td>[ ]</td>
<td></td>
<td></td>
<td>[ ]</td>
<td></td>
<td>[ ]</td>
</tr>
</tbody>
</table>

8. Please tick the boxes to show which months are your quiet times for tourist numbers.

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Does your operation temporarily close for 2 weeks or more at any time during the year?

Yes [ ]     No [ ]

[If not, go to Question 12]

10. Please tick the boxes to show which months your tour operation is closed.

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

11. What is the reason for the closure?

1) Unsuitable weather conditions ........................................ [ ]
2) Insufficient number of tourists ........................................ [ ]
3) Sensitive period for species ........................................... [ ]
4) Movement of species away from the area ........................... [ ]
5) Other commitments that you have .................................... [ ]
6) Maintenance .......................................................................... [ ]
7) Other (please specify) ......................................................... [ ]
12. Please write in the number of each type of vehicle/vessel you have operating on your tour, and then the total maximum passenger carrying capacity for each type of vehicle/vessel in the boxes below.

<table>
<thead>
<tr>
<th>Number of vessels/vehicles</th>
<th>Total passenger carrying capacity of this type of vessel/vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Powered Boat</td>
<td></td>
</tr>
<tr>
<td>2) Yacht</td>
<td></td>
</tr>
<tr>
<td>3) Kayak/Canoe</td>
<td></td>
</tr>
<tr>
<td>4) Aircraft</td>
<td></td>
</tr>
<tr>
<td>5) Coach/Bus</td>
<td></td>
</tr>
<tr>
<td>6) Minivan</td>
<td></td>
</tr>
<tr>
<td>7) Powered Bike</td>
<td></td>
</tr>
<tr>
<td>8) Other (please specify)</td>
<td></td>
</tr>
</tbody>
</table>

13. In the appropriate boxes below please give the number of people, including yourself, who work for the company.

<table>
<thead>
<tr>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Permanent full time (40 hrs/week all year)</td>
</tr>
<tr>
<td>2) Permanent part time (less than 20 hrs/week all year)</td>
</tr>
<tr>
<td>3) Seasonal full time (40 hrs/week during peak season)</td>
</tr>
<tr>
<td>4) Seasonal part time (less than 20 hrs/week during peak season)</td>
</tr>
</tbody>
</table>

Section 2. Your perception of how the tourism industry can be sustained

14. How many other operators offer a similar tour to yours within approximately a 50 km radius of where you operate?

[ ] __________ other tour operators

15. Environmental carrying capacity refers to the level of tourist activity an area can sustain before the resource begins to deteriorate. Thinking about environmental carrying capacity, how do you feel about the total number of tours currently operating in your geographical area(s). Please tick the appropriate box below.

- Far too many [ ]
- Slightly too many [ ]
- About the right number [ ]
- Room for more [ ]
- Room for many more [ ]
- Don’t know [ ]
16. Some people suggest that the number of tourists could be significantly increased from the current 1.3 million tourists a year to 3 million by the year 2004? A number of commentators see both advantages and disadvantages in reaching this target. How strongly do you agree with the statements listed below?

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>An increase in tourist numbers will increase foreigners awareness of New Zealand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2)</td>
<td>An increase in tourist numbers will be of significant economic benefit to New Zealand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3)</td>
<td>An increase in tourist numbers will generate increasing employment opportunities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4)</td>
<td>An increase in tourist numbers will lead to a noticeable deterioration of New Zealand’s environment.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5)</td>
<td>An increase in tourist numbers will decrease the quality of the &quot;New Zealand experience&quot; for the individual tourist</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6)</td>
<td>An increase in tourist numbers will result in tension between locals and tourists in your locality</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7)</td>
<td>Local communities in your area will become overwhelmed by the number of tourists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

17. Do you think the current management of marine tourism is adequate?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>At the national/political level</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>2)</td>
<td>At the local authority level</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>3)</td>
<td>At the level of self management by industry operators</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

18. Please rate how useful you think the techniques listed below would be in managing your type of tour in the future.

<table>
<thead>
<tr>
<th></th>
<th>Extremely useful</th>
<th>Very useful</th>
<th>Neutral</th>
<th>Not very useful</th>
<th>Not at all useful</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Quotas limiting the number of visitors to New Zealand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2)</td>
<td>Restrictions limiting the number of operators</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3)</td>
<td>Limit the number and size of vessels involved in tourist operations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4)</td>
<td>Increasing the price of tours to limit the number of tourists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5)</td>
<td>Allow tourism at designated sites only so other sites remain untouched by tourist activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendices

