

The characteristics and experiences of summer visitors to
Goat Island Marine Reserve, New Zealand

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Sharon Marilyn Race

21 December 2011

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This study was approved by the Auckland University of Technology Ethics Committee (AUTEC) on 6th May 2010, AUTEC approval number 10.98.

ABSTRACT

Goat Island Marine Reserve (GIMR) is New Zealand's oldest marine protected area, located on Auckland's northern east coast. Established in 1975, GIMR has been well researched by marine biologists, but the social aspects have received little attention. This study is the first published empirical research on the characteristics and experiences of its visitors. A self-reply questionnaire-based study was undertaken between 12 December 2010 and 13 January 2011, using the real-time-satisfaction (RTS) measurement. The study ($n=305$) investigated peak summer visitors' demographics, characteristics, satisfaction levels and knowledge of marine protection. Results reveal a diversity of visitors who primarily identify with GIMR as a place to 'swim with the fish'. Visitors are mostly satisfied but their marine protected area (MPA) knowledge is limited. A distinct change to the tourism life-cycle of the area has taken place; once a casual scuba diving location in a rural setting, urbanisation is enveloping the region and tourism is developing. Visitor numbers have increased more than 3000% since 1975 and the site's social carrying capacity exceeds management-planned levels. In this study, visitors were dissatisfied with a number of aspects, primarily the number of people on the beach, parking and the lack of in-water management of people and boats. Recent fatalities and near-drownings at GIMR have also highlighted the latter aspect. The study identified several key issues, including a lack of on-site staff, inaccurate advertising, the site's four names, language barriers and a lack of on-site interpretation, which represent the bigger picture of uncontrolled tourism growth in a highly protected natural area. Results indicate there is support for strong managerial approaches to limit visitor numbers and restrict certain activities, such as commercial tourism. The study also profiles the GIMR visitor and develops a new Marine Reserve Visitor Experience model. Marine ecotourism is emerging as an important market in the marine tourism and wildlife tourism sectors. Marine reserves are, however, highly protected areas of the ocean, which are vulnerable to human visitation and require focussed social-management interventions. Understanding the characteristics and experiences of New Zealand's most popular marine reserve will help inform management decisions so that GIMR can be preserved for future generations.

Chapter 1 INTRODUCTION

*Ever since that magical moment when my eyes opened under the sea,
I have been unable to see, think and live as I had done before.*
(Cousteau, 1996, p. 7)



Figure 1: Race, S. (2010). Goat Island Marine Reserve, New Zealand (winter, 2010)
[Photograph].

Naturalists such as Jacques Cousteau and David Attenborough have stimulated the growth and interest in the underwater world, and the subsequent growth in marine tourism and marine ecotourism. Through their educational and thought-provoking television and movie documentaries, such as *The Undersea World of Jacques Cousteau* and *Blue Planet*, they have allowed large numbers of people a chance to explore, learn and become emotionally attached to the many creatures that live on, in and under the water. They have also proposed difficult questions about where humans' responsibilities lie and the dilemmas faced when trying to communicate with other species (Frohoff & Peterson, 2003).

Most humans are only able to explore a very small proportion of the marine environment due to its size and the conditions of open water. Humans are aliens to the underwater world; they cannot breathe in it without assistance from technology and can not live in it unaided (Orams, 1999), yet humans have become more and more fascinated with marine flora and fauna. Over the past three decades increasing numbers of people have been seeking encounters with marinelife through tourism activities such as whale-watching, scenic boat cruises, scuba diving and snorkelling (Higham & Lück, 2008).

Tourism has evolved and continues to grow at a rapid pace as a result of our desire to engage in unique and natural environments, however, "tourism is inherently controversial" (Miller, 2007, p. 39). Tourism in the marine environment, known as marine tourism or marine ecotourism, therefore requires careful planning. Effective management of the marine environment and innovative ways to encourage marine conservation by users must be fostered and nurtured for marine tourism to be sustainable (Miller, 2007; Orams, 1999). Miller and Auyong (1991) suggest that brokers (tourism businesses), locals (residents) and tourists (international and domestic) all play an integral part in the relationship humans have with the marine environment.

New Zealand has 15,000kms of coastline and is responsible for its Territorial Sea and its Exclusive Economic Zone (EEZ) (Ministry for the Environment, 2005). New Zealand's waters host some of the most important resources, places of beauty and human heritage (e.g. shipwrecks) which collectively are the responsibility of all New Zealanders. The country's location and the influence of ocean currents attracts migratory species, such as marine mammals, fishes and a variety of seabird species, and

provides habitats for endemic, resident and visiting marine creatures (Hutching, 1998). Marine scientists suggest the marine environment may host as much as 80% of New Zealand's indigenous biodiversity. According to international law, New Zealand has sovereign rights over its coast and seas, yet despite its importance, the Ministry for the Environment (2005) concedes that regulations to protect the marine environment are "few, inconsistently applied, and variable" (para. 4).

In New Zealand, formal legal protection of its coastal waters commenced in 1975 when the first marine reserve was established under the newly formed Marine Reserves Act 1971 (Ballantine, 1991). The Cape Rodney–Okakari Point Marine Reserve (or Goat Island Marine Reserve [GIMR] as it is commonly known and will be referred to in this thesis) is located on Auckland's north east coast (Figure 1). GIMR was established primarily for scientific reasons, but the Act also allows the general public freedom of access "to study, observe and record marinelife in its natural habitat" (Marine Reserves Act 1971, 2008, p. 6). The marine reserve is now home to an increasingly diverse marine ecosystem, which was in poor condition prior to protection (Shears & Babcock, 2003).

GIMR has become ecologically rich; a reminder of what a healthy ocean should look like (Figure 2) (Enderby & Enderby, 2006). As of September 2011, New Zealand has proclaimed 35 marine reserves, however many are small and do not receive visitors because of their isolated, off-shore, location (Byers & McCrone, 2010; Hunt, 2008).

Managed by the Department of Conservation (DoC), GIMR receives visitors year round, most of them during the peak summer season (Hunt, 2008; Walls, 1998). After more than 35 years of protection, the marine environment at GIMR has recovered from substantial degradation (Babcock, Kelly, Shears, Walker & Willis, 1999) and the increased size and abundance of fishes, kelp and encrusting animals have become major attractions (Ballantine, 1991; DoC, 2003; Enderby & Enderby, 2006; Hunt, 2008).

DoC provides a number of facilities at the site, including educational signboards explaining the marinelife and the purpose of the reserve. A small sandy beach and rocky platforms to the east of the beach provide access to the marine reserve. A tourism business operates a glass-bottom boat and a variety of businesses in the local area hire dive and snorkel equipment and kayaks.



Figure 2: Enderby, J. & T. (c. 2010). Snapper (Pagrus auratus), Goat Island Marine Reserve, New Zealand [Photograph]. Reprinted with permission.

GIMR is the most popular marine reserve in New Zealand; it receives approximately 375,000 visits annually and during the peak summer season the reserve is estimated to receive up to 6,000 people per day, particularly on public holidays and weekends (Hunt, 2008). Over-crowding has been an issue almost since the inception of the marine reserve (Figure 3) (Department of Lands and Survey [DLS], 1984; Hunt, 2008; Walls, 1998).

GIMR is located within the Hauraki Gulf Marine Park (HGMP), as are five other marine reserves (Table 1). Long Bay-Okura Marine Reserve and Tawharanui Marine Reserve are also popular locations during the peak summer months, however, it is the abundance and closeness of marine life at GIMR that makes it the most popular of Auckland's marine reserves.



Figure 3: Race, S. (2011). *Goat Island Marine Reserve on a busy summer's day, January 2011.* [Photograph].

Table 1

Marine reserves located within the Hauraki Gulf Marine Park, Auckland

Name of marine reserve	Established	Size
Cape Rodney-Okakari Point Marine Reserve	1975	547ha
Te Whanganui-A-Hei (Cathedral Cove) Marine Reserve	1992	9sq/kms
Long Bay-Okura Marine Reserve	1995	980ha
Te Matuku Marine Reserve	2005	690ha
Motu Manawa-Pollen Island Marine Reserve	2006	500ha
Tawharanui Marine Reserve*	2011	400ha

*Formally Tawharanui Marine Park; status changed September 2011

Given the growth of visitation to GIMR and its important role as the first and most popular marine reserve in New Zealand, it is surprising there is little published empirical research on human activities at the reserve. This research will explore the socio-demographics, attitudes and experiences of visitors to GIMR during the peak summer months. More specifically, the research will examine the following issues:

- a) Visitor demographics.
- b) Visitor characteristics.
- c) Influences of a visit.
- d) Levels of visitor satisfaction.
- e) Knowledge of the marine reserve and other marine protected areas.

This research makes an important contribution to our understanding of the characteristics and experiences of visitors to New Zealand's most popular marine reserve. This information will be valuable for reserve management and contribute to a wider understanding of tourists' use of marine reserves in New Zealand and beyond. The study potentially strengthens new and existing relationships with reserve managers and marine scientists in the area.

The study also provides a platform to explore the effectiveness of Tourism New Zealand in meeting one of its specified outcomes from the New Zealand Tourism Strategy [NZTS] 2015; specifically, to deliver a "world-class visitor experience" (NZTS2015, 2010, p. 6).

Chapter 2 LITERATURE REVIEW

2.0 Introduction

This chapter initially reviews a range of literature on marine protected areas and marine reserves.

The focus moves to marine tourism where the characteristics and activities of marine tourists and motivations for recreational engagement in the marine environment are explored. An investigation is also made into whether a distinction exists between ecotourism, wildlife tourism and marine tourism participants and at this point, a clearer image of the marine ecotourist will emerge.

The study site, Goat Island Marine Reserve, is introduced in detail. A section on the site's popularity, attractions and inherent dangers concludes the chapter.

2.1 Marine protected areas – a global perspective

The oceans cover more than two thirds of planet Earth, driving the planet's climate and constantly shaping our continents (Cattermole & Clark, 2005; Earle, 2009; Lück, 2007; Miller & Auyong, 1991). Oceans are host to productive marine ecosystems that “provide food and livelihoods to millions of dependent local communities” (Toropova, Meliane, Laffoley, Matthews & Spalding, 2010, p. 9), which sustain economies and also play a role in the provision of energy and allow for recreation and tourism activities (Pauly & Alder, 2005). However, our lifestyles have caused considerable damage to this resource due to the exploitation of the oceans for aquaculture, mining, fishing, commercial harvesting, recreation, tourism and the disposal of waste (Earle, 1995; Johnston, Santillo, Ashton & Stringer, 2000; Miller & Auyong, 1991; Toropova et al, 2010).

Globally, marine and environmental scientists testify to the adverse and detrimental effects of the contamination of aquatic ecosystems, over-fishing and destructive fishing practices (Alder, Sloan & Uktolseya, 1994; Allison, Lubchenco & Carr, 1998; Harris, Manahira, Sheppard, Gough & Sheppard, 2010; McCarthy, Halbrook & Shugart, 1991; Toropova et al, 2010; van der Oost, Beyer & Vermeulen, 2003; Voie & Mariussen, 2010). Bioaccumulation, or the absorption or digestion of toxic chemicals by marine organisms, increases through the aquatic food chain, leading to species decline and increased risks to wildlife and humans who consume the contaminated organisms (van der Oost et al, 2003; Voie & Mariussen, 2010).

Biological changes in the marine environment may occur through over-fishing; when large quantities of a single species are removed, particularly predatory fish, other species within the food chain are affected (Shears & Babcock, 2003). On a global scale, over-fishing has already led to a reduction in catch sizes and the loss of keystone species (Castilla, 1999). Destructive fishing practices, such as netting juvenile fish, using poisons, explosives or equipment that breaks coral, cause habitats to degrade and reduces yields (Cinner, 2010; Pauly & Alder, 2005). Without intervention, the ultimate consequences to the marine environment, and local communities who depend on this ‘renewable’ resource, may be disastrous.

Concern over the health of global marine environments, and the increased use of the ocean's resources for human consumption, has led to the creation of marine protected

areas (MPA) (Hoagland, Sumaila & Farrow, 2001). MPAs are powerful, regulatory tools “used to protect the entire ecosystem to maintain ocean health and biodiversity” (Partnership for Interdisciplinary Studies of Coastal Oceans [PISCO], 2011, para. 2), whose protection levels vary according to the level of extractive activities permitted and individual regulatory requirements (Agardy, 1994; Dudley, 2008; Hoagland et al, 2001).

The International Union for the Conservation of Nature (IUCN) provides one of the most quoted definitions of a MPA. Updated in 2008, Dudley (2008) identifies the new definition, which now embraces all types of protected areas including terrestrial, coastal, tidal and freshwater, under the same umbrella:

A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. (p. 8)

The first MPA in the world was the Royal National Park, in Australia, which was designated in 1879 (MPA Global, 2011; MPA News, 2002). Today, there are an estimated 5,851 established MPAs globally, protecting approximately 4.7 million km² of the sea (IUCN, 2011a; Spalding, Wood, Fitzgerald & Gjerde, 2010). They include a variety of coastal and marine ecosystems and vary in size, location and protection level, but represent just 1.31% of the ocean’s surface (IUCN, 2011a; Spalding et al, 2010). The establishment and growth of MPAs on a global scale has been slow (Table 2) despite calls from world leaders to increase protection (Johnston et al, 2000).

Table 2

Global growth of marine protected areas from 2003 to 2010

MPA global growth 2003-2010				
Year	2003	2006	2008	2010
Number of MPAs	4116	4435	5045	5851
% Global oceanic coverage	0.45%	0.65%	0.72%	1.31%

Note. Adapted from IUCN (2011a), *Global ocean protection: Present status and future possibilities*, Copyright 2011 by IUCN, and Spalding et al (2010), *The 10% target: Where do we stand?* Copyright 2011 by IUCN and 2010 by Spalding et al. Reprinted with permission.

MPA management may be undertaken by various agencies, such as local or national governments, local communities or conservation organisations, or they may be co-managed by a specifically selected and named group (Pomeroy, Watson, Parks & Cid, 2005). Effective MPA management can support improved scientific knowledge of the marine ecosystem, regulate human activity to ensure it is sustainable and apply strong conservation principles (Day & Roff, 2000).

Aside from their ecological benefits, MPAs can also have significant socio-cultural impacts (Badalamenti et al, 2000). It has become increasingly clear that integrating human dimensions (i.e. social, culture, history, politics and economics) into MPA design and management decisions contributes to the success of the initiative (Badalamenti et al, 2000; Charles & Wilson, 2009; Day, 2008; Sowman, Hauck & van Sittert, 2011).

The most commonly accepted guidelines for MPAs are those offered by the IUCN, which categorise a MPA according to its management objectives. The IUCN proposes six categories of protection, each indicating “the range of management approaches and where they may be applied” (Dudley, 2008, p. 57). For example, a category Ia MPA does not allow any extractive activities and human visitation should be limited, while a category VI MPA allows for the extraction of some food species or coral, as long as the area continues to be ecologically sustainable (Table 3).

There may be multiple categories or zones within a larger MPA to allow for various activities or various levels of extraction. An example of a multiple-use MPA is the Great Barrier Reef Marine Park (GBRMP), in Australia; the park’s numerous zones aim to protect the marine environment while also allowing for the separation of potentially conflicting activities (Great Barrier Reef Marine Park Authority [GBRMPA], 2011).

Globally, a wide range of designations are given to MPAs including marine parks, marine sanctuaries, marine managed areas, marine conservation areas, marine coastal protected areas, biosphere reserves, marine reserves, closed areas, marine wilderness, harvest refugiums, sanctuary preservation areas and replenishment reserves (Sobel & Dahlgren, 2004). As a result, there is a lack of consistency and transparency (Barr, 2010; Sobel & Dahlgren, 2004). Barr (2010) appeals for a universal terminology, suggesting that perceptions are affected when expressions are unclear and the public are unlikely to be positive about future protection suggestions they do not understand.

2.1.1 What is a marine reserve?

Marine reserves are fully protected areas of the ocean that explicitly prohibit fishing and the extraction, removal or disturbance of any marine resource or habitat, except as needed for scientific research for which permits must be obtained (Dudley, 2008; Lubchenco, Palumbi, Gaines & Andelman, 2003; PISCO, 2007). Marine reserves have a category Ia IUCN rating, have limited human visitation to ensure conservation values are preserved and are central to the conservation of marine biodiversity and fishing management (Dudley, 2008; Lubchenco et al, 2003; PISCO, 2007; Roberts, 2000; Roberts & Polunin, 1991; Russ, Alcala, Maypa, Calumpong & White, 2004).

Globally marine reserves are also known as sanctuaries, ecological reserves or no-take areas and may comprise an entire MPA or be a separate zone within a multiple-use MPA, (Ballantine & Langlois, 2008).

The world's largest marine reserve, designated in April 2010 by UK government committees, is the Chagos Marine Reserve which surrounds the Chagos Archipelago / British Indian Ocean Territory in the central Indian Ocean (IUCN, 2011b; Koldewey, Curnick, Harding, Harrison & Gollock, 2010; Protect Chagos, n.d.). Covering more than 544,000 km², it protects endemic fish species and the world's largest living coral atoll (Koldewey et al, 2010; Protect Chagos, n.d.).

