Ecotourism on Otago Peninsula

Preliminary studies of yellow-eyed penguin *(Megadyptes antipodes)* and Hooker's sea lion *(Phocarctos hookeri)*

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Abstract

Ecotourism is the fastest growing sector of the tourism industry in New Zealand. It should be non-damaging, non-degrading and ecologically sustainable nature tourism; there should be no negative effects on the species targeted.

The majority of New Zealand's ecotourism activities are on Department of Conservation (DoC) administered land, or target marine birds or mammals that DoC is charged with protecting. Two ecotourism ventures on Otago peninsula were studied - one based on yellow-eyed penguins *(Megadyptes antipodes)* at Sandfly Bay and the other on Hooker's sea lion *(Phocarctos hookeri)* at Papanui Beach.

Sandfly Bay (45°54'S 170°39'E) on Otago Peninsula is a DoC Conservation Area with wildlife refuge status. The landing times of adult yellow-eyed penguins were recorded and compared with those of yellow-eyed penguins at Double Bay, an area closed to the public and less than 3 km from Sandfly Bay. This study concluded that there was no difference in landing times between the public and the non-public beach. On Sandfly Bay the numbers of humans visible on predetermined zones on the beach were also recorded and statistical tests compared the frequency of penguin landings with human presence on these different zones. It was found that the proportion of penguin landings was less while people were present in only one zone, - the eastern-most sector of the beach, nearest the penguin habitat and landing site. DoC's management strategy for Sandfly Bay consists of a viewing hide on the sandhills at the east end of the beach and signs encouraging people to use the hide and asking them not to go on to the area of the beach where this study found human presence equated with fewer penguin landings. This study concludes that if these guidelines are followed, the factor of human presence on the beach will have little short-term behavioural effect on yellow-eyed penguins.

The study of impacts on Hooker's sea lions was conducted at Papanui Beach (45°52'S 170°44'E). It involved two 'approachers' walking up to either a solitary sea lion or one which was a member of a group. Approaches were to 5 m, 10 m and 20 m of the sample animal. Behaviour was observed before, during and after the approach was made and the animal's behavioural state and the behavioural events it performed were recorded.

No significant difference in the proportion of time the sea lions spent in a specific behavioural state (lying versus sitting/moving) or in the number of times they performed a behavioural event was found with any of the six treatments (three approach distances with solitary or group animals). Positive correlations were found between thermoregulatory behaviours and both ambient temperature and black bulb temperature (an approximation of sea lion body temperature). The importance of these behaviours and possible outcomes of disturbance are discussed, as are population change implications. The extrinsic value of the approachers' group size in this and other studies is discussed. Other studies of Hooker's sea lion tolerance of humans at Papanui Beach suggest that habituation may have occurred at that beach.

1. Introduction

Tourism is the largest business on earth (Miller 1993). It generates $6 trillion in gross output and is responsible for employing 1 in every 9 workers world-wide (New Zealand Tourism Board 1995-96). The World Tourism Organisation predicts tourism growth to increase worldwide at 3-4.4% annually as we move into the next century. In the East Asia/Pacific region, of which New Zealand is a part, the forecast growth rate is, at 6.8%, almost double the world rate and the New Zealand Tourism Board reports that tourism in this area is growing at a rate three times that of world growth (New Zealand Tourism Board 1995-96). New Zealand specifically recorded growth in tourism at 9.6% in 1993 and 14.3% for the year ended December 1994.

Although New Zealand tourism only accounts for 0.2% of the present world market, it is a vital component of New Zealand's economic growth strategy (New Zealand Tourism Board 1995) and is the country's leading foreign exchange earner, bringing in $3.84 billion for the year ended December 1993 (New Zealand Tourism Board 1995-96). In fact, New Zealand's foreign exchange earned from tourism in 1994 was greater than that for meat, butter, wool or timber.

For the 12 months ending June 1995 1,366,964 visitors arrived in New Zealand, 11 % more than in 1994 (New Zealand Tourism Board 1995).