<table>
<thead>
<tr>
<th></th>
<th>Extremely useful</th>
<th>Very useful</th>
<th>Neutral</th>
<th>Not very useful</th>
<th>Not at all useful</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Disperse tourist activity to provide more sites catering for a smaller number of tourists at each site</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Charge all operators a levy (in addition to any Department of Conservation levies that may apply) to be used to help protect New Zealand's environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>Charge international tourists a green tax or levy to be used to help protect the environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Quality control and surveillance of tourist operations with penalties and bonds placed on operators that do not meet a certain environmental standard</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>Removal of operating licenses after several transgressions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>Industry self management through private operators developing voluntary standards with appropriate recognition for the operator eg. a &quot;green label&quot;</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>Ongoing environmental impact assessments to monitor the effect of tourism on the environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>All tours must have an approved educational component to increase the tourists appreciation and understanding of the natural environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>All tours must conform to a &quot;tour guide to tourist ratio&quot; set by an outside authority so individual tourists can be controlled more readily and their impacts minimised</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>New legislation that relates specifically to managing the environmental impact of tourism</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>Department of Conservation concessions or permits to view species such as penguins and gannets, similar to the permits currently required to view marine mammals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>Allocation of resource quotas (or right of access) to private operators with the fee paid into a conservation fund. The number of quotas available dependent on the environments capacity to cope with tourist activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendices

19. Do you think that marine tourism needs to be regulated anymore than it currently is?

Yes [ ]  No [ ]  Don’t know [ ]

20. What major agency do you think should have prime responsibility in regulating marine tourism in New Zealand?

1) New Zealand Tourism Board ................................................................. [ ]
2) Private operators .................................................................................. [ ]
3) Department of Conservation ................................................................. [ ]
4) Local government .................................................................................. [ ]
5) A new management body consisting of representatives from all of the above groups [ ]
6) Other (please specify) ........................................................................ [ ]

Section 3: Your environmental concerns with regard to marine tourism

21. Which of the following marine attractions in your locality seem to be particularly vulnerable to pressure from tourists?

1) Rocky reefs ......................... [ ]  14) Sharks................................. [ ]
2) Rocky beaches..................... [ ]  15) Marlin............................... [ ]
3) Sandy beaches..................... [ ]  16) Reef fish ......................... [ ]
4) Saltmarsh ................................. [ ]  17) Shags .............................. [ ]
5) Sand dunes ................................. [ ]  18) Albatrosses .................. [ ]
6) Estuary/inlet/harbour ................. [ ]  19) Penguins ......................... [ ]
7) Fiord ................................ [ ]  20) Gannets ............................ [ ]
8) Mangroves ................................. [ ]  21) Sea lions ....................... [ ]
9) Seaweeds ................................. [ ]  22) Fur seals ....................... [ ]
10) Scallops ................................ [ ]  23) Dolphins ......................... [ ]
11) Mussels ................................. [ ]  24) Whales ............................ [ ]
12) Paua ................................ [ ]  25) Any other species .......... [ ]
13) Oysters ................................. [ ]

22. Please indicate how much of a detrimental environmental effect you feel the following actions could potentially have on the animals or habitats visited during tours like yours.

<table>
<thead>
<tr>
<th>Action</th>
<th>Major detrimental effect</th>
<th>Moderate detrimental effect</th>
<th>Minimum detrimental effect</th>
<th>No detrimental effect</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Noise and vibration disturbing animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2) The trampling of plants and animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3) The removal of plants and animals through collecting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4) The flash from cameras disturbing animal behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5) The feeding of animals by tourists changing their natural feeding behaviour</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### Appendices

<table>
<thead>
<tr>
<th></th>
<th>Major detrimental effect</th>
<th>Moderate detrimental effect</th>
<th>Minimum detrimental effect</th>
<th>No detrimental effect</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Animals being disturbed by being touched</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Animals being scared off by the presence of tourists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Attractive, natural sites becoming overcrowded with tourists</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>The construction of barriers, fences and trails detracting from the natural beauty of the environment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Increasing amounts of litter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

23. Do you have any other concerns regarding the future growth of the marine tourism industry in New Zealand and its impact on the environment?