The Chagos Marine Reserve also supports a breeding sanctuary for a variety of seabird and waterbird species, has 10 formally designated International Bird Areas (IBA) and is a globally significant breeding site for green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*) (Birdlife International, n.d.; Koldewey et al, 2010; McGowan, Broderick & Godley, 2008).

The large size of the Chagos Marine Reserve is unusual as most other marine reserves are very small, such as New Zealand's GIMR's area. Of 124 marine reserves in 29 nations and territories, half are less than 3km² in size (PISCO, 2007).

Table 3

Six IUCN categories of marine protected areas

Categories of marine protected areas	
Category	Notes relating to use within MPAs
Ia	Strict protection of all marine resources. No removal, modification, extraction, or collection of marine species or other marine resources (e.g. sand and rocks) permitted. Protects fish breeding and spawning areas. Limited human visitation. May comprise whole MPA or be a separate zone within a multi-use MPA.
Ib	As per 1a, however more emphasis placed on the site being an undisturbed natural area, free of human disturbance. Provide limited human access and limit density of use. Site has the quality of a peaceful, wilderness area, particularly when diving below the surface.
II	Objective is total ecosystem protection. Management to allow for visitation, recreational and nature tourism activities. Extractive use of marine resources, habitat manipulation and active human management are not conducive to this category. Protection of resources to achieve the conservation of nature.
III	Category III offers protection to natural monuments or features within the marine environment. Uncommon designation in marine ecosystems.
IV	Offers protection to particular species or habitats within marine environment (e.g. whale sanctuaries). May be seasonal (e.g. during turtle nesting / egg-laying season). Active management often required to obtain desired protection. Broad ecosystem protection opportunities (i.e. encompassing categories Ia, Ib or II).
V	Management of this area stresses importance of people and nature interacting over time to ensure sustainable use of marine resources (e.g. sustainable fishing practices). Typically occurs in coastal areas where protected areas attract human interest. Culturally-modified coastal habitats may encourage sustainability.
VI	Protects natural marine habitats while also allowing for the sustainable use or extraction of some marine resources (e.g. the collection of particular food species). The extent of extractive activities must not reduce the overall objective of the MPA.

Note. Adapted from Dudley (2008), *Guidelines for applying protected area management categories*. Copyright 2011 by IUCN. Reprinted with permission.

Scientific studies across a spectrum of global marine reserves have documented and confirmed the achievements of many marine reserves (PISCO, 2007). For example, Russ and Alcala (2004) confirm that after protection, biodiversity and biomass increase significantly over time. Typically, the heavily fished species are the first to benefit from complete protection, growing larger and producing more offspring which results in an increase in species abundance (Figure 4).

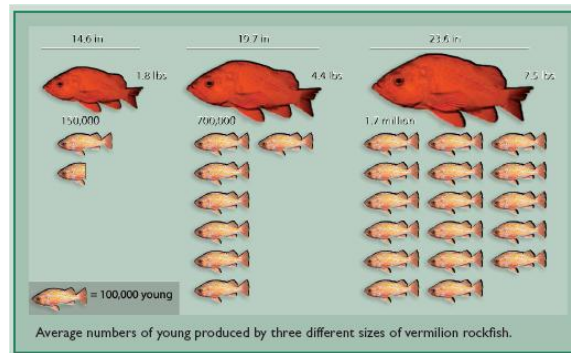


Figure 4: Partnership for Interdisciplinary Studies of Coastal Oceans (2007). *Larger fish produce more young allowing species to increase in number.* Copyright 2007 by PISCO. Reprinted with permission.

Some species may decline, which is generally because natural biological interactions are taking place (i.e. larger numbers of predators are eating more prey). The latter was documented in New Zealand's GIMR: Sea urchins (*Evechinus chloroticus*) declined as a result of increases in the populations of predators such as the spiny rock lobster (*Jasus edwardsii*) and snapper (*Pagrus auratus*) (Ballantine & Langlois, 2008; Shears & Babcock, 2002). This type of ecosystem interaction, known as a trophic cascade, can affect all levels of the food chain (Shears & Babcock, 2003).

As populations replenish, some species may disperse to areas outside marine reserve boundaries (Allison et al, 1998; Francini-Filho & Moura, 2008). Known as the 'spillover' effect, dispersals enhance fisheries immediately outside the reserve, benefiting anglers who fish in adjacent waters and supporting small-scale fishing enterprises (Allison et al, 1998; Roberts, 2000). Fish numbers decline considerably further away from protected areas, however, networks of marine reserves, which connect larval dispersal and juvenile or adult migration, can help to reduce these losses (Ballantine, 1999; Lubchenco et al, 2003).

The spillover effect and its effect on fishing communities, was found by Guidetti (2007) following research in the Torre Guaceto Marine Reserve, in Italy. Figure 5 indicates the extent of the spillover effect outside of the marine reserve's boundaries.

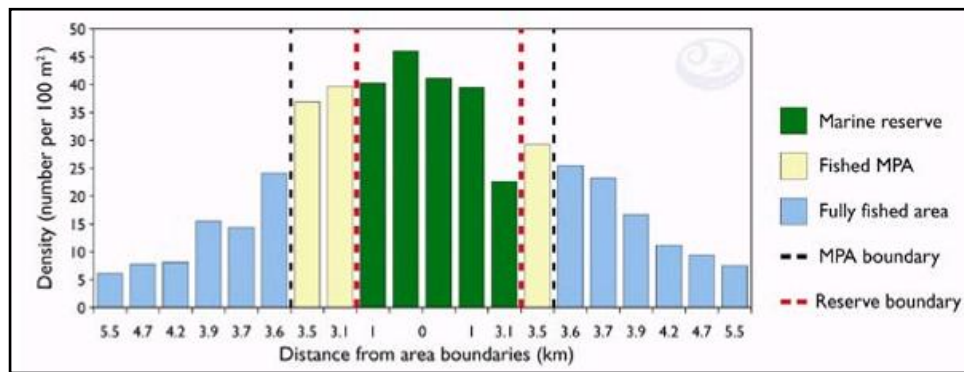


Figure 5: Protect Planet Ocean (2010). *The spill-over effect of fish to areas outside of the marine reserve, Torre Guaceto Marine Reserve, Italy.* Copyright 2010 by Protect Plan Ocean. Reprinted with permission.

Coastal marine reserves attract people, especially if marinelife is plentiful and the reserve is accessible and well managed. Popular activities may include recreational snorkelling or swimming to observe the fish, commercial tourism operators may offer guided tours (e.g. via glass bottom boats) or hire out scuba diving / snorkelling equipment and regional tourism offices may promote the reserve as a tourist attraction. Then, because of increased visitation, local communities may develop and thrive economically.

There are contrasting thoughts with regard to the human use of marine reserves; the IUCN suggests human use should be limited “to ensure preservation of the conservation estate” (Dudley, 2008, p. 57) and Ballantine and Langlois (2008) suggest that “potentially disturbing human activity” (p. 35) should be prohibited. No clear generic guidelines are offered with regard to the types of activities or the numbers of visitors that may cause disturbance, or whether the concept of limiting human use should be universal throughout all marine reserves. As a result, management regulations (or legislation) dictate the level of human interaction with the marine environment.

Although an effective conservation tool, marine reserves are not a panacea to marine conservation and on-going debates argue their limitations (Hilborn et al, 2004; Lubchenco et al, 2003). The debate undermines, but does not outweigh, the positive effects reported by scientists (for a comprehensive report on the pros and cons of marine reserves as conservation tools, see Jones, 2007).

Marine reserves can provide benefits for scientific and social enterprises while also keeping the objective of protecting biodiversity as a core conservation value (Pauly & Alder, 2005). Despite initial fears that marine reserves “do more harm than good” (Halpern & Warner, 2003, p. 1871), scientists suggest they should be an extension to “existing methods, protocols and systems” of marine planning and management (Ballantine, 1999, p. 4) and should form part of the global network of MPAs to be completely effective (Gaines, Lester, Grorud-Colvert, Costello & Pollnac, 2010).

2.1.2 United Nations Convention on Biological Diversity

International governments have acknowledged the importance of protecting areas for conservation and human livelihoods by becoming a party to the United Nations Convention of Biological Diversity (CBD). The CBD was adopted by more than 190 government leaders, including New Zealand (New Zealand Biodiversity, 2011) during the United Nations Conference on Environment and Development, informally known as The Earth Summit, in Rio de Janeiro, Brazil, in 1992 (United Nations, 1997). The CBD is an agreement with three main goals: “the conservation of biological diversity, the sustainable use of its component, and the fair and equitable sharing of the benefits from the use of genetic resources” (Convention of Biological Diversity, 2000, p. 2).

Following The Earth Summit, global protection of the marine environment and increases in fish stocks were highlighted as priorities. Protection targets were recommended at further global meetings, such as the 2002 World Summit on Sustainable Development, Johannesburg, South Africa (OECD Trade and Agriculture Directorate, n.d.), the 2003 IUCN World Parks Congress in Durban, South Africa (Vth IUCN World Parks Congress, 2004) and the First Congress of Marine Protected Areas (IMPAC1) in Geelong, Australia in 2005 (Day, Senior, Monk & Neal, 2007).

At the 8th Ordinary Conference of the Parties to the Convention on Biological Diversity in Curitiba, Brazil in 2006, global leaders agreed to protect at least 10% of the world’s marine and coastal areas for effective conservation by 2012 (CBD, 2006). This was further affirmed at the Second Latin American Congress on National Parks and other Protected Areas in Bariloche, Argentina in 2007 (Congreso Latinoamericano de Parques Nacionales y otras Areas Protegidas, 2007).

The protection priorities and targets are not compulsory or binding; they are recommendations (Laffoley, Gjerde & Wood, 2008). Laffoley et al (2008) suggest the targets are also thwart with difficulties: "...these targets were adopted with limited prior knowledge of the existing global marine protected area network and without any assessment of the feasibility of the targets" (p. 340). In a study of global MPAs, Wood, Fish, Laughren and Pauly (2008) suggest that "even the most modest targets will not be met for at least several decades" (p. 346).

As a result of the looming 2012 deadline and the realisation that targets would not be met, the deadline was extended. At the 2010 Conference to the Parties of the Convention of Biological Diversity in Nagoya, Japan, it was noted "with concern the slow progress towards achieving the 2012 target...despite efforts in the last few years, just over 1 per cent of the ocean surface is designated as protected areas..." (CBD, 2010, p. 1). Members agreed to an eight-year extension of the same targets until 2020 (CBD, 2010).

2.1.3 Challenges facing MPAs

2.1.3.1 Human dimensions of MPAs

One of the most difficult challenges facing international organisations that seek the global protection of marine resources is that of educating people about their importance. Traditional fishing communities may also notice the depletion of fish stocks but lack the knowledge to address the situation (Wells & White, 1995), thus education and interpretation of the marine environment is fundamental to sustained protection of its resources (Orams, 1997).

Coastal MPAs are able to provide the vital link between environmental protection and the sustained use of the ocean's resources for human consumption, but require management plans that incorporate the human dimensions to be successful (Charles & Wilson, 2009). Management plans would be best to include the following:

1. Create societal (or community) objectives – this is a move towards communities acknowledging their location is unique and creating a willingness to care about the place (i.e. attachment to place);

2. Make participation meaningful – this increases the chances of community buy-in and willing compliance, which should also lead to effective governance;
3. Community involvement and access – acknowledges the direct and indirect costs to MPA stakeholders and community members (such as increased infrastructure costs due to tourism development and anglers having to travel long distances to work), as well as the long-term benefits which may arise through such impacts, including an economically stable community.

2.1.3.2 The NIMBY syndrome

Global support to protect the marine environment is increasing (Dudley, 2008), however, problems arise when exact locations for MPAs are discussed. Stakeholders often recognise the benefits and are in favour of marine protection, although many prefer not to establish one in their neighbourhood (Suman, Shirlani & Milon, 1999).

The ‘not-in-my-back-yard’ or NIMBY syndrome was documented in Florida, USA (Suman et al, 1999) and Belgium (Bogaert, Cliquet & Maes, 2009) and is also prevalent in New Zealand (Taylor & Buckenham, 2003). Societal and community opposition is not particular to MPAs, as Dear (1992) notes when planning for other human services:

It's always hard to find places for jails, drug treatment centers, boarder babies, halfway houses, highways and sanitation truck garages, incinerators, and homeless shelters. (p. 288)

Opposition to MPAs may be a result of the incremental approach to global marine protection. Opposition often appears in coastal communities once MPA boundaries are drawn on a map and when local fishermen realise the protected area will be “too close to their fishing grounds” (Suman et al, 1999, p. 1036).

The NIMBY syndrome can be addressed by recognizing the human dimensions of marine conservation, which show communities that “social and economic factors are as important as biological factors” (Suman et al, 1999, p. 1036).

2.1.3.3 Funding

The public process of establishing a MPA is lengthy (New Zealand's GIMR opened 12 years after it was proposed [Ballantine & Gordon, 1979]) and costly and "many government agencies, especially in developing countries, lack the funds to address this issue" (Halpenny, 2003, p. 110). Paper MPAs are often a result and, though they aim for marine protection, many have little or no formal management (Hoyt, 2008).

The user-pays scheme is employed by a number of MPAs to recover costs or to finance research and development. Visitors may pay directly at the entrance to the MPA or indirectly via a commercial tourism operator. For example, foreign visitors to Bunaken National Maritime Park in Sulawesi, Indonesia, purchase permits on arrival from the ticket counter, the charge is Rp 50,000 per day and monies collected go towards conservation programmes in the park (North Sulawesi Information, 2009). Visitors to Australia's GBRMP pay an Environmental Management Charge of A\$5.50 per day to tourism operators, which goes towards the management of the park (GRRMPA, 2011).

However, there is also strong opposition to MPA user-pays schemes. In many countries, including New Zealand, citizens consider the marine environment to be common property and feel coastal areas "should be provided by the government" (Lindberg, 2001, p. 7), without direct costs to the public. Taylor and Buckenham (2003) suggest that to implement user-pays schemes in these countries first "requires education and consultation to allow for a change in thinking" (p. 32).

2.2 Marine tourism

The marine environment is home to a diverse range of recreational opportunities, from scuba diving and snorkelling to sailing in the open ocean (Orams, 1999). The growing interest in the underwater marine environment over the past four decades can probably be accredited to explorers like Jacques Cousteau and the TV documentaries that have resulted from his explorations (Garrod & Gossling, 2008).

Until the early 1990s, published literature on marine tourism was scarce (Miller & Auyong, 1991). As a result of its increasing popularity, international academic conferences have been held on the subject, a journal (*Tourism in Marine Environments*) was established and a variety of journal articles and books have emerged, which have contributed to marine tourism being recognized as an important market within the tourism industry, worthy of focussed and significant study (Orams, 1999). The first definition of marine tourism, proffered by Orams (1999) is still widely accepted:

Marine tourism includes those recreational activities that involve travel away from one's place of residence and which have as their host or focus the marine environment (where the marine environment is defined as those waters which are saline and tide-affected). (p. 9)

Marine tourism extends further than our interaction with the oceans' inhabitants. It also includes coastal areas, sea birds, cultural and heritage sites near the shore (or under the water in the case of sunken wrecks), the local scenery, local communities and the array of equipment used to enjoy this environment (Orams, 1999). The marine environment appeals to a variety of people and ages and allows for a range of recreational activities. This phenomenon results in more people, more activity, more equipment and more impacts, and thus a greater need for management (Orams, 1999).

2.2.1 The marine tourist

Academia has explored and categorised the characteristics of a general tourist into various typologies in an attempt to understand motivations, attitudes and behaviour. The typology of a marine tourist is still evolving and, although data are scarce, results from recent studies indicate they are different to a general tourist, primarily because of the type of activities they undertake and the difficulties of mobility and communication

they face when they are on, in and under the water (Coghlan, Fox, Prideaux & Lück, 2009; Orams, 1999).

During the 1970s, various typologies of the general tourist evolved through the literature (see Cohen, 1972; Crompton, 1979; Gray, 1970 and Plog, 1974). The expansion and modification of these typologies during the late 20th Century led to positioning the tourist in the natural environment. Laarman and Durst (1987, as cited in Fennell, 1999) were one of the first to categorise nature-based tourists, or ecotourists, based on the level of interest in the natural environment and the degree of physical effort required for the activity. Poon's (1993) reincarnated 'new tourist' sought independence and travel to destinations that had a strong environmental orientation.

The typology of a marine tourist may be extensions of these, however it is difficult to generalise because "within every marine recreational activity there will be a diverse range of age groups and peoples represented" (Orams, 1999, p. 35). For example, there is a demographic division between adventure / high risk almost-solo activities and more passive / wildlife-based or socially-based activities, where males and younger people predominantly engage in the former activities, such as scuba diving, surfing and windsurfing and predominantly females or older people engage in the latter, such as sunbathing, swimming and wildlife-watching (Orams, 1999).