Otago's international visitors increased from 133,000 for the year ended March 1988 to 152,000 for the year ended September 1993 (New Zealand Tourism Board 1995-96). `Tourism Dunedin' monitors visitors to Dunedin who use commercial or private (i.e., staying with friends or relatives) accommodation. In the year to August 1993, approximately 234,000 visitors stayed in commercial accommodation, which increased to 293,000 in the year to August 1994 and then levelled off to 287,000 to August 1995, with 65-70% of these visitors being domestic and 30-35% international. However, the recently established (September 1994) VFR (Visiting Friends and Relatives) Visitor Monitor, which accounts for those also staying privately, estimates the total number of visitors to Dunedin for the year to September 1995 at around 353,000. It has been suggested that all people visiting Dunedin make an excursion to the Otago Peninsula during their stay (Debra Simes, Tourism Dunedin pers. comm.).

Awareness of environmental issues is becoming more important globally and the catchword of tourism in the 1990s is 'ecotourism'. Ecotourism is the fastest growing sector of the tourism industry (Cater 1994). There has been much discussion as to what the correct definition of ecotourism is, or should be, and many debate its scope. Put simply, it is the subset of nature tourism (tourism based on viewing of or interacting with nature) which is sustainable, therefore involving a symbiotic relationship between tourism, the environment and culture (Gilbert et al. 1992), a 'win-win' situation. The 1992 conference `Ecotourism Business in the Pacific: Promoting a Sustainable Experience' adopted the following definition put forward by Valentine (1992, p.9): `Ecotourism is restricted to that subset of nature based tourism which is:

a) based upon relatively undisturbed natural areas,
b) non-damaging, non-degrading, ecologically sustainable,
c) a direct contributor to the continued promotion and management of the natural areas used,
d) subject to an adequate and appropriate management regime,
e) of clear benefit to local people.

Clearly, ecotourism, when fulfilling these criteria, would be an asset to the area in which takes place; but, in reality how attainable is it? Especially as the areas where New Zealand's major natural tourist attractions occur tend to be those which are environmentally sensitive with fragile ecosystems (Ward and Beanland 1994). Even some delegates to the previously mentioned ecotourism conference thought the `promise has been much greater than the reality' (Gilbert et al. 1992, p. iii). However, there is no point setting a low but easily attainable standard when its attainment is not fulfilling the ideal originally envisaged. All efforts to achieve the sustainable and symbiotic goals of ecotourism must be seen as an improvement on the solely profit-driven motives of purely consumptive tourism. However, as Giannecchini (1993) reminds us, when conservation and capitalism join in partnership `whatever laudable environmentally sound policies and goals the [tourism] industry articulates, they will remain subsidiary to the demand for profits' (p. 430).

In spite of potential difficulties in its attainment, ecotourism is seen by many as one of conservation's most promising tools. Young (1992) states that the tourism industry is seen by organisations such as World Wide Fund for Nature (WWF) as possibly the only industry able to play a positive role in conservation. Giannecchini (1993) sees ecotourism as an opportunity for conservation, as does McSweeney (1992a) who views it as a means of preserving, conserving and perhaps even restoring `the best that remains of our natural and cultural heritage' through educating and instilling a `conservation conscience' in its participants (McSweeney 1992a, p 2).

The New Zealand Tourism Board (1995) endorses McSweeney's sentiments by stating that tourism plays a role in maintaining the conservation estate and promoting its value, by providing revenue and through education of visitors. The Ministry of Tourism agrees and states in its discussion paper on tourism sustainability that `The industry has in the past, and will increasingly in the future, play a major role in supporting the protection of the natural environment' (Ministry of Tourism 1992, p. 11). Even cynics must agree that ecotourism is a potentially valuable tool and one that should be used to the optimum benefit for conservation.

New Zealand's appeal as a tourist and, more specifically, an ecotourist destination stems from its natural beauty and `clean, green image'. This is evidenced by the fact that the majority of New Zealand's natural attractions (Ward and Beanland 1994) and ecotourism activities (McSweeney 1992b) are housed on the 30% of New Zealand's land administered by the Department of Conservation (DoC), known as the conservation estate. Also, many of the water based ecotourism operations target marine mammals, which DoC is charged with protecting.

The Department works under the framework of the Conservation Act 1987 which outlines its duties under other legislation, including the Wildlife Act

1953, the Marine Mammals Protection Act 1978, the National Parks Act 1980, the Reserves Act 1977, etc. These, coupled with the Resource Management Act 1991, mean all New Zealand's major resource legislation is geared towards sustainability (Ministry of Tourism 1992). Under this framework DOC has a , mandate to preserve New Zealand's natural resources for future generations' (Mansfield 1992). Specifically, the Conservation Act 1987 states that the Department of Conservation must `foster the use of natural and historic resources for recreation and to allow their use for tourism... to the extent that the use of any natural or historic resource for recreation or tourism is not inconsistent with its conservation.'