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

24. May I contact you if I have any queries about your response to this questionnaire? The confidentiality of all replies will be strictly observed.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Name __________________________________________________________
Address _________________________________________________________
Contact phone _________________________________________________
Contact fax _____________________________________________________

Thank you for your co-operation in this research, it is very much appreciated. Now all that remains for you to do is put the questionnaire in the prepaid envelope supplied and post it.

Thanking you once again.

Susan McKegg
DEPARTMENT OF MARINE SCIENCE
Appendices

Appendix G

Questionnaire Covering Letter

Department of Marine Science
University of Otago
PO Box 56
Dunedin
Ph (03) 479 8308
Fax (03) 479 8336

Date
Name
Address
Telephone

The Environmental Implications of Marine Tourism in New Zealand

Dear

The enclosed questionnaire is part of an Otago University study designed to establish the current status of marine tourism in New Zealand and identify your perceptions of the industry, both positive and negative. The issue of sustainable tourism has become an increasingly topical subject as economic and political pressure mounts to increase the number of tourists visiting New Zealand.

This study is the first of its kind to focus specifically on marine tourism in New Zealand and will provide a baseline for future research in the area. This research is essential because an understanding of the environmental implications of tourism is a pre-requisite to sound management.

The questionnaire has been sent to every marine tour operator in the country. Your reply will be treated in the strictest confidence. No individual details will be divulged and your answers will simply be used for statistical purposes.

The questionnaire only takes about 15 minutes. In nearly all cases you are simply asked to circle the appropriate number, tick the appropriate box or write in an answer. I have enclosed a stamped addressed envelope for your reply.

Your participation is very important to the success of this research and it also enables you, as a tour operator, to have an input into the future management of tourism.

Thank you very much for your help, it is greatly appreciated.

Yours sincerely,

Susan McKegg
Survey manager
Appendix H

Case Study Survey Forms

Administrator Survey: Department of Conservation

<table>
<thead>
<tr>
<th>Objective</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify marine tourism resources in the area</td>
<td></td>
</tr>
<tr>
<td>Identify management of marine tourism resources in the area</td>
<td></td>
</tr>
<tr>
<td>Compare management strategies between areas</td>
<td></td>
</tr>
</tbody>
</table>

Person Interviewed

Position

Telephone/Fax number

- How many permits and concessions regarding marine wildlife are currently issued?

- Talk to concession administrator (conditions, price, length of time valid, renewal rights, environmental impact assessments)

- What species and habitats do you think are of concern with regard to tourism (high profile species and habitats)?

- What species/habitats are you aware of in the area with no strict legal protection (ie not covered by concessions or permits) and yet still targeted by tour operators?

- How is tourism managed in the conservancy (staff and time involved, liaison with operators)?

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- Are there any monitoring projects or programmes currently underway or planned to assess the impact of tourism on resources?
  yes..........[ ] no..........[ ]

If yes-what species/habitats, methods, who by, duration of study?________________________________________________________

If not-why? ____________________________________________________

- Are there any plans to start monitoring?
  yes..........[ ] no..........[ ]

- Do you have a record of any public complaints with regard to tour operators
  yes..........[ ] no..........[ ]

If yes, how was it dealt with? (could I have a look)_____________________________________________________________

- Liaison with the operators, how much contact and control does the Department have over the operators?
  ____________________________________________________________
-What co-ordination does the Department have with other relevant bodies in order to develop integrated, comprehensive policies towards wildlife tourism?

-Regulation; the development of standards, regulations, guidelines governing the operation of wildlife tourism operations

Are there any areas/species/habitats considered inappropriate for marine tourism activities?

  yes.............[ ]    no.............[ ]

If yes, what?

Administrative boundaries often do not adhere to ecological boundaries. Are there any sites of importance to marine tourism that span the jurisdiction of more than this particular conservancy?

  yes.............[ ]    no.............[ ]

If yes, what?