A four-year study of visitors ($n=3,407$) to GBRMP identified similar characteristics, particularly when oceanic activities were considered (Coghlan et al, 2009): 56% of all divers were male; 65% of 'out-of-water' (i.e. passive activities) respondents were female and more than 75% of visitors travelled with a companion or family member(s).

Further data collection of marine visitors is required in order to compare and contrast these characteristics on a global scale so as to establish a more comprehensive marine tourist typology.

2.2.2 Activities

Globally, the coastal zone hosts a wide range of recreational marine activities (Orams, 1999). These have increased exponentially during the 21st Century as a result of more communities living near the coast and more people visiting the seaside each year (Miller & Auyong, 1991; Needham & Szuster, 2011). The design and manufacture of marine tourism equipment has also advanced to meet these demands and now allows humans to

access the marine environment safely and, depending on the activity, reasonably cheaply (Orams, 1999).

Popular marine recreational activities now include surfing, sailing, fishing, kite-boarding, swimming, scuba diving, snorkeling, kayaking and water-skiing. While these are all water-based activities, marine tourists also enjoy many land-based marine activities, such as beach walks, shell collecting, sandcastle building, rock pool viewing, bird watching, picnicking, sunbathing, socialising and sightseeing.

Popular commercial marine tourism activities include whale-watching and swim-with-dolphins tours, scuba and free-diving trips and courses, underwater photography, harbour cruises, and the hiring of kayaks or small sailboats for short durations. Cruise ships are also popular marine tourism activities and in 2009, the cruise tourism industry attracted almost 20 million tourists (Lück, Maher & Stewart, 2010).

2.2.3 Socio-economic and cultural impacts

Coastal communities, and in-land dwellers who choose coastal destinations at which to holiday or visit, are dependent on the quality of the marine and terrestrial environments and, as populations increase and more coastal areas are urbanised, this combination poses problems of its own (Hall, 2001).

Marine tourism provides positive socio-economic benefits to many local communities, such as increased employment and alternative livelihoods that may, in protected areas, “reduce dependencies on park resources” (Roman, Dearden & Rollins, 2007, p. 820), upgrades to infrastructure (e.g. water and electricity supplies, and new roads) and the development of superstructure (e.g. accommodation and retail shops) (Higham & Lück, 2007).

However, negative impacts from increased marine tourism may also be noticed, particularly during peak holiday seasons, when an increase in visitor numbers may cause over-crowding in local communities (Needham & Szuster, 2011). If unmanaged, the marine environment may be degraded resulting in reduced fish stocks and the possible collapse of age-old traditions and cultures (Johnston et al, 2000).

2.2.4 Management strategies

Several techniques to manage marine tourism aim to keep visitors safe, reduce user conflict, protect marine environments from negative visitor behaviour and create sociological and ecological benefits. Orams (1999) divides the strategies into four categories: physical, regulatory, economic and education.

Physical management strategies, usually in the form of human-made structures, are used to direct and facilitate the movement of visitors and reduce any negative environmental impacts as a result of their presence. Physical approaches are not very common in the sea, as they are difficult to erect. Good examples are mooring buoys, boat ramps and wharves. Self-guided underwater trails may also be used to guide human behaviour.

The setting of rules and regulations for site usage are traditional *regulatory* methods of visitor management and may include limiting visitor numbers, prohibiting certain activities, closing ecologically sensitive areas from use or creating separate zones for activities. Found on posted signs at the destination, in brochures and on websites, regulations may impose punishments if breached, such as bans, fines or imprisonment.

Economic management strategies include visitor entry fees, which may increase during the summer months in an attempt to reduce visitor numbers, permits for commercial tour operators and fines, if regulations are broken. Rewards may also be offered in exchange for reporting illegal behaviour, such as fishing in a marine reserve.

Education management strategies aim to encourage appropriate behaviour, which may lead to a better understanding of the environment. In a marine reserve, the education of visitors aims to protect what the reserve has set out to achieve. Difficulties arise because visitors' typologies differ, education on land may be forgotten once in the water and when insufficient qualified personnel are on duty to provide assistance.

The use of other techniques may combine with and / or extend the strategies above. The following section discusses some of these in detail.

2.2.4.1 Acceptable levels of visitor numbers

Literature often defines a carrying capacity of a destination as the maximum number of visitors in an area that does not cause resource or socio-cultural degradation and does not diminish the quality of the tourist experience (Davis & Tisdell, 1995; Inskeep, 1991;

Shelby & Heberlein, 1986). Capacity is a subjective assessment, which “develops with time and the growth of tourism and can be manipulated by management techniques and controls” (Saveriades, 2000, p. 151).

Butler’s (1980) life-cycle of a destination shows what can happen when visitor numbers are exceeded without timely and appropriate intervention; eventually, the result may be over-crowding, diminished experiences, displaced visitors and a deteriorating environment. These social and biophysical factors were noted in studies of marine tourists to GBRMP in Australia and GIMR in New Zealand (Breen & Breen, 2009; DoC, 2003; Inglis, Johnson & Ponte, 1999; Taylor & Buckenham, 2003).

The sustainability of the social and biophysical conditions of a destination is at “the heart of concerns over tourism impacts, saturation points and carrying capacities” (McCool & Lime, 2001, p. 373). Social conditions include the sustainability, concern and involvement of local communities, visitors’ satisfaction levels and impacts and the level of involvement by the tourism industry. Biophysical conditions include the landscape, the accessibility of the site, the degree of protection afforded to the area and the unique features of the destination. It is the relationship between the two conditions, and the style of planning by site managers, that determines the level of interest in the destination and the level of impact by tourists (Lindberg, McCool & Stankey, 1997; McCool & Lime, 2001).

The question of ‘how much is too much?’ can be reconsidered as “what are the desirable, appropriate or acceptable conditions for this region, area or tourism destination?” (McCool & Lime, 2001, p. 383). In the case of marine reserves, setting acceptable visitor conditions must also include any site-specific restrictions and regulations. This subjective attitude to visitor management has already led to the development of new frameworks and management techniques, such as the Limits of Acceptable Change (LAC) process, which is being used to control visitor numbers in popular coastal MPAs.

The long-term benefits of maintaining acceptable levels of visitor numbers through research and periodical adjustments include continued environmental protection, satisfied visitors and local communities, and a cohesive value-driven tourism industry (Breen & Breen, 2009).

2.2.4.2 Limits of acceptable change (LAC)

The Limits of Acceptable Change (LAC) is a planning framework typically used to plan for activities in terrestrial environments (Cole & McCool, 1998). In essence, it allows for the separation of users in different zones, with the aim of reducing user conflict (Catlin & Jones, 2010). The GBRMP “uses zoning as the backbone for park management and planning” (Roman et al, 2007, p. 820), by for example, restricting motorised boat usage in parts of the MPA that are also frequented by snorkellers and scuba divers. The LAC process, when used as a management strategy, helps to provide safe environments for visitors.

2.2.4.3 Demarketing

Demarketing refers to promoting a destination only to certain demographics of the tourist population, to discourage other population groups from visiting, or to avoid promoting the destination at all (Beeton, 2003; Clements, 1989; Saveriades, 2000). If this management strategy is utilised in protected areas, the aim would be to reduce visitor demand, increase the quality of the visitor experience and ensure sustained ecological protection (Beeton & Benfield, 2002; Reid, Waring & Croy, 2008).

2.2.4.4 Shifting baselines

The failure to notice incremental changes, and the phenomenon of human behavioural change to avoid dissatisfaction, is known as the “shifting baselines syndrome” (Pauly, 1995, p. 430). Baselines are reference points for measuring or evaluating change. The first observation is the natural baseline from which to evaluate change. As the first observed phenomenon declines, the next experience resets the baseline to the new disturbed state. As the spiral continues, the result is a gradual but acceptable change to the original appearance of the observed. The final product, though somewhat diminished, is still acceptable and satisfactory to users (Pauly, 1995).

In simple terms, users change their behaviour (i.e. acceptance level) by re-evaluating their expectations to escape disappointment, in order to attain (or retain) a suitable level of satisfaction (Pauly, 1995). Inadvertently, conservation managers may be subjected to, and fooled by, the shifting baseline syndrome when concluding that existing visitors are satisfied.

2.2.4.5 Research

Biological and social research provides information from which policies for effective marine governance may be implemented. The following two case studies offer examples of how social science research can assist marine conservation managers:

Study 1: A 2003 study of tourists' perceptions of impacts on a multi-use MPA in Torre Guaceto, Italy, revealed an unexpected discovery: local visitors were not even aware they were in a MPA! This research is now reflected in policy-making and management strategies and consideration is given to a different approach of MPA awareness for the local community (Petrosillo, Zurlini, Corliano, Zaccarelli & Dadamo, 2007).

Study 2: A 2002 study of visitors to Hanauma Bay Marine Park, Hawai'i, examined the site's social carrying capacity based on users' pre- and post-perception of crowding. Despite previous management strategies to reduce visitor numbers, using regulatory and economic strategies, this study revealed that visitors were still unsatisfied with crowding levels, which has lead to visitor displacement and a loss in entrance fee revenue, now essential to fund marine conservation. This research allowed management to monitor visitors more strategically, encourage visitation on less crowded days and re-evaluate the fee structure (Lankford, Inui & Whittle, 2008).

2.2.4.6 No 'in-water' management, please!

The strategies noted in section 2.2.4 are primarily land-based which have been adapted for use in the marine environment, as there is no specific strategy for in-water visitor management (Barker & Roberts, 2008). This may be an important omission for coastal MPAs and locations where increasing levels of visitors may impact negatively on the marine environment and reduce human safety.

The issue of control in the marine environment is summarised by Ballantine (1991):

It seems that many (people), from all kinds of backgrounds, feel the high water mark is a kind of last frontier beyond which one is free from regulations and restraints. They feel that the sea is the one place where you can do what you like and don't even have to feel guilty. This idea is often subconscious... (p. 23)

These management strategies offer solutions for sustainable and safe marine tourism activities.

2.3 Marine ecotourism

2.3.1 What is marine ecotourism?

Marine ecotourism is a relatively new term in tourism literature. Broadly defined as “ecotourism that takes place in saline and tidal coastal and marine settings (Cater & Cater, 2007, p. 8), it shares some of the characteristics of ecotourism and wildlife tourism (Cater & Cater, 2001) (as explained in the following sections) and “is a subset both of marine nature-based tourism and of sustainable marine tourism” (Wilson & Garrod, 2003, p. 1). Academia generally agrees that marine ecotourism occurs in naturally sensitive areas, which are vulnerable to the direct and indirect impacts of human consumption and has, at its focus, the viewing of marine wildlife in natural marine habitats.

Marine ecotourism activities are generally non-consumptive (meaning non-extractive) and include snorkelling, scuba diving, kayaking, sailing, mammal-watching (i.e. whales, dolphins and seals), bird-watching, looking at rock pools, walking along the beach and sightseeing from land platforms. There are also land-based marine ecotourism activities such as visiting aquarium viewing centres (Wilson & Garrod, 2003), however this concept is contentious because although sea-water may be pumped directly from the sea, marinelife is kept in captivity in glass tanks (Lück, 2008) and is thus not in a natural marine environment.

Marine ecotourism could therefore be contained to highly protected MPAs, such as marine reserves, however Cater and Cater (2001) suggest that confining marine ecotourism only to protected areas is too restrictive, “particularly as less than 1% of the world’s marine area is currently within established protected areas” (p. 277). The non-consumptive and sustainable use of marine resources, the engagement of local communities and substantial education and interpretation are strong components of marine ecotourism operations (Wilson & Garrod, 2003).

2.3.1.1 Ecotourism

Ecotourism evolved as an alternative to mass tourism and has the interpretation and sustainability of the natural environment as its focus (Newsome, Dowling & Moore, 2005). Ecotourism was first described in 1987 by Ceballos-Lascurain (as cited in Garrod & Wilson, 2003) as:

Tourism that consists of travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring or enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations. (p. 23)

Ecotourism has since grown in popularity and a niche market has evolved around its conservation ethos. This growth has resulted in several modified and extended definitions of the term, which are now as varied as they are confusing (see Blamey, 1997; Diamantis, 1999; Fennell, 1999; Orams, 1995, 2001a; Page & Dowling, 2002; Swarbrooke & Horner, 1999; Valentine, 1993; Weaver, 2001). There is now a lack of a clear definition of ecotourism that can be consistently and confidently applied by academia and tour operators (Higham & Lück, 2008). Higham (2007) concedes: “Ultimately it will be left to the reader to decide which school of thought should prevail” (p. 14).

Many ecotourism definitions suggest three themes should always be observable in any tourism activity claiming the ‘eco’ prefix (Fennell, 2002; Goodwin, 1996; Orams, 1995; Perkins & Grace, 2009; Weaver, 2001; Wilson & Garrod, 2003). The three themes are: “nature as the focus of the experience, environmental education, and environmental conservation” (Perkins & Grace, 2009, p. 234).

1. Ecotourism activities should be *nature-based*, with a focus on the natural environment (including flora and fauna) and may also include components of the natural area, which portray the local culture or heritage.
2. The activity should have a *learning orientation*. On-site education and interpretation programmes aim to increase people’s awareness of conservation and increase their ecological literacy. Programmes should also aim to change visitor behaviour towards the natural environment, so visitors can knowingly minimise their impact during the experience and continue the same behaviour once they have returned home. It is suggested that site education and interpretation leads to a more satisfied visitor.
3. Ecotourism should also seek to be *sustainable* both for the viability of the natural environment and for the local communities who use and benefit from it.

To achieve sustainability, site managers are encouraged to concentrate their efforts around the principles of sustainable development.

Contemporary reviews of ecotourism argue that it should also focus on two further themes: prior learning and young visitors.

5. *Prior learning*, or learning about the natural environment before a visit to an ecotourism destination or prior to embarking on an ecotourism activity, may inspire involvement in environment advocacy, add meaning to the visit and increase cultural awareness (Dubin, 2008).
6. *Young visitors* should be encouraged to bond with natural environments and take active roles in protecting and preserving natural environments. Cini, Leone and Passafaro (2010) suggest young people have a responsibility to society to construct a sustainable future. Besides, they already have the potential, via social media networks, to contribute easily and significantly to ecological awareness.

Due to its increasing popularity, the word ‘ecotourism’ has now become a successful marketing tool and a popular brand name for environmentally friendly tourism (Dorsey, Steeves & Porras, 2004). Subsequently, many tourists are recognising the need to become responsible, environmentally-friendly travellers (Dolnicar & Long, 2009).

Environmentalism has become a commodified and commercialised 21st Century concept (Dorsey et al, 2004) and some authors suggest ecotourism is just another form of mass tourism clothed in a green brand or image (Garrod, 2003). The eco- prefix is likely used by some tourism operators as a marketing strategy, rather than for the promotion of the conservation of the natural environment, however, as identified by Orams (2001), “there is no copyright on the term, there is no patent on what the approach entails. As a consequence, any debate over who has the right to call themselves an ecotourism operator is meaningless” (p. 27).

Although criticism of its use may be valid, the ideology of environmental protection is creating a global awareness and starting to transform behaviour. There is evidence that some consumers are voluntarily choosing ecotourism products ahead of less environmentally responsible tourism products (Goodwin & Francis, 2003; Singh, Slotkin & Vamosi, 2007; Worboys & de Lacy, 2003).

2.3.1.2 Wildlife tourism

Wildlife tourism is defined by Newsome et al (2005) as:

...tourism undertaken to view and / or encounter wildlife. It can take place in a range of settings, from captive, semi-captive, to in the wild and it encompasses a variety of interactions from passive observation to feeding and / or touching the species viewed. (p. 18)

Although the term wildlife includes both fauna (animals) and flora (plants/trees), wildlife tourism generally excludes the latter and concentrates primarily on travelling to observe animals in the wild (Shackley, 1996).

Wildlife tourism may be both consumptive or non-consumptive; activities such as big game hunting and fishing are consumptive as the activity usually results in the death of the animal at the hands of the paying visitor (Newsome et al, 2005). Non-consumptive wildlife-oriented recreation (NCWOR) tourism generally offers “a realistic chance for the conservation of wildlife resources in the long term” (Wilson & Tisdell, 2001, p. 279). For example, viewing an albatross breeding colony from a land platform at Taiaroa Head, New Zealand (Higham, 1998) can be considered a NCWOR tourism operation.

Many destinations in Africa and South America, as well as the Polar, regions are popular wildlife tourism destinations. There are now very few locations on the planet where wildlife tourism is not a thriving and growing industry (Newsome et al, 2005).