As part of the Ministry of Tourism's pledge to support the protection of the environment, they commissioned a report called `Development of Environmental Indicators for Tourism in Natural Areas: A Preliminary Study' (Ward and Beanland 1994). This study set out to identify potential impacts of tourism and discover what research into those impacts has been carried out. They surveyed all DOC conservancies and several Regional and District Councils to establish any studies that had already been conducted. Most of the research identified concerned visitor numbers or the physical environment (track conditions, water quality, etc.). Of the 49 studies they listed, only 3 related to impacts on animal species: impacts on New Zealand Dotterels in Waikato, the White Heron Colony on the West Coast and the Royal Albatross Colony at Taiaroa Head. Robertson (1993) reports on the long term monitoring that has been conducted at Taiaroa Head and the gannet colonies at Cape Kidnappers and the impacts on breeding and distribution caused by nature tourism that these studies have shown. Other than these I have been informed of two studies on marine mammal watching (Mike Donohue pers. comm.) and four other wildlife impact studies (Jonet Ward pers. comm.). One study of the commercial swim-with-dolphins operations in the Bay of Islands has recently been completed (Constantine and Baker 1997). It is obvious that this is an area of research that has had very little emphasis to date in New Zealand, perhaps due in part to the relative youth of the industry.

There also appears to be a lack of literature overseas on animal related impacts, with the majority of studies being on the physical environment, vegetation or visitor numbers and perceptions. Kuss et al. (1990) reviewed the international research on visitor impacts on national parks and other recreation lands and concluded that little literature existed about the relationships between wildlife and human use of areas. They made many valuable points and developed a set of guidelines to be considered in assessing impacts. The most important point they made is that all interactions are species, site and even season specific; meaning that, ideally, all ecotourism sites need to have their impacts monitored, as the effect on a species at one site by a particular operation may be different to the effect of an almost identical operation at another site.

To attain the goals of sustainability it is essential to monitor the effects visitors are having, both on the environment and the species that inhabit it. As most ecotourism occurs on land that DOC has the mandate to protect, the responsibility for monitoring lies with the Department. Probably the best example of the Department playing a major role in the development of ecotourism is in the area of marine mammals. From the marine mammal