Do you think there is potential or opportunities for growth in the marine tourism industry in your area.

  yes.............[ ]    no.............[ ]

If yes, what?
### Appendices

**Operator Survey**

**Objectives**

- Identify the history of the operation
- the resources upon which the operation is based
- regulations governing the operation
- how the operation is run

<table>
<thead>
<tr>
<th>Operation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Person Interviewed</td>
<td></td>
</tr>
<tr>
<td>Position</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone/Fax number</td>
<td></td>
</tr>
</tbody>
</table>

**History**

- How long have you known about the resource upon which the operation is based?
  - _________ years

- How long after knowing about the resource was the operation set up?
  - _________ years

- What kind of knowledge of the resource base did you have before the operation began?
  -  

- How did you go about setting up the operation (procedure eg which agencies had to be approached etc)?
  -  

- Why did you set up the operation?
  - protect a species ................................... [ ]
  - create jobs ........................................ [ ]
  - responding to demand ................................... [ ]
  - creating a product that creates a market .... [ ]
  - lifestyle opportunity ................................... [ ]
  - other ........................................ [ ] specify,  

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-What are the plans for the future of the operation?
  greater tourist numbers................. [ ]
  character of the trip .................. [ ]
  more assets/employees ................. [ ]
  other ....................................... [ ] specify ____________________________

Resources
-What are the major wildlife resources on which this operation is based?

______________________________________________________________________________

______________________________________________________________________________

- On an average trip what is the character of the wildlife seen at this operation in terms of;
  the range of species seen
  the proximity of the wildlife
  the naturalness of the setting

- Do you think this operation is having any negative effects upon the wildlife or habitats targeted?
  yes.........[ ] no...........[ ]
  If yes, what? ________________________________________________________________

Do you think there are any other threats to the resource?
  yes.........[ ] no...........[ ]
  If yes, what? ________________________________________________________________

- Do you monitor the resources (species counts, presence/absence records etc)?
  yes........[ ] no..........[ ]
  If yes, how? ________________________________________________________________

- Do you follow a formal code of practice and review your environmental performance/standards accordingly?
  yes.........[ ] no...........[ ]
  If yes, how? ________________________________________________________________

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Do you see potential or opportunities for growth in your particular market?

yes............[ ] no............[ ]

-Do visitors ever express concern about the impacts they may potentially cause?

yes............[ ] no............[ ]

If yes, what? ____________________________________________________________

- Are the tourists told how to behave in order to reduce potential impacts?

yes............[ ] no............[ ]

- Do you have a formal code of conduct or rely on common sense?

formal code .............................................. [ ]

common sense ........................................... [ ]

- What kind of visitors participate in the tour (keen wildlife enthusiasts-->allsorts)?

Management

Access

- Can access to the wildlife or area only be gained via this operation, or can it be achieved privately?

Only via the operation ..................[ ]

Privately ..............................................[ ]

- User-group conflict. Do you have a problem with other sector groups (eg private boaties, commercial fishers etc) that utilise the same resources as your operation?

yes............[ ] no............[ ]

If yes, what? ____________________________________________________________

Permit

- Legislative or regulatory requirements (permits, concessions, RM consent) needed to operate

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- What type of permit do you hold to run the operation
  - concession [ ]
  - marine mammal permit [ ]
  - other [ ]

- How long is permit valid for?
  __________ years

- Conditions of the permit (can I see it) ______________________________

- Liaison with DoC, any gripes, are they fulfilling their mandate to protect the environment? __________

- Ideas for improved management ______________________________

**Staff**

- How are staff selected and trained in environmental matters, interpretation of the environment and tourist control? ______________________________

- Do you find it difficult to find people with the right skills and knowledge of the environment?
  yes [ ] no [ ]

- Do you have a set tour guide to tourist ratio?
  yes [ ] no [ ]

  If so, what? ______________________________

- Do you ever need to limit visitor numbers?
  yes [ ] no [ ]
## Researchers Assessment of the Tour

<table>
<thead>
<tr>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify significant features and critical areas</td>
</tr>
<tr>
<td>- potential and current use of these resources</td>
</tr>
<tr>
<td>- potential impacts</td>
</tr>
<tr>
<td>- research and monitoring requirements</td>
</tr>
</tbody>
</table>

### Operation

### Vessel description

### Number of visitors on the tour

1. How are the visitors introduced to the tour?

2. Are tourists informed on how to behave around the wildlife and controlled around the wildlife
   - yes [ ]
   - no [ ]