2.3.2 Education and interpretation programmes in MPAs

Interpretation of the marine environment is integral to the success of the marine ecotourism industry (Barker & Roberts, 2004; Boren, Gemmell & Barton, 2008; Coghlan et al, 2009; Orams, 1997, 1999; Zeppel & Muloin, 2009). Typically, marine interpretation programmes include talks by rangers or tour guides at the shoreline or onboard boats, often supported by a variety of media (e.g. brochures, websites and signboards), and may cover “the biology, ecology, and behaviours of marine species, best practice guidelines, and threats to marine life” (Zeppel & Muloin, 2009, p. 217). They aim to reveal the meanings and relationships of objects through firsthand experiences (Tilden, 1977) and help to translate “the technical language of a natural

science or related field into terms and ideas that people who aren't scientists can readily understand" (Ham, 1992, p. 1). Interpretation programmes also aim to increase visitor enjoyment and encourage "environmentally desirable changes in tourists' attitudes and behaviour" (Orams, 1997, p. 296).

Significant interpretation of the marine environment may be difficult in some cases. Those engaged in scuba diving and snorkelling activities, and to a lesser extent glass bottom boat tours, face a number of challenges which inhibit opportunities to learn. Coghlan et al (2009) note: "humans may face mobility issues (e.g. swimming in a swell or strong current), whilst wildlife on the other hand may be highly mobile in a three dimensional space. Furthermore, communication between guides and visitors may be very limited, depending on the level of immersion in the marine environment" (p. 48).

A shortage of suitably trained and qualified personnel can complicate efforts to implement effective interpretation programmes (Orams, 1999), as may initial set-up and maintenance costs, however as Tilden (1977) notes, "there is no preserve so small that it cannot employ some devices, if it desires to do interpretation at all" (p. 48). Several volunteer groups, established to provide MPA education to visitors, have done just that. For example, the Friends of Fitzgerald Marine Reserve (FFMR) in California, USA, formed in 1985 to assist local rangers, is a not-for-profit volunteer group dedicated to education outreach (FFMR, 2010). Volunteers provide interpretation of the intertidal environment and other ecosystem components, such as birdlife, botany and conservation to individual visitors and larger groups, while visitors learn about the diversity of marinelife in the ocean and reasons for its protection (FFMR, 2010).

Education and interpretation programmes play an important role in enhancing and supporting community-based conservation (Needham & Szuster, 2011). Volunteers engaged in MPA environmental programmes also receive many emotional and social benefits. A study of volunteers in South Australian MPAs showed they acquired an enhanced sense of connection to nature, increased MPA knowledge base and a sense of community belonging, as well as personal satisfaction and increased physical health and well-being (Koss & Kingsley, 2010).

2.4 Human relationship with the natural environment

2.4.1 Biophilia and nature-protective behaviour

Humans have a special connection with the wilderness and animals (Kellert & Wilson, 1993). Having historically depended upon other species on Earth for food and comfort, humans' inclination to *be* in natural environments and to affiliate with wild animals seems normal, thus the natural environment provides settings and opportunities for humans to interact with wildlife (Kaplan & Kaplan, 1989; Kahn, 1999).

In 1984, Wilson created the word 'biophilia' – the human tendency to affiliate positively with the living world, particularly its living biota (Kellert, 1993). Also referred to as “nature-friendliness” (van den Born, Lenders, de groot & Huijsman, 2001, p. 66), the connection with nature is deemed to fulfil an innate and genetically-based need. The biophilia hypothesis, as asserted by Kellert (1993) is a:

...human dependence on nature that extends far beyond the simple issues of material and physical sustenance to encompass as well the human craving for aesthetic, intellectual, cognitive, and even spiritual meaning and satisfaction.
(p. 20)

Kellert and Wilson (1993) hypothesise that human urges for biophilia occur unconsciously and naturally from early childhood and are inherent to human evolution, and that experiences in natural environments encourage nature-protective behaviour. The biophilia hypothesis has found some empirical support. Kaplan (1995) and Kahn (1997; 1999) acknowledge that time spent in natural settings encourages relaxation, promotes healing and reduces stress levels, while close relationships with animals provide psychological comfort and promotes physiological well-being. Kals, Schumacher and Montada (1999) suggest that human's nature-protective behaviour is a result of four major predictors: an emotional affinity towards nature (i.e. having a love for nature; an affective characteristic); an interest in nature (a cognitive characteristic); indignation about insufficient protection of natural environments and previous experiences directly with nature.

Children have a biological tendency to associate positively with nature because of the pleasurable activities available in the outdoors, such as playing in the mud, climbing trees and splashing in the water (Chawla, 2007). However, as children increase in age

and learn fear, their affiliation with certain objects, creatures or situations often turns negative (Chawla, 2007; Kahn, 1999). The term, biophobia – the opposite to biophilia – involves strong fears, most often resulting from discomfort or connections with creatures that are deemed to be frightening, such as spiders and sharks (Kellert & Wilson, 1993). Ulrich (1993) asserts these fears are inherent and part of the human defence mechanism, however, Kals et al (1999) suggest they can be counteracted through the combination of concrete experiences in natural environments and environmental education programmes with appropriate others (e.g. educationalists), as it is these factors that increase a person's emotional affinity with nature. Thus, by instilling a strong affinity for nature, there is a greater desire to be *in* nature (Kals et al, 1999; Kahn, 1999).

2.4.2 Value orientations related to environmental behaviour

Individuals are attracted to nature in a number of ways and for a number of reasons, which is a result of differing demographic and socio-economic backgrounds (Reynolds & Braithwaite, 2001). The typology of biophilia values, as developed by Kellert (1993), reflects human's differing tendencies to affiliate with nature and includes utilitarian value, negativistic value, dominionistic value, naturalistic value, ecologicistic value, scientific value, aesthetic value, symbolic value, humanistic value and moralistic value (Table 4).

The nine nature values move through three phases of pro-environmental behaviour – egocentric, altruistic and biospheric (Kellert & Wilson, 1993). Egocentrism is similar to entitlement, in that its behaviour is determined by the economic and personal benefits of the use of natural resources (i.e. intrinsic values); altruistic behaviour is the result of perceived benefits of nature for others (i.e. social values); and biosphericism concerns behaviour that directly benefits the environment / ecosystem (de Groot & Steg, 2008).

The 'value' of marine conservation is often perceived differently. Utilitarian values and approaches to recreational activities and tourism by conservation managers, local government and fishing communities may be in direct conflict with the public's humanistic and aesthetic approaches (Bogaert et al, 2009; Davis & Tisdell, 1995; Jones, 2007). Unfortunately, the trade-offs and sacrifices needed between these values may be detrimental, rather than beneficial, to marine conservation.

Table 4

Typology of biophilia values reflecting human's tendency to affiliate with nature
(Kellert, 1993)

Term	Definition	Function
<i>Utilitarian</i>	Practical and material exploitation of nature	Physical sustenance / security
<i>Naturalistic</i>	Satisfaction from direct experience/contact with nature	Curiosity, outdoor skills, mental/physical development
<i>Ecologistic-scientific</i>	Systematic study of structure, function, and relationship in nature	Knowledge, understanding, observational skills
<i>Aesthetic</i>	Physical appeal and beauty of nature	Inspiration, harmony, peace, security
<i>Symbolic</i>	Use of nature for metaphorical expression, language, expressive thought	Communication, mental development
<i>Humanistic</i>	Strong affection, emotional attachment, "love" for nature	Group bonding, sharing, cooperation, companionship
<i>Moralistic</i>	Strong affinity, spiritual reverence, ethical concern for nature	Order and meaning in life, kinship and affiliation ties
<i>Dominionistic</i>	Mastery, physical control, dominance of nature	Mechanical skills, physical prowess, ability to subdue
<i>Negativistic</i>	Fear, aversion, alienation from nature	Security, protection, safety

2.4.3 Loyalty to, and growth of, protected natural environments

Travel destination loyalty (TDL) takes a longitudinal perspective of repeat visitor behaviour to the same destination (Opperman, 2000). Directly linked to a destination's ability to attract visitors, TDL is measured at an individual (micro) or collective (macro) level. It may be influenced by existing alternatives (or lack thereof), satisfaction with previous visits and the novelty of the activity, such as snorkelling to view marine life (Niininen, Szivas & Rile, 2004) and may also indicate a strong sense of destination identification (Ryan, 1995).

TDL also concerns the motivations, expectations and attitudes of visitors (Hsu, Cai & Li, 2010). Highly satisfied visitors often state their intention to return or suggest the destination to others via various forms of communication (Aguilo, Alegre & Sard, 2005; Opperman, 2000). Word-of-mouth, social media (e.g. Facebook and Twitter) and tourism advertisements greatly influence visitation to protected areas such as GIMR (Eagles & McCool, 2002). Motivations for repeat visitation to natural environments

include the opportunity to observe wildlife close up and to learn about nature, concerns about nature, participation in recreational or leisure activities and self-actualisation (Awaritefe, 2004; Tao, Eagles & Smith, 2004; van der Merwe & Saayman, 2008). Despite travel motivations differing between visitors and destinations, they are generally connected to biophilia values with biospheric tendencies (Kellert, 1993).

A positive attitude towards the conservation and protection of a natural area can lead to increased and repeat visitation to other natural areas (Eagles & McCool, 2002). As noted by Eagles and McCool (2002): “People must visit parks, must appreciate the experiences gained and must have a memory of appreciation that leads to long-term attitude reinforcement” (p. 23). The cycle of visitation and appreciation leads to attitudinal changes that encourage citizens to lobby, via political action, for further protected areas (Figure 6). The tourism conservation cycle model, developed by Eagles and McCool (2002) is based on the development and planning of national parks. It can also be used to indicate how the attitude towards marine protected areas, and in particular marine reserves, may be developed.



Figure 6: The tourism conservation cycle. From “Tourism in National Parks and Protected Areas: Planning and management” by P. F. J. Eagles and S. F. McCool, 2002, CAB International. Copyright by CAB International. Reprinted with permission.

The tourism and conservation cycle is seen in the increased visitation to, and appreciation for, popular MPAs in New Zealand, such as Goat Island Marine Reserve, and the increased community support for further MPA establishment, as noted in sections 2.5 and 2.6.

2.5 Kia Ora! Welcome to New Zealand

2.5.1 Tourism in New Zealand

The success of New Zealand's tourism industry lies in the country's unique scenery and abundance of natural resources (Tourism Strategy Group [TSG], 2011). According to Tourism New Zealand (TNZ) (2011a):

New Zealand is a land of nature and a land of immense natural diversity. The scenic attractions alone – the stunning landscapes, glorious beaches, the upthrust volcanoes and spectacular geothermal activity – will leave you reaching for superlatives. (Nature)

International visitors to New Zealand reached 2.5 million (as at the end of January 2011) with New Zealand's top five markets – Australia, UK, USA, China and Japan – accounting for 69% of all arrivals (TSG, 2011). New Zealand's natural attractions also encourage domestic tourism, which in the year ended December 2010, accounted for almost 50 million trips (including day trips) (TSG, 2011). Together tourism contributes over NZ\$22 billion to the New Zealand economy and accounts for almost 200,000 jobs (directly and indirectly) or almost 10% of New Zealand's total workforce (TSG, 2011).

Nature-based activities are popular and vary considerably, from high impact adventurous activities such as jet-boating and mountain climbing, to more relaxing activities such as tramping and bird watching (Carr, 2007; TNZ, 2011a). The many nature-based activities that take place along the coasts include visiting the beach, fishing, surfing, whale-watching and swim-with-dolphin tours, sailing, swimming, scuba diving and snorkelling (TNZ, 2011a).

New Zealand holds special *taonga* (treasures) in its varied landscapes and unique environments and is well recognised for its nature-based tourism and conservation ethos, *kaitiakitanga* (guardianship), particularly as 30% of the country's public land is set aside for conservation to "preserve the country's ecological heritage" (TNZ, 2011a). The relationship between Māori (the indigenous people of New Zealand) and settler (European or Pākehā) is also depicted as "a unique marker by which to differentiate New Zealand's destination image" (Amoamo & Thompson, 2010, p. 36).

2.5.1.1 New Zealand Tourism Strategy 2015

The New Zealand Tourism Strategy 2015 [NZTS2015] (2010) is a document which charts the path of tourism planning and development in New Zealand. *Kaitiakitanga* (guardianship) and *mana-ā-kītanga* (hospitality) are the two key values that underpin the strategy and provide the foundation for a sustainable approach to the development of the New Zealand tourism industry (NZTS2015, 2010). The strategy focuses on four outcomes:

1. New Zealand delivers a world-class visitor experience.
2. New Zealand's tourism sector is prosperous and attracts ongoing investment.
3. The tourism sectors take a leading role in protecting and enhancing the environment.
4. The tourism sector and communities work together for mutual benefit.

In order for these outcomes to be achieved, there must be cooperation between “the private sector, central and local government, and other interest groups” (NZTS2015, 2010, p. 3).

2.5.2 Māori and *kaitiakitanga*

Māori are the indigenous people of New Zealand and, in accordance with the Treaty of Waitangi signed in 1840 between the Crown (government) and Māori leaders, Māori are guaranteed certain rights and privileges including the right to *kaitiakitanga* (guardianship) over their *taonga* (treasures) and the right of *rangatiratanga* (control or sovereignty) of their resources (Carr, 2009; Orams, 2002).

Māori have a special relationship with the sea, traditionally taking marinelife for food and other customary uses, however, temporary protection areas or bans on the extraction of certain species have also been created, to allow marinelife to replenish when required (Ballantine, 1999; Wilson Freeman, Hogan & Thompson, 2007). Māori are encouraged to continue marine environment protection through active participation, however, because the objectives of marine reserves conflict with Māori objectives for marine management or because their interests were not supported, their involvement in marine environment protection has varied (Wilson et al, 2007).

For example, Māori communities disapproved of the proposal for the Tapuae Marine Reserve, in New Plymouth, on the grounds that access to customary fishing grounds would be negatively affected (Churchouse, 2005). Conversely, local Māori on the Coromandel Peninsula, south-east of Auckland, supported the proposal for the Te Whanganui-a-Hei (Cathedral Cove) Marine Reserve, as the coastline held significant cultural and historical meaning for their people; ultimately, however, Māori interests were overlooked in the final planning stage “as a consequence of the boundary adjustment which excluded their most sacred site from the reserve” (Cocklin, Craw & Mcauley, 1998, p. 224).

Māori involvement in the proposal of the GIMR was also limited and initially opposed, however, since its establishment, attitudes have changed and Māori now support GIMR (Taylor & Buckenham, 2003).

The New Zealand government and Māori leaders recognise the need to work together “to develop, implement and monitor marine management systems” that will benefit all *tangata whenua* (people of New Zealand), today and in the future (Wilson et al, 2007, p. 48).

2.5.3 The role of the public sector

The management of public conservation land is guided by legislation from six Acts of Parliament (Table 5). Three general policies relating to conservation in New Zealand guide the interpretation of the conservation legislation. They are the Conservation General Policy, National Parks General Policy and the New Zealand Walkways General Policy. Note, there is no specific General Policy for the marine environment.

Thereafter, each region’s conservancy office has their own Conservation Management Strategy and individual conservation sites may have their own site-specific Conservation Management Plan. A concession, or permit, is required for the operation of any commercial business on conservation land, which must be consistent with the principles outlined in the legislation, policies, and management plans (DoC, 2006a).

Table 5

The Acts of Parliament which guide the management of public conservation land in New Zealand

Name of Act & establishment date
Resource Management Act 1991 (RMA)
Conservation Act 1987
Marine Reserves Act 1971 (MRA)
National Parks Act 1980
Walkways Act 1990
Reserves Act 1977

2.5.3.1 The Department of Conservation

Formed in 1987, the Department of Conservation (DoC) manages public conservation land and is charged with protecting “the intrinsic, natural and cultural values of the terrestrial and marine areas it manages, while fostering recreational opportunities that provide contact with these values” (McCrone, 2001, p. 6). DoC also advocates for the protection of the country’s natural heritage, both on and off public conservation land, so that its values can be passed on to future generations (DoC, 2006a).

DoC co-manages conservation land with *tangata whenua* (people of New Zealand), including local *iwi* (tribes), under the Conservation Act, 1987. Assistance with the day-to-day management of conservation areas is provided by many New Zealand organizations, including local concessionaries, not-for-profit organizations (e.g. Royal Forest & Bird Protection Society of New Zealand [Forest & Bird], Kiwi Conservation Club and the NZ Plant Conservation Network), honorary rangers and local volunteer groups, who endorse the conservation philosophy (Carr, 2007; Walls, 1998).

DoC recently developed the Destination Management Framework (DMF) – a set of principles to manage the “elements that make up a site or destination – its values, attractions, the people, infrastructure, access and how the place is marketed” (DoC, 2011a, p. 5). The DMF encourages an increased participation in protected areas and allows DoC to focus on its vision:

New Zealand is the greatest living space on Earth
Kāore he wāhi i tua atu i a Aotearoa, hei wahi noho i te ao
(DoC, n.d.a, Vision, role overview and statutory mandate)

The DMF suggests management techniques that aim to engage more people and respond to visitor's expectations in a more integrated manner, while also keeping the visitor experience in mind. The DMF does not specifically apply to MPAs or the marine environment, but to all conservation areas managed by DoC.