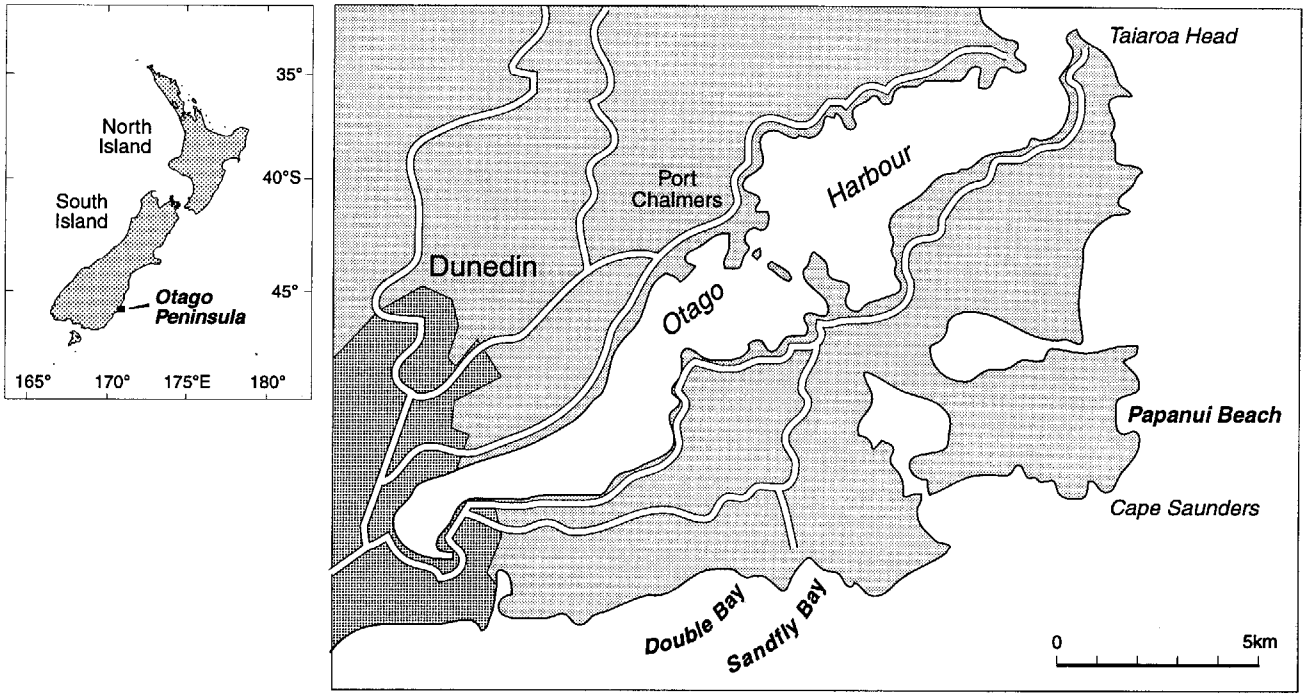

FIGURE 1. OTAGO PENINSULA SHOWING STUDY SITES USED.

tourism industry's inception, with whale watching at Kaikoura in 1988, the Department has `attempted to be early in our development of rules, and reasonable in their construction, taking into account the best available scientific information, and consulting fully with existing operators and all those interested in marine mammal welfare' (Suisted 1995).

As part of its obligation to monitor the impacts of ecotourism on wildlife, the two preliminary studies detailed in this report were commissioned by the Department of Conservation and funded by the New Zealand Employment Service. The aim was to investigate whether visitors to two ecotourism sites were having any instantaneous behavioural effects on the two species of wildlife the ecotourism operations were targeting. The two sites monitored were Sandfly Bay and Papanui Beach, both on the Otago Peninsula (Figure 1) and the species monitored were yellow-eyed penguin *(Megadyptes antipodes)* and Hooker's (or New Zealand) sea lion *(Phocarctos hookers)* at the two sites respectively.

2. Yellow-eyed penguin

2.1 INTRODUCTION

The yellow-eyed penguin *(Megadyptes antipodes),* or hoiho, is one of New Zealand's threatened, endemic species. The third largest penguin species, it is considered `timid and robust' (Darby and Seddon 1990). This species roosts year round in the same area, making regular (usually daily) foraging trips to sea. They are the least colonial of all penguins, preferring to nest out of the visual

contact of other pairs. In fact, penguins forced to breed within the sight of another pair will invariably fail to breed successfully (Darby and Seddon 1990).

The fact that these penguins are present year round close to a large metropolitan area (Dunedin City) makes them a prime object for ecotourism.

The Department of Conservation has promoted Sandfly Bay on the Otago Peninsula (Figure 1) as an area where people can view yellow-eyed penguins in their natural habitat, and to this end they have built a public viewing hide at the east end of the beach. This management strategy is designed to encourage people to visit Sandfly Bay, thereby leaving other yellow-eyed penguin breeding areas relatively undisturbed by humans.

Kuss et al. (1990) suggest that the inter-relationship between species, site and ecotourism operation, among other things, makes each site an individual case for study. Therefore, although it may be possible to relate some of the information presented here to other areas, it must be stressed that generalisations are not recommended. The objective of this study, then, was to assess whether the management strategy in place at Sandfly Bay is effective in minimising the effects of humans on the penguins there, and to test the theory that the presence of visitors on the shore will delay the landing of penguins returning to their nests (Department of Conservation 1991).

2.2 METHODS

2.2.1 Study sites

To assess the effect human use of Sandfly Bay (45°54'S 170°39'E) has on yellow-eyed penguin landing times, it was compared with an area of no public, and limited researcher, use. The beach compared with Sandfly Bay was the section of the Boulder Beach World Wide Fund for Nature Habitat Area commonly known as Double Bay (45°54'S 170°37'E)(Figure 1).

2.2.2 Procedure

Observations were made on 15 different days over the period 29 October 1995 to 18 December 1995. Observations at the two sites were conducted simultaneously, with one observer at each site. The permanent hide at Double Bay housed the observer there, while observations at Sandfly Bay were conducted from the sandhill next to the public viewing hide. The observer was hidden from public (and penguin) view by marram grass. The close proximity of the two sites meant weather conditions were always similar at both sites. No observations were made on days with constant or heavy rain.

Observation commencement time varied. For analysis, 1612 hrs was used as start time, except for 2 days, when 1628 hrs was used. Observations were always concluded at 12 minutes after the official sunset time (obtained from the Otago Daily Times). As yellow-eyed penguins generally return from the sea prior to dark (B. McKinlay pers. comm.), observation time lengthened as sunset became later in the day.