3. Make a note of the provision of educational material on the tour.

4. List type of species or habitat encountered

5. Behaviour at time of encounter
   - feeding [ ]
   - nesting [ ]
   - courting [ ]
   - protecting juveniles [ ]
   - mating [ ]
   - resting [ ]
   - travelling [ ]
   - other [ ]
- Note any potential for disturbance (possible long term, accumulative effect -> minimal)

- Note the number of other operators and private viewers encountered on the tour visiting the same attraction
  ______ operators
  ______ private viewers

- Note the approximate distance of vessel/visitors from animals
  ________ metres

- What actions are taken to minimise environmental risk

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Appendix I

Example of a Sighting Report Completed by Marine Mammal Operators

Crew: ........................................................................................................................................
Date: ..........................................................................................................................................
Time: ...........................................................................................................................................
Trip: ............................................................................................................................................... 
Pax No: .........................................................................................................................................
Time taken to locate: ......................................................................................................................
NM to locate: .................................................................................................................................
Location: ....................................................................................................................................... 
Grid reference: ..............................................................................................................................

Species: Species 1 ...................................................................................................................................... Species 2
Total Number: ..................................................................................................................................... 
Juveniles: .......................................................................................................................................... 

Behaviour
Feeding Playing Travelling
Mating Resting

Reaction to vessel/behaviour:
......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................

Vocalisations:
....................................................................................................................................................
....................................................................................................................................................

Duration of Encounter:
Encounter ended by:
.....................................................................................................................................................
.....................................................................................................................................................

No. of swimmers: ............................................................................................................................
Reaction to swimmers:
....................................................................................................................................................
....................................................................................................................................................
....................................................................................................................................................
....................................................................................................................................................

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Appendix J


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Tourism is the fastest growing sector of the New Zealand economy and accounts for more than $NZ 3.84 billion in foreign exchange. New Zealand’s tourism is based predominantly on scenic attractions, wildlife and natural resources. The country has a diverse and relatively pristine marine environment and it is likely that coastal and marine tourism will become increasingly important. However, the marine species and habitats targeted by tourism need to be identified and environmental implications assessed if this growth is to be managed sustainably.

This study investigated the current status of marine tourism in New Zealand, with particular regard to environmental issues and options. The term marine tourism was used to include all commercial operations visiting natural areas for the purpose of diving, recreational fishing, tour boating and cruises, and the viewing of seabirds and marine mammals. A mail-out questionnaire sent to all (~380) commercial operators was used to profile the industry. The major types of operation were identified as were the key areas, species and habitats targeted by each.

New Zealand’s marine tourism industry is still in its infancy; most operations are small, locally controlled businesses, and have evolved within the past five years. Wildlife viewing is the most common activity, with more than 44% of operators noting marine mammals and 78% seabirds as their key attraction.

Introduction

In response to the demand for travel and adventure, tourism is now the world’s largest and most rapidly growing industry (Miller and Kirk, 1993; Snow, 1990). In line with this trend, tourism is New Zealand’s fastest growing industry and its largest earner of foreign exchange, contributing close to $NZ4 billion in 1995. A thriving domestic tourism industry generates a further $NZ4 billion a year, making tourism worth some $NZ8 billion a year, and contributing more than 5% to the country’s gross national product (NZTB, 1995). This growth rate for tourism is somewhat higher than the current world average of 3.8% per annum (Endicott, 1996). For the year ended June 1995, visitor arrivals to New Zealand were 1.37 million, an increase of 11% over the previous year. It is projected that the annual number of overseas visitors will exceed 2 million by the turn of the decade (NZTB, 1995). By comparison, New Zealand’s current population is only 3.5 million (Statistics New Zealand, 1995).