2.5.3.2 Conservation Act 1987

The objectives of the Conservation Act 1987 include preserving and protecting all natural and historic resources, so their intrinsic values may be maintained; providing space for public appreciation and recreational enjoyment; and safeguarding opportunities for future generations (Conservation Act 1987, 2010). DoC was established to carry out the objectives of the Act. However, the Act has also been criticized for “championing the preservation philosophy” (Craig et al, 2000, p. 65) and not including the management of people in its goal.

2.5.3.3 Marine Reserves Act 1971

The Marine Reserves Act 1971 was enacted after several years of lobbying by marine scientists who wanted to establish a marine reserve in Leigh for scientific study (Ballantine, 1991). Administered jointly by the Ministry of Agriculture and Fisheries (MAF) and DoC, the Act provides “for the setting up and management of areas of the sea and foreshore as marine reserves for the purpose of preserving them in their natural state as the habitat of marine life for scientific study” (Marine Reserves Act 1971, 2008, p. 2).

The removal of marine life is prohibited (except by permit), which also includes “taking, catching, fishing, killing, or pursuing by any means or device; and, in relation to any plant, includes uprooting and transplanting; and also includes any attempt at taking” (Marine Reserves Act 1971, 2008, p. 6). Offenders may be jailed or fined up to NZ\$250,000 and have equipment seized (Marine Reserves Act 1971, 2008).

The Act also allows the public to have “freedom of access and entry to the reserves, so that they may enjoy in full measure the opportunity to study, observe and record marine life in its natural habitat” (Marine Reserves Act 1971, 2008, p. 6). Freedom of access includes the right to navigate and anchor with care within the boundary of a marine reserve.

2.5.4 Marine protected areas in New Zealand

In 1887, New Zealand established its first national park. Māori chief, Te Heuheu Tukino IV, gifted Tongariro National Park to the nation. It is located in the centre of the North Island and is a popular destination for tramping during the summer months and snow skiing during the winter months (DoC, 2011b). New Zealand has 30% of its land mass set aside in national parks and conservation reserves, which are accessible to the public via good road systems and offer a range of leisure and tourism recreational activities.

By contrast, New Zealand’s first protected area in the marine environment was established in 1975 – 88 years after the establishment of the Tongariro National Park – the Cape Rodney–Okakari Point Marine Reserve (GIMR’s formal name). It is the study site for this research and is discussed in more detail in section 2.6.

Overfishing, seen as one of the most destructive of human activities, impacts severely on the marine environment and indirectly causes a loss of biomass (Shears & Babcock, 2003), thus the main objective of establishing a marine reserve, where fishing is prohibited, is to restore the health of the biomass, and ultimately the ecosystem, although full recovery may take many years. As a result of the lengthy recovery time, Shears and Babcock (2003) note that few empirical studies within marine reserves have been conducted and “no temporal data exist for non-reserve sites” (p. 2). There is also a lack of longitudinal data available worldwide to compare fished and un-fished areas to prove the long-term effectiveness of a category Ia MPA. The dearth of data supporting global and national MPA development means the process of establishing more marine reserves is slow.

During the past decade, the New Zealand government has been developing a network of MPAs within its Territorial Sea (from the coastline to 12 nautical miles offshore) and Exclusive Economic Zone (EEZ) (12 to 200 nautical miles offshore), with the aim of

having “10% of New Zealand’s marine environment with some form of protection by 2010” (Ministry of Fisheries, 2005, p. 3). New Zealand currently has 35 marine reserves (Figure 7) (including the newly established Tawharanui Marine Reserve in Auckland, which replaced the Tawharanui Marine Park in September 2011) (Wilkinson, 2011). The majority of sea area with total protection (99%) is in two largely inaccessible marine reserves located around isolated offshore island groups – the Kermadec Islands, located 1000kms north-east of New Zealand and the Auckland Islands, located 470kms south of New Zealand (DoC, n.d.b). The remainder are coastal marine reserves, which are small in size.

The Ministry of Fisheries (2009) reports that approximately 32% of the marine environment within New Zealand’s EEZ is protected, however, the MPA network in New Zealand can also include vertical stratification and Benthic Protected Areas (BPA) (Ministry of Fisheries, 2005). Although BPAs prohibit seabed trawling and dredging within 100m of the seabed, the remainder of the water column, which can be considerably deep, remains unprotected. Currently, the BPA network covers approximately 30% of the EEZ. Consequently, at present only 2% of New Zealand’s marine environment is really protected in MPAs (Ministry of Fisheries, 2009).

During 2011, eight new marine reserves were proposed – three large marine reserves surrounding the Sub-Antarctic Islands and five smaller marine reserves on the South Island’s West Coast. Once established, New Zealand’s marine reserves will protect more than 10% of New Zealand’s Territorial Sea (Heatley & Wilkinson, 2011; Ministry of Fisheries, 2011). All marine reserves are administered under the Marine Reserves Act, 1971.

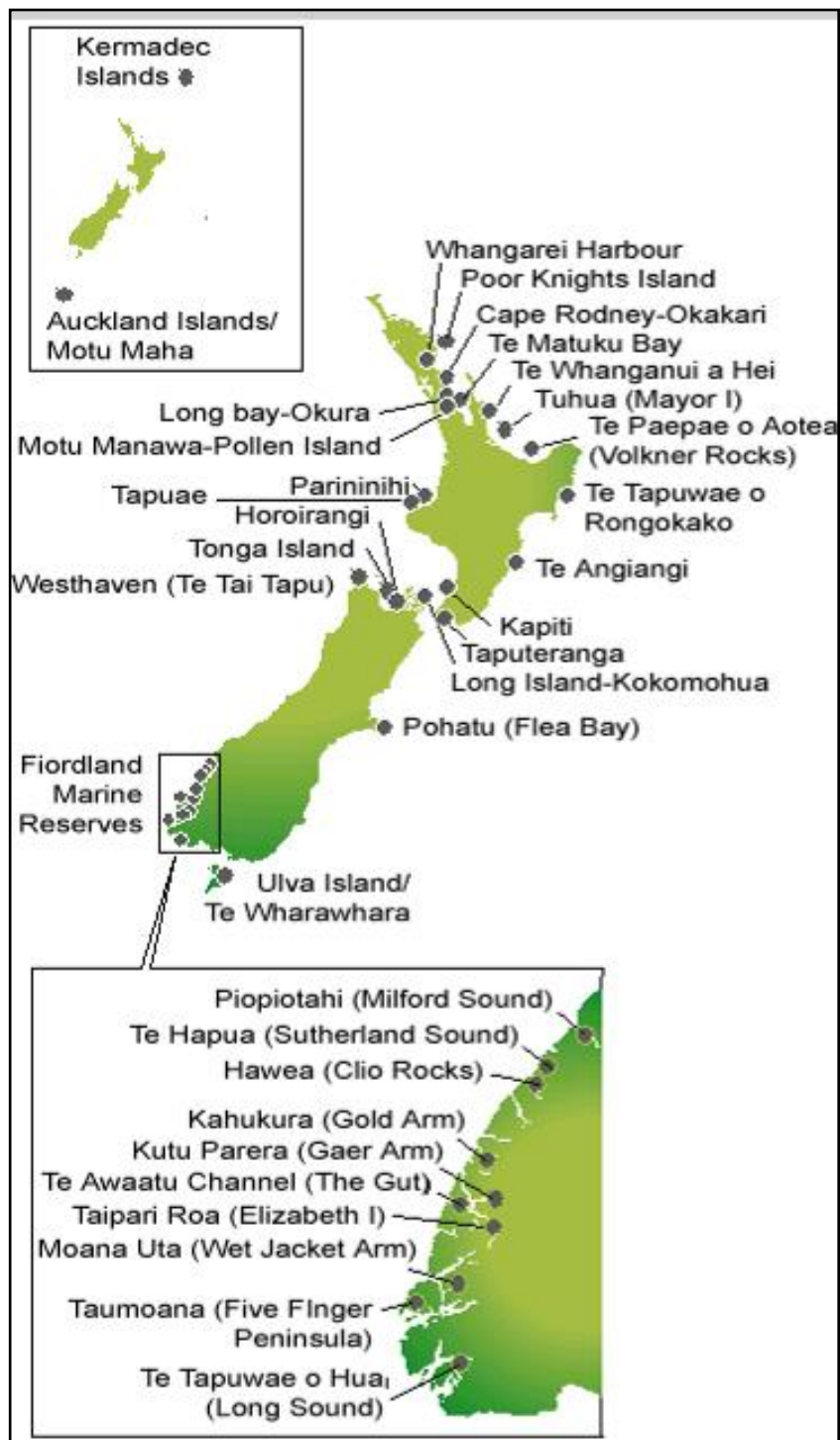


Figure 7: New Zealand's marine reserves as at February 2010. From Department of Conservation. Retrieved from <http://www.doc.govt.nz> Copyright 2010 by Department of Conservation. Reprinted with permission.

2.5.4.1 Support for marine reserves

Public interest in the establishment of further marine reserves in New Zealand is increasing despite the considerable length of time marine ecosystems take to recover after protection (PISCO, 2002; Russ & Alcala, 2004; Taylor & Buckenham, 2003; Walls, 1998). The support is possibly because “protection of the marine environment is considered to be New Zealand’s fourth most important conservation activity behind biosecurity, the protection of native bird and plants, and preservation of bird and plant habitats” (Arnold, 2004, p. 10).

Arnold’s (2004) review of public interest in, and attitude towards, the marine environment identified several biophilia values: emotional connections (*humanistic*), connotations of different words (*symbolic*), concern for marine resources and the marine environment (*moralistic*) and community responsibility for education, knowledge and legislation (*ecologistic-scientific*). The establishment of GIMR, more than 35 years ago, has paved the way for the protection of New Zealand’s marine environment.

2.5.5 Hauraki Gulf Marine Park

GIMR is located within the Hauraki Gulf Marine Park (*Ko te Pataka kai o Tikapa Moana*) (HGMP) (Figure 8). The 1.2 million hectare marine park is “one of the lifelines of commerce in New Zealand, serving the Port of Auckland and a significant fishing and transport industry. It also provides outstanding recreation opportunities for residents and visitors” (Auckland Council, 2010, Why protect the Gulf?).

Established by special legislation in 2000, the HGMP is managed by a forum, which consists of representatives of the Ministers of Conservation, Fisheries and Māori Affairs, representatives of six regional councils and representatives of the *tangata whenua* of the Hauraki Gulf and its islands (DoC, n.d.c).

The HGMP seeks to protect the natural and historic features of Auckland’s inner waters, part of the territorial sea and numerous habited and inhabited islands and is of significant national value due to its “natural richness, environmental quality, biological diversity and landscape” (DoC, n.d.c., Significance). However, despite its size, only 0.3% of its waters are protected in no-take marine reserves (Bond, 2011).

2.5.6 Auckland's marine reserves

The six marine reserves of the HGMP (Table 1 and Figure 8) are dissimilar in terms of their biological diversity. They also host a wide range of visitors, with the majority originating from “the vicinity of the reserve and from the closest large metropolitan area” (McCrone, 2001, p. 31).

The Long Bay-Okura Marine Reserve is adjacent to one of Auckland's most popular beaches estimated to receive more than 1.5 million visitors annually (Hunt, 2008; McCrone, 2001). The attraction of this urban setting is the long expansive beach and adjacent Long Bay Regional Park, rather than the marine reserve, likely because the marine environment has not yet returned to its natural state (Salomon, Shears, Langlois & Babcock, 2008).

Tawharanui Marine Reserve (formally the Tawharanui Marine Park) is the closest marine reserve to GIMR and a popular snorkelling destination. The reserve's popularity is increasing (McCrone, 2001) and more visitors are expected after the successful establishment of the Tawharanui Open Sanctuary. Protected by a 2.5km long predator-proof fence, it is a mainland sanctuary for birds and wildlife on the Tawharanui Peninsula, which adjoins and supports the Tawharanui Marine Reserve (Tawharanui Open Sanctuary Society Inc, 2011).

Te Matuku Marine Reserve is located in a small Waiheke Island bay. It protects one of the island's largest and least disturbed estuaries and a small area of the sea in the Waiheke Channel (DoC, 2006b). Recreational activities, such as kayaking, swimming, birdwatching and picnicking are encouraged. Primarily a wetland with mudflats, mangroves and shell spits, the waters are often murky and not great for underwater viewing. The endangered New Zealand dotterel and other wading birds are protected residents (DoC, 2006b; Marine NZ, 2007).

The Motu Manawa-Pollen Island Marine Reserve is unique in that Auckland's busy northwestern motorway passes through the reserve. As a result, access is difficult and best reached by kayak. This tidal marine reserve is a valuable marine environment protecting mangrove swamps, mudflats and shell banks and is also a haven for birdlife, including migrating seabirds (Forest & Bird, 2011; Marine NZ, 2007).

Te Whanganui-A-Hei (Cathedral Cove) Marine Reserve, located on the eastern coast of the Coromandel Peninsula, approximately 2.5 hours drive from Auckland central, was established in 1992. Recreational activities include sea kayaking, scuba diving, swimming and snorkelling. A snorkel trail, installed in 2004 and marked by buoys and information panels, depicts the diverse marine habitats and species that live in the marine reserve (DoC, 2010a).

The Cape Rodney-Okakari Point Marine Reserve is explored in detail in the following section.

2.6 The study site: Goat Island Marine Reserve, Auckland, New Zealand

2.6.1 Physical and biological aspects

The Cape Rodney-Okakari Point Marine Reserve, which is also known as Goat Island Marine Reserve and Leigh Marine Reserve (DoC, n.d.d), is located approximately 90 minutes drive north of downtown Auckland, on the east coast of New Zealand (Figure 9). It is within the local Pakiri to Puhoi region (NZTRI, 2011) and 3kms north-west of the town of Leigh, a small community fishing-village perched above a harbour and the gateway to GIMR. There is only one access point to the marine reserve, which is well sign-posted from Warkworth.

The marine reserve comprises 547 hectares (almost 5.5 km²) of seabed and shoreline, with *Motu Hawere*, or the Goat Island Scientific Reserve (9ha), at its centre, and extends 800 meters from the mean high-tide mark that defines the reserve's boundary. Located in the middle of the marine reserve, *Motu Hawere* was formally protected in 1971 and is home to breeding petrels and other sea birds (DoC, n.d.d).

The marine reserve's rocky shoreline, small sandy beach and the Whakatuwhenua Stream lie adjacent to land owned and managed by a variety of groups, including DoC, Auckland Council, University of Auckland and local landowners, including *iwi*. Together the land constitutes the Leigh Reserves Complex (Figures 10 and 11). The ancient greywacke rock and soft sandstone are typical of this north-eastern coastal location, as are the mudstone cliffs at the south of the bay which house a number of large pohutukawa trees (*Metrosideros excels*) (Enderby & Enderby, 2006).

According to the Ministry for the Environment (2008): "In 1978, much of the sea floor in the Goat Island Marine Reserve between 5 and 9 metres in depth was rock-flat barrens dominated by sea urchins" (para 3). Over the years since marine reserve protection, the benthic communities have shifted from a dominance of sea urchins to a dominance of macro algae (Shears & Babcock, 2002). This change indicates the presence of a trophic cascade, brought on by an increased abundance of predators (Babcock et al, 1999; Shears & Babcock, 2003). While the large fish, particularly snapper (*Pagrus auratus*), blue cod (*Parapercis colias*) and red moki (*Goniistius spectabilis*) are the most dominant, many other species of marine flora and fauna are also present (Babcock et al, 1999; Enderby & Enderby, 2006; Shears & Babcock, 2003).