The landing time of all adult penguins was recorded at both beaches. For the purposes of this study the beach and adjacent areas at Sandfly Bay were divided into six zones (labelled A-F, Figure 2). The interface between Zones D and C is where penguins leave the sea to return to the nesting area. The

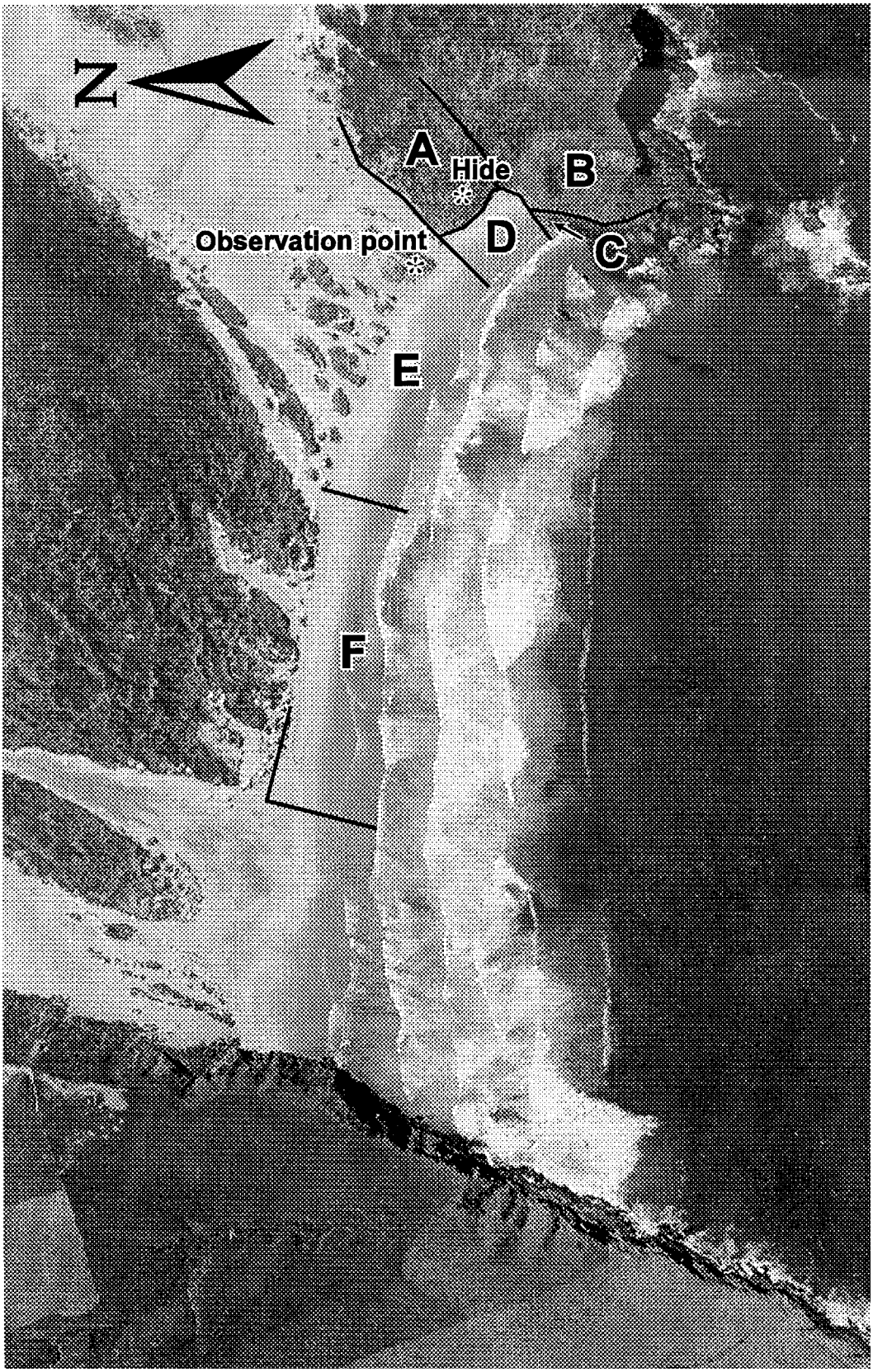

FIGURE 2. SANDFLY BAY SHOWING ZONE DIVISIONS.

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