New Zealand (269 000 km\(^2\)) lies in the southwest Pacific and comprises two main islands (North and South) at temperate latitudes (~34-47° S). The country also includes, however, a number of smaller islands from the subtropics to the subantarctic. New Zealand has a diverse marine environment and an intricate coastline some 15000 km in length. By world standards much of the country’s coastal and marine environment is pristine or still relatively unimpacted by human activity. An estimated 483 000 international visitors participated in marine tourism related activities in 1993 (NZTB, 1992/1993). Whilst this represents only 27% of the total visitors surveyed, it is expected that coastal and marine tourism will become increasingly important. For instance, in the same survey scenic boat cruises (and short bush walks) were identified as the most popular activities.
Appendices

The predominant style of tourism in New Zealand is based on wildlife, wildlife areas and scenic beauty, with nature-based tourism given considerable prominence in New Zealand's domestic and international marketing strategies. With the rapid expansion and diffuse nature of tourism in New Zealand there has been very little documentation of the extent of marine tourism in the country. It is thus imperative that the marine species and habitats targeted by tourism are identified and environmental implications assessed if this growth is to be managed sustainably.

This paper documents the current status of marine tourism and quantifies the major types of attractions and activities. In addition it addresses some of the issues regarding the sustainability and future growth of the industry.

Methods

For this study marine tourism was defined as commercial operations visiting natural areas for the purpose of diving, fishing, marine mammal and seabird watching, cruising and tour boating. A survey of all marine tour operators was conducted during September and November 1995. Names and addresses of operators were obtained by writing to all the visitor information centres in New Zealand that have a coastal interest. In addition, a search was made through the Yellow Pages of all the telephone directories under the key word/-phrases "charter services-boat and launch charter, divers and diving tuition, fishing trips, tourist attraction and tour services, sightseeing and excursions". A direct mail survey was selected as the most appropriate and economic method for collecting the data given the large number of tour operators dispersed throughout the country.

A total of 376 operators were initially identified as having some type of marine attraction component included in their tour. To maximise the response, stamped return-addressed envelopes were provided, and follow-up telephone calls were made to all those who had not returned completed questionnaires after three weeks. Twenty-seven surveys were returned as undeliverable. The possible survey sample was therefore reduced to 349. A total of 190 responses were received giving an overall response rate of 55%. The data were collated and analysed using the program SPSS for Windows.

Objectives of the survey were: (1) To obtain profile data on tour operations and the marine tourism industry as a whole (e.g. locations of operations, types of trips offered, and key attractions). (2) To identify possible
environmental concerns, specifically the species and habitats perceived as vulnerable to tourist pressure. (3) To investigate the attitudes of the tour operators to the current and future management of the industry. This paper reports results of the first two objectives, examines the characteristics of New Zealand's marine tourism industry, and discusses some of the management issues that need to be addressed.

Results and Discussion

Profile of the industry:

There is a marked seasonal pattern in numbers of visitors participating in marine tourism activities, with a distinct peak over the summer months December to March (Fig. 1). A similar pattern is shown by total international visitor arrivals.

New Zealand's marine tourism industry is still in its infancy; 61% of operations have developed within the past 5 years (Table I). 43% of the respondents indicated that they close for a period of two weeks or more during the year. The closure usually coincided with the winter months June to August and was primarily a result of weather restrictions or lack of tourist demand. Together these factors contribute to a difficult operating environment where an operation must be able to support itself over the winter lull in tourist numbers to remain commercially viable. Also, the industry is largely composed of small, locally owned and operated businesses. Overall 82% of the operations employ less than three staff members. Small operators are relatively uncontrolled except by market forces which raises the issue of new operators visiting areas without an adequate knowledge of the resources.

Activity and Attractions:

The price of tours varied considerably depending on the activities offered, but averaged NZ$30-35 per hour. 72% of operations used powered boats, 15% yachts and 16% kayaks. The use of powered vessels provides access to locations and wildlife previously inaccessible to visitors. This highlights a concern expressed widely in the literature that, increasingly, nature tourism activity constitutes travelling to relatively undisturbed locations with fragile ecosystems or endangered and threatened wildlife (Butler, 1980; Kozlowski, 1985; Boo, 1990; Cellabos-Lascurian, 1991; Hawkins & Roberts, 1993; Jacobson & Lopez, 1994). In addition, species in these areas are unused to human presence and often more sensitive to disturbance (Klein et. al., 1995).
Appendices

New Zealand's marine tourism industry encompasses a diverse range of activities, the major ones being cruises, line fishing, seabird and marine mammal watching (Fig. 2). Wildlife viewing is the most common activity, with 44% of respondents noting marine mammals and 78% noting seabirds (including penguins) as a key attraction of their tour (Fig. 3). Many operators (52%) noted a wide range of attractions ranging from historic sites to sea caves and the general marine vista. These attractions, grouped as scenery, in Fig. 3, account for the large proportion of operators in this category.