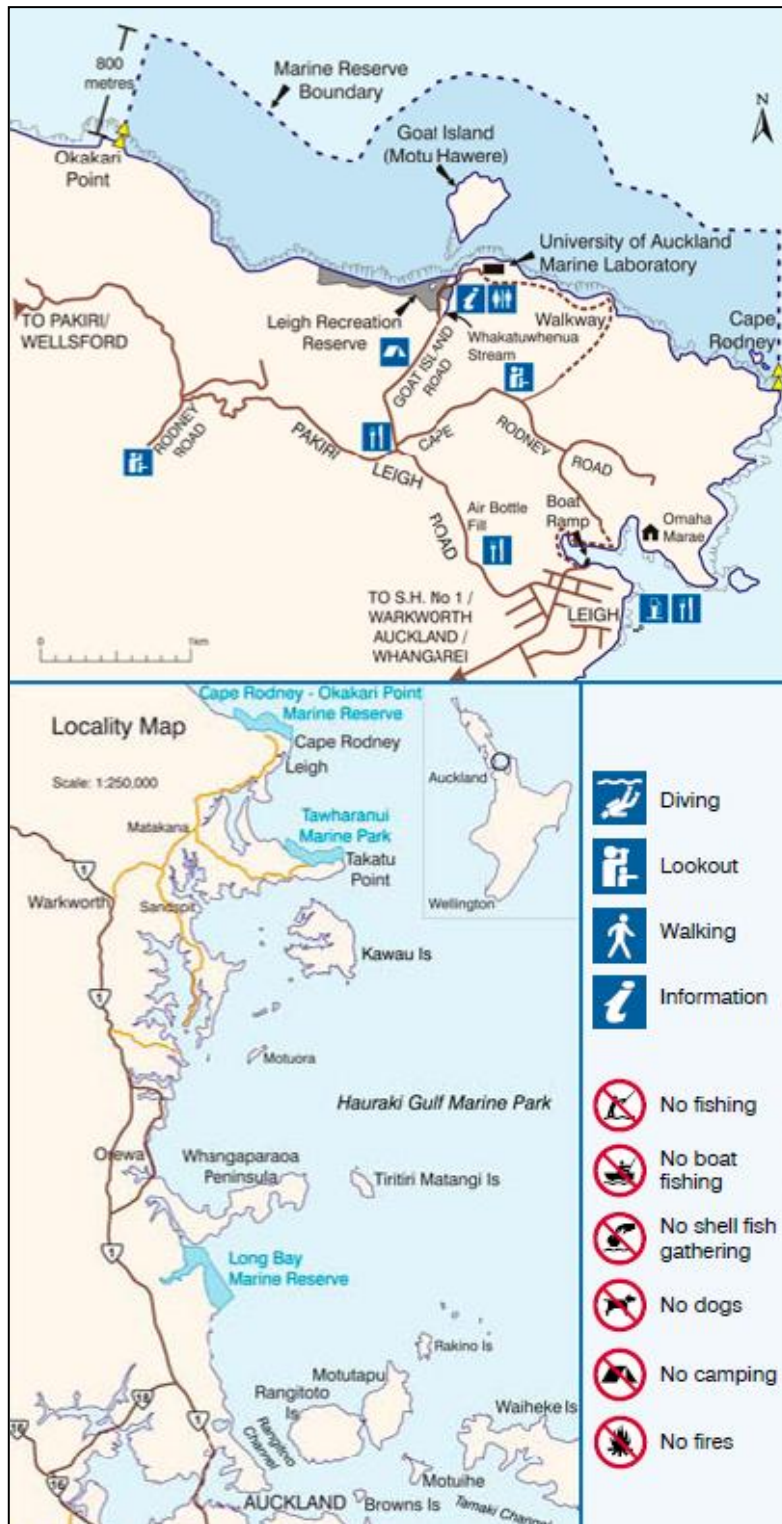


Figure 9: Map of the Cape Rodney-Okakari Point Marine Reserve and greater area [Map]. Retrieved from <http://www.doc.govt.nz/upload/documents/parks-and-recreation/places-to-visit/auckland/cape-rodney-marine-reserve-brochure.pdf> Copyright 2010 by Department of Conservation. Reprinted with permission.

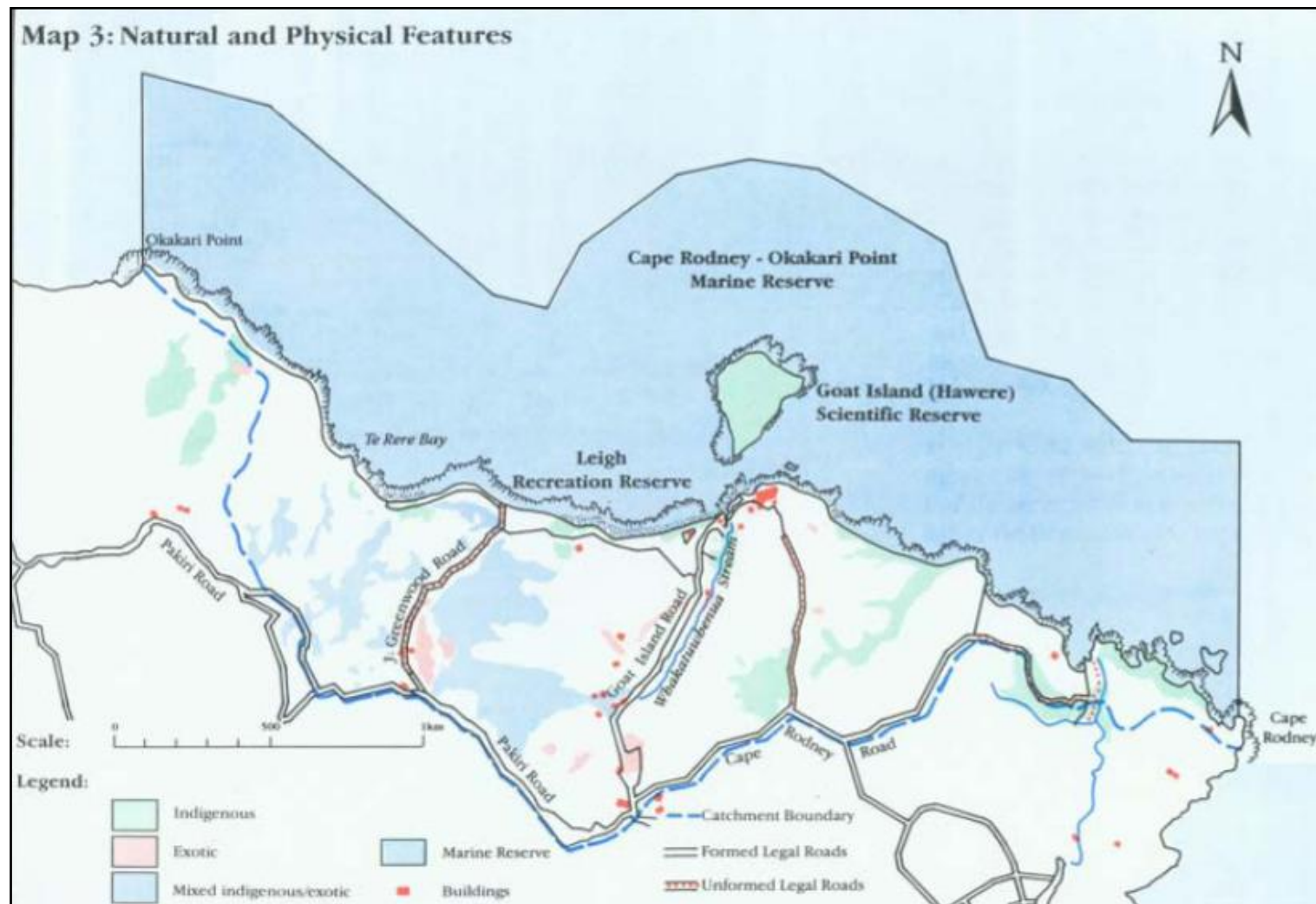


Figure 10: Biophysical features of the Leigh Reserves Complex [Map]. From DoC. Copyright 2002 by Department of Conservation. Reprinted with permission.

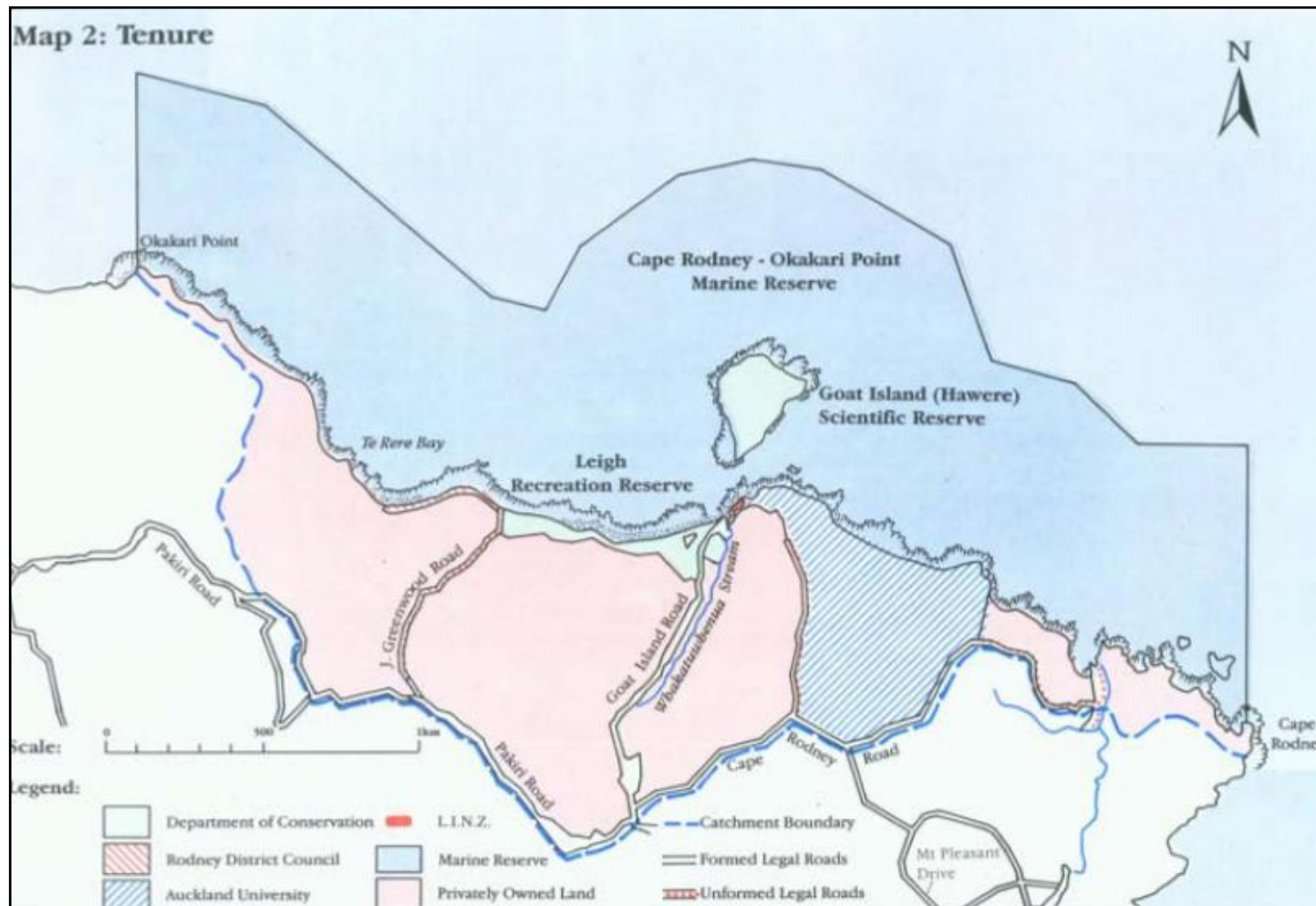


Figure 11: Land tenure of the Leigh Reserves Complex [Map]. From DoC. Copyright 2002 by Department of Conservation. Reprinted with permission.

At low tide, the rocky shores expose rock pools that reveal seaweeds, seashells, starfish, shrimps, sponges, sea urchins (kina), octopus, crabs and small endemic fish. Subtidal kelp forests dominate the reefs, housing colonies of crustaceans and small eggs which feed a variety of fish. Larger fish, such as jack mackerel (*Trachurus novaezelandiae*), piper (*Hyporhamphus ihi*), kingfish (*Seriola lalandi lalandi*), and snapper (*Pagrus auratus*) extend their range off-shore and may also be found in large schools (Enderby & Enderby, 2006; DoC, n.d.d; DoC, 2010b).

New Zealand's smallest stringray, the eagleray (*Myliobatis tenuicaudatus*) and other stingrays lie on the sandy seabed close to the shore, alongside goatfish (*Mullus auratus*) and porae (*Nemadactylus douglasii*). Nocturnal creatures like the spiny rock lobster (*Jasus edwardsii*) hide in caves and underwater canyons. Large marine mammals, such as orca (*Orcinus orca*) and bottlenose dolphins (*Tursiops truncatus*) regularly feed in the marine reserve (Babcock et al, 1999; DoC, 2010b; Enderby & Enderby, 2006; Shears & Babcock, 2003; Torckler & Torckler, 2008).

The Hauraki Gulf Marine Park region is identified as a potential marine Important Bird Area (IBA) (Brooks, 2011; Waugh, 2009). IBAs are defined as areas "small enough to be conserved in their entirety and often already part of a protected-area network" (Birdlife International, 2011, International Bird Areas) and highlight areas of conservation for seabirds. At GIMR, a colony of pied shags (*Phalacrocorax varius*) nest in the clifftop pohutukawa trees (*Metrosideros excels*). They belong to the same family as cormorants (*Phalacrocoracidae*) and are common to New Zealand. They feed on fish from the marine reserve and are often seen perched on a tree stump with their wings outstretched to dry due to their permeable plumage (DoC, 2010b).

Other birdlife at GIMR include the introduced mallard duck (*Anas aucklandica*) which wander the beach and the Whakatuwhenua Stream. Despite being an alien species, they are "the most common and familiar waterfowl in the country" (Dyer & Williams, 2010, p. 178). The world's smallest penguin, the little blue penguin (*Eudyptula minor*), which is listed as Lower Risk-Near Threatened (New Zealand Penguins, 2007), is known to feed around the coast during the day and nest at *Motu Hawere* at night. Many other seabirds, including Australasian gannets (*Morus serrator*) and variable oystercatchers (*Haematopus unicolor*) are also common visitors (Enderby & Enderby, 2006; Leigh by the Sea, n.d.).

2.6.2 History

Māori have a long history in the area; arriving in the 14th Century on the *Moekaraka waka* (canoe), they landed at *Whakatuwhenua* (now known as Goat Island Marine Reserve) and settled in a *pa* (village) at *Te Arai o Tahuhu* (Te Arai Point). Descendents have remained in the area and are represented by *Ngati Manuhiri hapu* of *Ngatiwai* (Ngati Manuhiri, 2011) who claim *manamoana* (customary marine rights) and exercise *kaitiakitanga* (guardianship) over the marine reserve (DoC, 2010b).

This rural coastal region was isolated for many years, as there were very few roads north of Auckland. During the 1950s, spear-fishing was popularised, which resulted in the depletion of much of the marinelife, particularly crayfish and snapper (Walls, 1998).

During the 1960s, scientists from the University of Auckland's Leigh Marine Laboratory advocated for legislation to protect a small area of the marine environment (Ballantine, 1991). The New Zealand Underwater Association and the New Zealand Marine Sciences Society, who had noticed the decline of marinelife in the area, actively supported the proposal and pressured the government to produce draft legislation. Once produced, it was noted as being "narrow in scope and negative in tone" (Ballantine, 1991, p. 22), however, eventually, the Marine Reserves Act 1971 was passed into parliamentary law.

The Marine Reserves Act 1971 provided the vehicle to apply for the establishment of New Zealand's first marine reserve. Several NIMBY-type objections preceded the applications and subsequent resubmissions, before the Cape Rodney-Okakari Point Marine Reserve was approved in November 1975. A management committee was formed (as required by the Act) and the marine reserve formally opened in 1977.

The main activity at GIMR during the 1970s was marine science research (Cole, Ayling & Creese, 1990). By the end of the decade, marine scientists had produced maps and surveys of the biophysical features of the marine reserve, creating "a good taxonomic baseline" (Ballantine & Gordon, 1979, p. 277). Field and laboratory studies are still conducted in the marine reserve and the university continues to invest in marine science infrastructure (Montgomery, n.d.).

2.6.3 Social aspects

Prior to the opening of GIMR, the management committee raised concerns about possible sociological impacts on the marine environment. Concerns included the requirement of licences for scientific experiments and structures, the control of boat anchorage and the need to balance public interest and education, while “limiting the destructive effects of sheer numbers” (Ballantine & Gordon, 1979, p. 277). Initially public interest in recreational activities at GIMR was low, however, studies have indicated a steady increase in visitor numbers (Table 6).

Table 6

Estimated visitor numbers at Goat Island Marine Reserve, since 1983

Year	Visitor numbers (est.)
1975/1975	13,000
1983/1984	42,000
1991/1992	89,000
1992/1993	114,000
1993/1994	122,000
1998/1999	210,000
2007/2008	375,000

Note: Based on figures cited by DLS (1984), Hunt (2008), McCrone (2001) and Taylor & Buckenham (2003).

A 1984 unpublished report on the results of a visitor survey at GIMR, affirmed initial concerns that suggested land-based resources were under pressure from intense social use (DLS, 1984). During the summer months, the small beach became over-crowded and the water near the shoreline congested. The main activities were scuba diving (performed mainly by males) and swimming, and the main attraction was touching and feeding the fish. For many, the purpose of the marine reserve was not clear, as visitors “likened the reserve to an underwater zoo” (DLS, 1984, p. 16).

The report indicated males predominated (58%), visitors travelled in groups or families (80%) and scuba diving was the main reason for a visit (64%). Recreational activities for non-divers were primarily land based and included sightseeing, sunbathing and beach walking. Overall, satisfaction levels were high, as were repeat visits. The site offered a unique diving experience in a rural location and, despite the intense over-

crowding, there was a “high rate of requests for more marine reserves... more of the same” (DLS, 1984, p. 17).

2.6.4 GIMR in the 21st Century

Visitation to GIMR has grown rapidly since DoC became responsible for its management (i.e. in 1987, when DoC was established) and visitor numbers have increased more than 3000% since 1975. The Leigh Reserves Complex Conservation Management Plan [LRCCMP] 2002 guides the management of the site which includes, amongst other items, biological and visitor monitoring, research and education, compliance and law enforcement and commercialisation (DoC, 2002).