Dolphins were the species targeted most frequently, with 22% of operators identifying them as a key attraction. There are four dolphin species commonly sighted in New Zealand waters: common (Delphinus delphis), bottlenose (Tursiops truncatus), dusky (Lagenorhynchus obscurus) and Hector's dolphin (Cephalorhynus hectori), the later endemic to New Zealand (Slooten and Dawson, 1994). New Zealand fur seals (Arctocephalus forsteri) and penguins were the next most commonly targeted species. The viewing of penguins involves blue penguin (Eudyptula minor), Fiordland crested penguin (Eudyptes pachyrhynchos) and the yellow-eyed penguin (Megadyptes antipodes), recognised as the world's rarest penguin. Thirteen respondents identified whales as a target attraction. New Zealand is the only place in the world where resident sperm whales are close enough to the shore to be viewed on a commercial basis. Other transient cetaceans are also viewed on an opportunistic basis. One of these is the rare southern right whale which has been sighted regularly in New Zealand waters for the past few years (Department of Conservation, 1995).

Many wildlife enthusiasts have a particular fascination for marine mammals (Kovacs and Innes, 1990; Simonds, 1991). Commercial whale watching worldwide has grown spectacularly over the past decade, almost doubling annually in terms of revenue and passengers (Hoyts, 1995). The abundance of marine mammals inhabiting New Zealand's coastal waters will continue to attract increasing numbers of visitors, creating commercial pressure to expand the current level of activity. Care must be taken to weigh up the threats and opportunities with management decisions based upon rigorous environmental impact assessment.

To date there is no system in New Zealand which can be used to ensure operations are ecologically sound. To achieve sustainable management there is a need for industry-wide environmental standards ensuring operators have adequate guidelines and knowledge about the ecosystem in which they are operating. The governmental body charged with conservation matters in New Zealand is the Department of Conservation, consequently it has
the most significant and direct role in administering marine tourism. It must be noted that where marine mammals are not encountered, the department has no powers of regulation over marine based tour operations, such as seabird or general aquatic viewing. The Department has adopted a very precautionary approach to any increased commercial marine mammal watching (Baxter and Donoghue, 1995). The lack of information to guide management necessitates this approach. All marine mammals around New Zealand are fully protected under the Marine Mammals Protection Act 1978. In '90 regulations (promulgated under the Act) were introduced, establishing a permit system specifically for the control and management of marine mammal watching. These were revised in 1992 in response to the rapid growth of marine mammal watching around the country. The regulations are based upon research conducted overseas, and the results of two New Zealand studies which assessed the impact of marine mammal watching on sperm whales (Baker and MacGibbon, 1991; Gordon et al., 1993).

Few respondents noted marine reserves as a major attraction on their tour (Fig. 3). This may reflect the small number of marine reserves in the country (13 have so far been established under New Zealand's Marine Reserves Act 1971) and their location generally away from key tourist destinations. In addition, 11 of the 13 protected areas have been created within the past five years. Recovery of natural resources in an undisturbed area is a gradual process, hence changes in the environment generated by protection may not yet be clearly visible.

Environmental concerns:

Respondents were given a list of marine attractions and asked to note any which they considered particularly vulnerable to pressure from tourists in their locality. In addition they were asked to identify how much of a detrimental environmental effect they felt a list of 10 different scenarios could potentially have on the species or habitats visited during a "tour like theirs" (responding on a four point scale from 1-major detrimental effect to 4-no detrimental effect).

Respondents were then grouped on the basis of their target attraction. This enabled us to examine the degree to which the operators felt their particular key attraction was vulnerable to tourist pressure and the actions during a tour like theirs, which may have a notable detrimental environmental effect on the key species or habitat identified. None of the four key taxa noted above was regarded as being particularly vulnerable to tourist pressure (Table II). Concern about actions that might affect the species or habitats targeted related mainly to:
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increasing amounts of litter, and overcrowding by tourists spoiling the ‘naturalness’ of the sites visited (Table III). Very few operators considered that detrimental effects would arise from such actions as touching, noise, or the general presence of tourists, even though these have been identified elsewhere as potential problems associated with wildlife viewing. Reliant as they are upon sound for communication, prey detection and orientation, marine mammals may be especially vulnerable to noise disturbance (Reeves, 1992). An echolating animal has the problem of discriminating the echoes from its target from general background noise. Anything which increases the level of background noise, such as vessel traffic, could reduce the efficiency at which it can perform an echolation task (Gordon et al., 1992), yet none of the operators targeting marine mammals identified noise as a potential concern.