Over the years, site upgrades have included the sealing and widening of Goat Island Road and the enlarging of carparks, improved beach access, an unmanned information kiosk and a new toilet block. Recently, upgrades have included the installation of information panels, recycling bins and walkways and the planting of indigenous vegetation. During 2010, four new picnic tables (Figure 12) and two new car parks were built (larger than was first recommended on the development plan as noted in Figures 13 and 14). General repairs and maintenance are ongoing management tasks.

Feeding and poaching continue to occur despite signage banning this activity (T. Enderby, personal communication, July 29, 2010). Signboards located on the beach and rocks specify regulations for site users. Local tour operators, commercial fishers and other members of the public assist DoC’s two part-time rangers (T. Wilson, personal communication, July 29, 2010).

In the local region, several businesses have opened to capture the potential marine reserve market, including scuba diving schools, cafes, restaurants, accommodation establishments and a glass bottom boat (Walls, 1998). Resource consent was given in 2009 for the establishment of a commercial operation at the end of Goat Island Road (to hire out snorkelling equipment) (Rodney District Council, 2009) and recently the University of Auckland’s, Leigh Marine Laboratory opened the Edith Winstone Blackwell Interpretive Centre (Leigh Marine Laboratory, n.d.). A 2008 economic impact analysis of visitors to GIMR suggested the marine reserve was worth NZ\$18.6 million per year to the local economy (Hunt, 2008).



Figure 12: Race, 2010. *Recent upgrades to public facilities at Goat Island Marine Reserve, New Zealand [Photograph].*

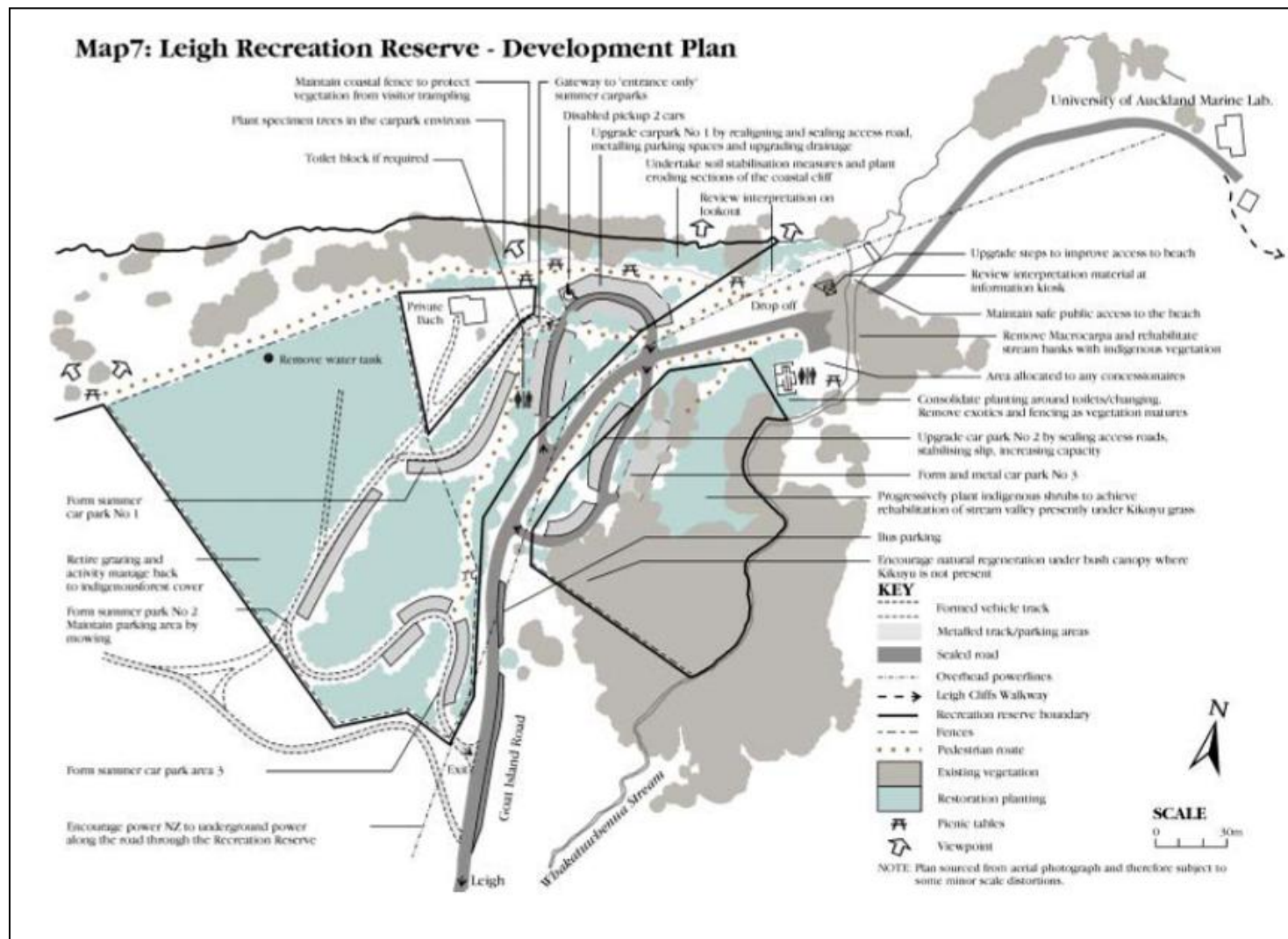


Figure 13: Leigh Reserves Complex Development Plan, as at June 2002 [Map]. From Doc. Copyright 2002 by Department of Conservation. Reprinted with permission.

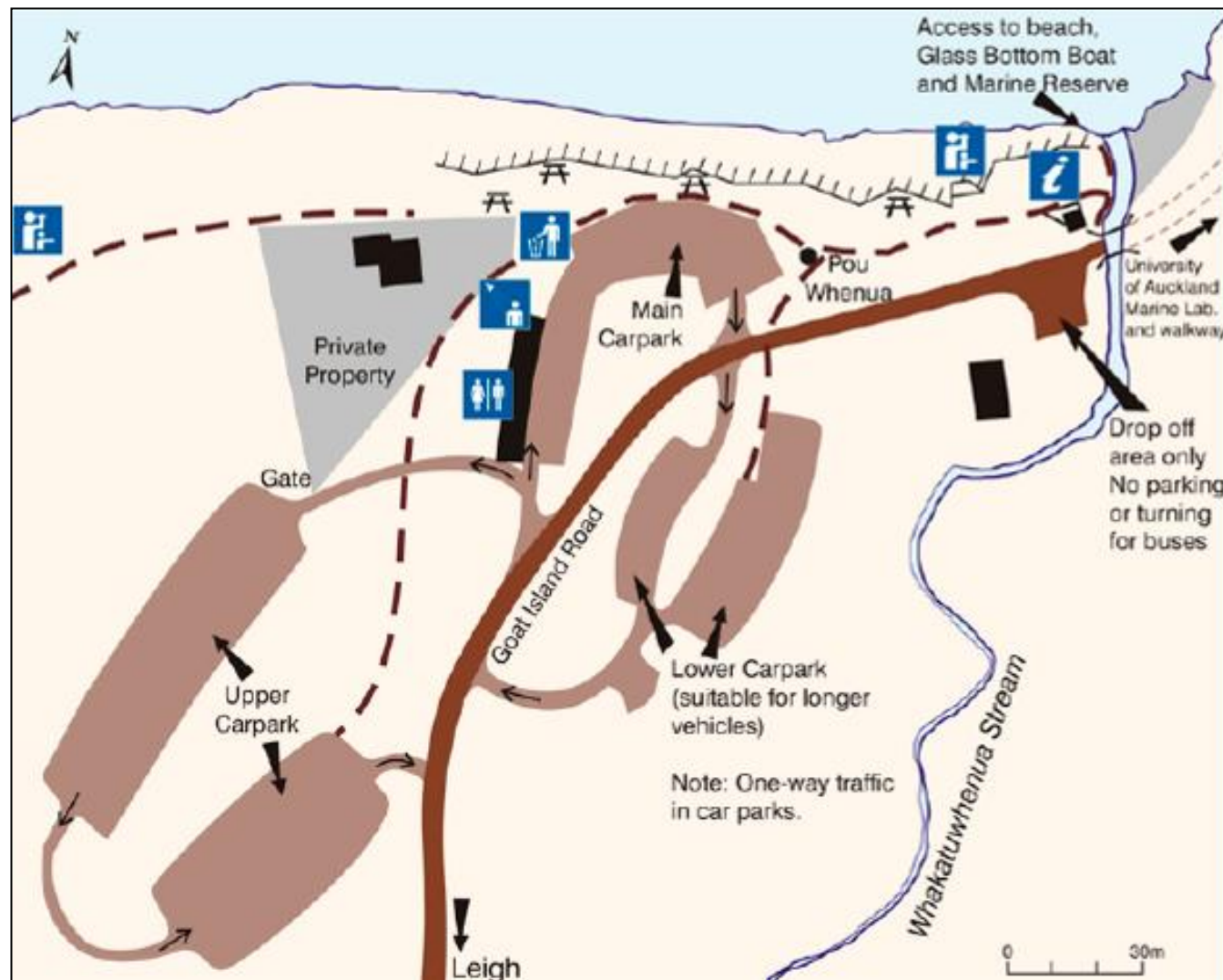


Figure 14: Leigh Reserves Complex, as at June 2010 [Map]. From Cape Rodney-Okakari Point Marine Reserve brochure. Copyright 2010 by Department of Conservation. Reprinted with permission.

2.6.5 The marine reserve's appeal, and its dangers

Snorkelling, scuba diving and swimming with marinelife are popular recreational activities at GIMR (Ballantine, 1991; DLS, 1984; DoC, 2003; Hunt, 2008; Walls, 1998), however there are risks associated with any water-based activity (Orams, 1999). Snorkelling is perceived as a low-risk recreational activity when compared to scuba diving, however they are both considered adventure sports and the marine environment causes difficulties for some participants (Wilks, 2000). Fatalities and near-drownings have already occurred at GIMR.

Adventure sports, require “a strong focus on risk avoidance and emergency procedures training” (Davis, Warner & Ward, 2002, p. 78), as well as reasonable levels of fitness and skill by the participant. With oceanic activities, these are contributing factors to many drownings (Davis et al, 2002; Edmonds, 1999). Research monitoring trends on the behaviours and perceptions of risk relating to water safety include knowing whether participants can swim more than 100m unaided and determining participant's levels of experience with the activity (Davis et al, 2002; Edmonds, 1999; Injury Prevention Research Centre [IPRC], 2006; Water Safety New Zealand [WSNZ], 2010).

Globally, strategies to decrease fatalities and near-drownings include visitor education (signage or face-to-face), zoning in-water areas and allocating seasonal lifeguards (or other trained professionals) to destinations where snorkelling and scuba diving are popular pastimes (Cortés, Hargarten & Hennes, 2006; Edmonds, 1999; Harada, Goto & Nathanson, 2011; IPRC, 2006; Roman et al, 2007). “Snorkel training programs” (Davis et al, 2002, p. 79) and “water safety education programmes” (IPRC, 2006, p. 4) are recommended to improve snorkelling techniques and to keep visitors safe. According to Wilks (2000), visitors must also be:

...encouraged to ask questions, seek help, and follow all directions given by staff at the marine destination. This includes the recommendation not to scuba dive or snorkel, if there are serious concerns about their fitness to participate in these activities. (p. 286)

There are currently *no* water safety programmes, lifeguards or onsite staff at GIMR to assist visitors with these activities.

2.6.5.1 Snorkelling

Snorkelling is the activity of swimming face down, looking through a mask and breathing through a tube and is one of most popular ways to view marine life (Garrod & Gossling, 2008). Although the global snorkelling population is unknown (Edmonds, 1999), academics agree that the activity has wide appeal, attracts much greater participation rates than scuba diving and has generated an interest in the marine environment in all ages (Garrod & Gossling, 2008; Orams, 1999).

The basic equipment for snorkelling are a mask and snorkel, however fins, a wetsuit and a personal floatation device (PFD), such as a life jacket, are also recommended (Edmonds, 1999; Workplace Health and Safety Queensland, 2010). Fins reduce the physical effort of moving through the water, saving energy and reducing metabolic demand on the body (Pollock, 2010). Wetsuits provide thermal protection and protection from abrasions and cuts on rocks during water surges, as well as protecting the skin from sunburn – snorkellers are especially prone to sunburn as the water acts as a magnifier, intensifying the sun's rays (de Carvalho, 2003). A PFD “assists the person to remain at the surface without great effort” (Avramidis, Butterly & Llewellyn, 2009, p. 407). Although a wetsuit offers some buoyancy, it is not considered a PFD.

The buddy system used by scuba divers worldwide should also be encouraged when snorkelling “especially if the snorkeller is not experienced in the existing conditions” (Edmonds, 1999, p. 201).

Snorkelling is a popular recreational activity at GIMR, particularly during the warmer summer months. According to Hunt (2008), “the ability to easily view fish is said to be one of the major attractions of the site” (p. 4).

The marine reserve is relatively protected and safe on calm days, however strong currents moving through the channel move snorkellers unexpectedly, sometimes onto exposed rocks, or can cause water to go into the snorkel. These incidents may cause panic or injury to visitors not accustomed to such conditions.

2.6.5.2 Scuba diving

The self-contained underwater breathing apparatus (SCUBA) which allows humans to breathe underwater is the “single most important invention with regard to marine

tourism” (Orams, 1999, p. 15). Scuba diving is a multi-billion dollar global industry and a popular past time recreational holiday activity for certified divers (Hinch & Higham, 2004; Orams, 1999). Scuba diving is a physically demanding sport “confounded by the effects of hyperbaric pressure, water temperature and current” (Mier & Kegeles, 2002, p. 47), which requires a high level of fitness.

According to previous studies (DLS, 1984, DoC, 2003), scuba diving is popular at GIMR (both commercially and privately) mainly because entry is directly from the beach. The reserve is not deep – approximately 5m in the channel, sloping 15-20m to a sandy bottom on the northern side of Goat Island (J. Enderby, personal communication, December 21, 2010), however, weather conditions are unpredictable, even in summer, and there can be limited underwater visibility when strong currents (on the changing tides) flow through the channel. The potential of an emergency may arise unexpectedly. Thus, it is recommended that participants dive with a buddy (or buddies) at all times and commercial operators supply adequate supervision (Edmonds, 1999; Garrod & Gossling, 2008; Hinch & Higham, 2004; Mier & Kegeles, 2002; Orams, 1999).

Scuba diving is now accessible on a global scale and, as a result, “multilingual facilities may also be required” (Edmonds, 1999, p. 201) at the destination to ensure participants’ safety.

2.6.5.3 Water safety

Swimming, breath-holding (so the diver can dive to greater depths unencumbered by equipment), snorkelling and scuba diving are never without risk and high levels of physical and aquatic fitness and skill are required (Mier & Kegeles, 2002). The body undergoes physiological alterations when immersed in water as “the blood volume in the chest is increased while vital capacity (the total volume of gas in the lung that can be expired or inspired in a single breath) is decreased” (Pollock, 2010, p. 36). Breathing becomes irregular and hypoxia, a lack of oxygen supply, may occur.

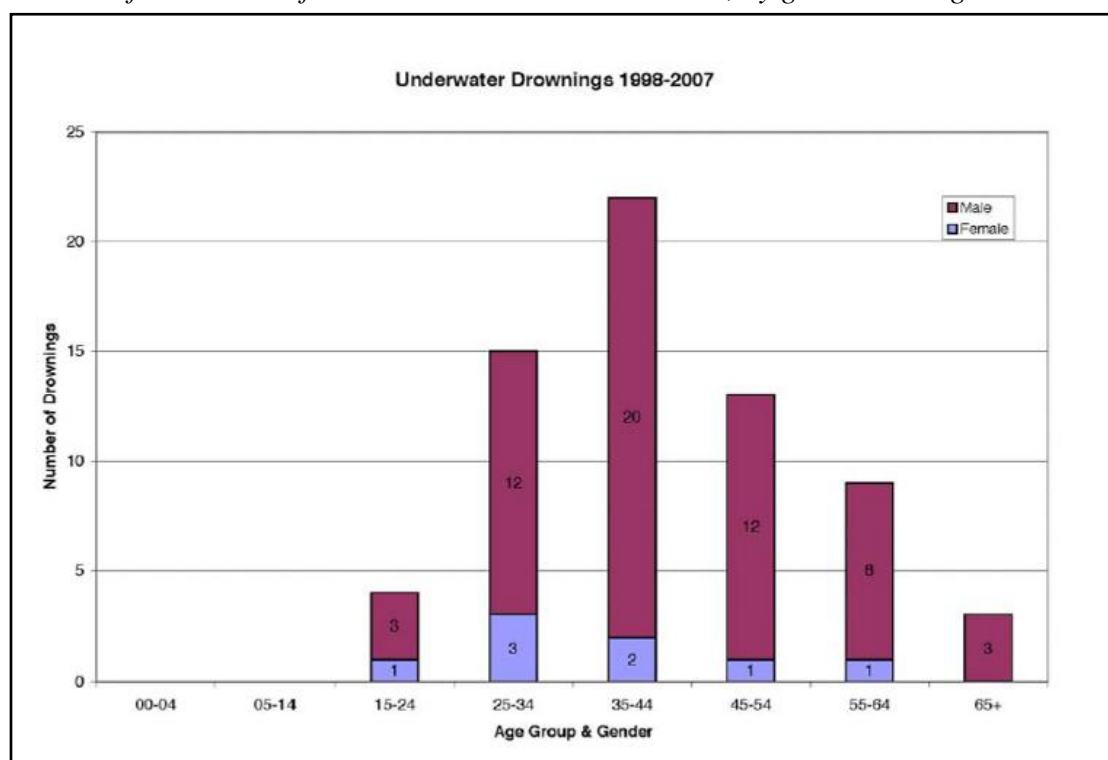
According to Davis et al (2002): “Drowning is the third leading cause of unintentional death in New Zealand” (p 70). Studies of underwater fatalities in New Zealand waters indicate the high majority of snorkelling and scuba diving victims were males, aged between 33-36 years (Table 7) and their deaths were associated with poor equipment, low fitness, limited skill levels and inadequate training (WSNZ, 2008, 2010). Auckland

beachgoers are vulnerable to drowning, particularly during December, January and February; the IPRC (2006) indicates Aucklanders swim at a beach regularly during the summer months, yet a large number of beachgoers are unable to swim more than 100m.