This indicates that targeted animals are either not affected by current levels of marine tourism activity, or that operators are unaware or not prepared to acknowledge an impact. The terms ‘potentially’ and ‘tour like yours’ were used to try and take the onus off the individual and remove any inherent bias in the question. If in fact operators do not perceive their type of tour to have any potential effects on the species or habitats targeted it may raise an issue of concern to managers as they encounter the problem of trying to effect change in the industry without willing participants.

Conclusion

New Zealand is endowed with spectacular coastal scenery and unique marine wildlife. Marine-based tourism is likely to become increasingly important in New Zealand. The relatively successful management of marine tourism to date is potentially a result of the industry still being in its early stages of development. As the industry continues to grow there will be an increasing need for proactive co-ordinated planning if negative impacts are to be minimised and the environmental, social and economic returns maximised.

This paper highlights some of the issues emerging in New Zealand’s marine tourism industry. In particular, the operators perception that tourism does not impact the environment, despite the long catalogue of literature documenting the environmental impacts which result from tourism. Managers are likely to encounter increasing resistance as they try to regulate the industry. To achieve sustainable management it is vital that research and monitoring keeps pace with rising tourist numbers. Resistance to regulation will be alleviated if operators and
the general public can see management policies are not formulated in an ad hoc manner but are based upon robust, scientifically defensible research.

References


Appendices


Appendices


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Table 1. Number of years marine tourism operations have been established in New Zealand

<table>
<thead>
<tr>
<th>Years of operation</th>
<th>Number of operations</th>
<th>Percent of operators</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>116</td>
<td>61.4</td>
<td>61.4</td>
</tr>
<tr>
<td>5-10</td>
<td>42</td>
<td>22.2</td>
<td>83.6</td>
</tr>
<tr>
<td>10-15</td>
<td>14</td>
<td>8.4</td>
<td>92.1</td>
</tr>
<tr>
<td>15-20</td>
<td>6</td>
<td>2.2</td>
<td>94.2</td>
</tr>
<tr>
<td>20-25</td>
<td>2</td>
<td>1.0</td>
<td>95.2</td>
</tr>
<tr>
<td>25+</td>
<td>9</td>
<td>4.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table II. The number of operators targeting the four most frequently identified attractions and the proportion of those operators indicating the target attraction was vulnerable.

<table>
<thead>
<tr>
<th>Target Attraction</th>
<th>Number of operators targeting the attraction (n=190)</th>
<th>% of operators indicating species vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolphins</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Seals</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>Penguins</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Whales</td>
<td>13</td>
<td>23</td>
</tr>
</tbody>
</table>
Table III. Actions that operators identified could have a major to moderate environmental effect on the animals or habitats visited during a tour like theirs (only includes actions of concern identified by ≥50% of the operators).

<table>
<thead>
<tr>
<th>Target Attraction</th>
<th>Action of concern</th>
<th>% of operators identifying concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dolphins</td>
<td>Increase in litter</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Overcrowding of natural sites</td>
<td>54</td>
</tr>
<tr>
<td>Seals</td>
<td>Increase in litter</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Overcrowding of natural sites</td>
<td>50</td>
</tr>
<tr>
<td>Penguins</td>
<td>Increase in litter</td>
<td>52</td>
</tr>
<tr>
<td>Whales</td>
<td>Overcrowding of natural sites</td>
<td>50</td>
</tr>
</tbody>
</table>
Figure 1. Seasonal pattern in visitor numbers participating in marine tourism activities compared with the trend in total international visitor arrivals for the 1994 season (source: Market Research NZTB/Statistics New Zealand)
Figure 2. Type of activities incorporated in New Zealand's marine tourism industry (n=190, error bars represent one standard error)
Figure 3. Key attractions targeted by marine tourism operators in New Zealand (n=190)