Other contributing factors to drowning fatalities include alcohol consumption, snorkellers not wearing fins, wetsuits or PFDs, snorkelling or scuba diving alone, becoming separated from a buddy, pre-existing medical conditions, breath-hold hypoxia or hypothermia. Snorkellers, divers and swimmers may require basic first-aid or emergency ventilation (oxygen) or hyperbaric treatment after a near-drowning incident (Davis et al, 2002; Edmonds, 1999; Moddell, 1978).

Table 7

Number of underwater fatalities between 1998 and 2007, by gender and age



Note. From Water Safety New Zealand (2008), *New Zealand water safety stocktake August 2008: A statistical analysis of information from Drownbase*. Copyright 2008 by Water Safety New Zealand. Reprinted with permission.

2.6.5.4 Incidents and fatalities at GIMR

Prior to the research data collection period for this study, GIMR had several near-drownings and two fatalities (most recently, a 37 year old male snorkeller on Christmas Day 2008). The changeable weather conditions and water temperatures, combined with participant's low skill levels were suggested causes of these incidents.

Water temperatures during the summer months can range significantly between 14-15°C in November to 21-22°C in March (J. Atkins, personal correspondence, July 22, 2010) which are well below the body's core temperature of 37°C. The various stages of hypothermia occur when the body is subjected to temperatures below its internal temperature. One of the causes of this condition is being in the water. Depending on circumstances, such as whether the person is wearing suitable clothing to minimise body heat loss, severe hypothermia (when shivering stops but the person is semi-conscious) can occur in water which is 32°C and cardiac arrest (where there is no obvious pulse or breathing) can occur in water which is 28°C (WSNZ, n.d.a).

GIMR's waters are therefore dangerously cold, even in the height of summer.

GIMR has no permanent onsite staff or lifeguards, at any time of the year. Often, local tour operators and members of the public are first respondents to people in trouble. The local volunteer fire brigade, St Johns ambulance service, the Westpac rescue helicopter and sometimes lifeguards from the Omaha Surf Life-Saving Club (8kms to the south-east by inflatable rubber boat) are requested to assist in cases of emergency (personal observations; T. Enderby, personal communication, December 12, 2010).

As a result of the incidents and fatalities at GIMR, DoC (2011c) issued a media warning to snorkellers to be prepared and to "heed the advice of Water Safety New Zealand" (Snorkellers take risks at popular Goat Island Marine Reserve). According to the report, record numbers of visitors have been pulled from the reserve's waters recently due to exhaustion and panic.

No further action (none found) has been taken.

2.7 Conclusion

New Zealand's first marine reserve has increased in popularity significantly in recent decades and is now an important location for recreation and tourism. DoC plays an important role in ensuring public facilities at the Leigh Reserves Complex are maintained, that scenic and habitat values are protected and that the marine reserve's regulations are upheld.

GIMR has the greatest public awareness of Auckland's five marine reserves and is promoted as a regional tourism attraction. The tourism industry lists it as one of the "50 Must Dos in Auckland" (Auckland Tourism, Events and Economic Development Ltd [ATEED], 2011, Things to Do). It is also promoted internationally as: "So much more than a picnic at the beach, a day at Goat Island Marine Reserve is unforgettable" (Tourism New Zealand Guide, 2008, Cape Rodney + Snorkelling).

GIMR's popularity stems mainly from the abundance and size of marinelife, the variety of biota and ease of access (Taylor & Buckenham, 2003). However, despite its popularity and economic value, there is a lack of knowledge on visitor characteristics and their behaviour. It is this gap that this thesis seeks to address.

This information is important because GIMR is New Zealand's most popular MPA and a significant tourist attraction for New Zealand and international visitors. It is the preeminent example of total marine protection in New Zealand, but also has high visitor impacts which are not in harmony with the objectives of this, or any other New Zealand marine reserve.

Understanding GIMR's visitors is important and will provide assistance to management and other stakeholders. It will also provide further impetus for the sustainable management of people in marine reserves in New Zealand and other MPAs around the world.

Chapter 3 RESEARCH OBJECTIVES AND QUESTIONS

3.0 Introduction

Conservation and outdoor recreation are two well-established traditions that contribute considerably to New Zealand's culture and society. The number of New Zealand tourism businesses that operate with a conservation or 'eco' focus has increased substantially since the 1980s (Higham & Carr, 2002). New Zealand marine tourism businesses have also seen a rapid growth, particularly operations that have a focus on marine conservation and marine mammals, such as whale-watching trips and swim-with-dolphins programmes (Constantine, 1999; Orams, 2002).

A large percentage of New Zealand's marine environment is protected in off-shore marine reserves, which are inaccessible to the majority of the general public, however, GIMR is located next to the shore and is very accessible. It is the most popular marine reserve in New Zealand, often frequented by local and international visitors, especially during the peak summer months. The latter is the focus of this study because it is the time of year when visitation is most intense and diverse and when management challenges are most acute. GIMR sits liminally between conservation, marine science and mass tourism, its popularity stemming from its status as a highly protected marine estate that allows visitors close encounters with marinelife (Cole et al, 1990).

A review of literature on the characteristics and experiences of summer visitors to Goat Island Marine Reserve revealed little information. It is vital for conservation managers to understand the demographics and attitudes of visitors' experiences, so they can be managed effectively. Surveys, such as self-reply questionnaires, are an appropriate and widely utilised research technique used to gather information on tourists and visitors to protected natural areas. Data collected in this study will contribute to a wider understanding of tourists' use of GIMR and the use of other marine protected areas in New Zealand and beyond.

3.1 Research objectives

There are four primary objectives to this research:

1. To identify the characteristics and experiences of summer visitors to Goat Island Marine Reserve.
2. To comprehend visitors' motivations during the peak summer days.
3. To consider the level of interest in the marine environment and marine protection.
4. To consider the future of the marine reserve with regards to impacts from the pressures of recreation and tourism.

3.2 Research questions

GIMR is located north of Auckland City and the route to the marine reserve is well signposted. Promoted by the tourism industry, the destination is identified as a top tourist attraction where one can “discover an abundance of New Zealand marine life and enjoy the experience of being surrounded by schools of playful fish” (ATEED, 2011, Goat Island Dive & Snorkel). In order to understand the characteristics and experiences of visitors to this site, five research questions were investigated.

Previous published and unpublished reports suggest there have been extraordinary increases in visitor numbers since the opening of the marine reserve. Currently little knowledge of visitor demographics is available, for example, languages spoken, ethnicities and usual places of residence. Section D of the research instrument explores answers to the first research question:

Question 1: What are the demographics of visitors to GIMR?

It is important to ascertain additional visitor data to better understand visitation patterns, such as visitors’ length of stay at the site, their travelling companions and the main purpose for a visit. Several questions in section A of the research instrument will help to answer the second research question:

Question 2: What are the characteristics of a visit to GIMR?

Conservation of the environment and engagement in outdoor recreation are part of life in New Zealand, particularly during the summer months. A large number of easily accessible sandy beaches in Auckland host a variety of recreational activities. As motivation is an important variable in understanding human behaviour, it is important to know what factors influence a person’s decision to visit GIMR. Identifying visitors’ recreational activities and identifying visitor actions through observation may assist in answering the following research question.

Question 3: What factors influence a person’s decision to visit GIMR?

As visitor numbers have increased, DoC has taken an egalitarian approach to managing the social aspects of the marine reserve, such as enlarging the site's facilities, rather than limiting visitor numbers (DoC, 2003). The public's voice is an essential ingredient in the effective management of MPAs (Ballantine & Langlois, 2008; PISCO, 2007). Understanding the relationship between visitor motivation, expectation and satisfaction is essential for understanding GIMR's burgeoning social phenomenon. Thus, question four is explored.

Question 4: What is the level of satisfaction with the various attributes of GIMR?

New Zealand markets itself to international visitors as being *100% Pure* and advocates protection and conservation of the natural environment to all travellers via sustainable and responsible tourism practices (NZTS 2015, 2010). Worldwide, the allocation and advocacy of marine protection is minimal when compared to that of terrestrial protection, yet despite the public's ignorance of marinelife and apathy towards marine protection, it seems they are very interested in its diversity when it is brought to their attention (Ballantine & Langloise, 2008). Marine reserves have the provision to educate and advocate the wider benefits of marine conservation, thus, the last research question is concerned with the respondents' knowledge of visiting a MPA and their awareness of marine protection.

Question 5: What is the level of awareness of being in a marine protected area?

The next chapter explains the researcher's chosen methodology and how the study was conducted, including detailed information of the four research sites.

Chapter 4 METHODOLOGY AND RESEARCH DESIGN

4.0 Introduction

This chapter introduces and discusses the design and methodological approach of the study.

The researcher employed a post-positivist ontological approach to examine the aims and objectives of the study, as set out in Chapter 3. A self-reply questionnaire was the main instrument used to gather data, which was used to explore four main themes: motivation for travelling to the study site, activities undertaken at the site, knowledge of and interest in marine protected areas and demographic information. The researcher's field notes, written during the data collection period, complement and add value to the data gathered from the self-reply questionnaire.

This chapter also describes the pilot study, data collection and the processes employed to analyse data. Finally, ethical considerations pertaining to the study are outlined and the researcher's evaluation of the time in the field is offered.

4.1 Purpose of the study

The purpose of this research is to identify the characteristics and experiences of visitors to GIMR during the peak summer season of 2010 / 2011. The study employs a post-positivist ontological paradigm. Few research articles in tourism explicitly consider or include an in-depth review of the paradigm and methodological stance of the researcher, however post-positivism (developed from positivism) is an approach which has tended to dominate tourism research to date (Jennings, 2007). The research instrument is a self-reply questionnaire which has both closed and open questions; the latter allows participants to share additional information regarding their experiences. Respondents' data were coded and analysed using the Statistical Package for Social Sciences (SPSS) version 18.

4.1.1 Reasons for the study

The leisure, recreation and tourism markets have transformed from a homogeneous group of consumers into specific market segments (Weaver & Oppermann, 2000) and it has become vital for tourism managers to have access to current market-specific data in order to achieve their management objectives. For managers of marine reserves, the main objectives are to conserve the coastal and marine ecosystem while allowing for appropriate recreational and tourism activities (Sobel & Dahlgren, 2004).

The research explores the geographic, socio-demographic and psychographic dimensions of visitors and their attitudes to marine conservation at GIMR, which is important for DoC, the University of Auckland's Leigh Marine Laboratory, the tourism industry and other stakeholders.

4.2 Methodology of the study (the researcher's paradigm)

Traditionally, a positivist epistemological paradigm is applied to most tourism research (Jennings, 2007). French philosopher Auguste Comte (1798-1857) founded positivism in the 18th century as a means to study the social world (Bernard, 2006; Gane, 2006; Jennings, 2007). It is an approach which describes the order of events though deductive logic (evidence) and positivist researchers believe truth is “achieved through the verification and replication of observable findings” (Clark, 1998, p. 1243).

Positivism utilizes scientific techniques or statistical investigation methods to increase the viability (or rigorousness) of the study which includes quantitative data collection via research instruments such as questionnaires with predetermined response options, hypotheses testing and statistical and mathematical analysis (Slevitch, 2011). In quantitative research, the representativeness of a sample is crucial when the researcher wishes to make inferences and generalizations about the target population being studied, thus, “a sample’s accuracy is more important than its size” as the data then provide more reliable estimates against which hypotheses can be tested (Oppenheim, 1992, p. 43). The positivist paradigm commits to research that is empirical, objective, reliable and value-free. Positivist empirical research is based on the view that knowledge is established through the use of observable evidence and that knowledge is different to our beliefs or feelings but is rather “our mental attempt to interpret what our senses tell us” (Payne & Payne, 2004, p. 171).

A positivist paradigm assumes the existence of objective reality as a way of defining human behaviour, that is: reality exists and such knowledge is derived only if the researcher is totally detached from the research project (Bernard, 2006; Clark, 1998). The aim of objectivity is to reduce bias thereby ensuring the phenomenon of the event which is studied is not influenced by outside entities. This epistemological approach of separation (of the observer and the observed) and the use of predominantly quantitative methodologies within the positivist paradigm postulates that factual information can be separated from values (beliefs and feelings) (Slevich, 2011). Truths can be found as long as the prescribed procedures and underlying principles have been rigorously followed. Utilizing the positivist approach, research aims to predict or theorize about the social world objectively by testing hypotheses, searching for the cause and effect of such observations and retesting theories against observable evidence (deductive

reasoning) in order to enhance or develop new theories (Jennings, 2007; Payne & Payne, 2004).

However, all research requires some human interference at some stage (Bernard, 2006). Whether the study employs a positivist or interpretivist paradigm - the interpretivist paradigm is seen as being at the opposite end of the research paradigm continuum (Cresswell, 2009) - the researcher's pre-existing ideas guide the direction of the study, from data collection to data interpretation. As noted by Maxwell and Delaney (2004,) whether one is a positivist or an interpretivist "data cannot be collected without some pre-existing ideas about what may be relevant, because it is those decisions that determine the variables to be manipulated or assessed in a particular experimental design" (p. 4). One of the critiques of positivism is the strict guidelines within the paradigm which refrain the researcher from "using insight, intuition and other non-rigorous knowledge" (Walle, 1997, p. 525).

Post-positivism developed as a result of this critique in the late part of the 20th Century and also through the acceptance that the absolute truth of social life may never be found and thus absolute truth is challengeable (Bernard, 2006; Clark, 1998). A researcher's set of beliefs or a paradigm may influence many aspects of the research process, thus a shift in paradigm – such as a shift from positivism to post-positivism – may also result in a shift in the beliefs of that paradigm.

Paradigms have four major, interrelated beliefs or terms: ontology, epistemology, methodology and axiology (Bailey, 2007; Denzin & Lincoln, 2008). An ontological position is defined as "the study of reality or things that comprise reality" (Slevitch, 2011, p. 74) or "the study of *being* and *becoming*...concerned with fundamental nature of existence" (Kvale & Brinkmann, 2009, p. 326). Fundamentally, the positivism paradigm holds that objective reality exists. Post-positivists, however, concede that reality may never truly be known (Bailey, 2007) and can describe what is said to exist or what relationships exist, based on *being*. The post-positivist researcher accepts the statement 'causes *probably* determine effect' and does not appear independent of the research.

Slevitch (2011, p. 74) suggests "ontological positions establish our process of knowing" or our epistemological position. This is defined as "the relationship between the knower and the known" (Bailey, 2007, p. 50) or "the study of the nature of knowledge

and justification” (Kvale & Brinkmann, 2009, p. 324). According to Bailey (2007, p. 50) the central question of an epistemological position is: “Is what is learned independent of the researcher?”

The term axiology refers to the role that ethics and values play when conducting research and queries whether social scientists should be interested and/or emotionally engaged or disengaged when conducting research (Tashakkori & Teddlie, 2010). The axiological stance of the post-positivist researcher is that research should be conducted as objectively and as value-free as possible, while acknowledging that biases may influence the results.

Methodologically, the post-positivism paradigm is predominantly quantitative, although researchers may use qualitative methods to emphasize or give meaning to empirical data.

The travel and tourism industry operates in an economically-driven society, influenced by the mass movement of people and constant and rapid change. Although it may seem that many tourism researchers in the 21st Century have rejected positivism and post-positivism, they are still the dominant paradigms for this discipline (Jennings, 2007; Riley & Love, 2000; Slevitch, 2011; Walle, 1997). Post-positivist tourism research focuses on providing data from which patterns of tourism behaviour can be generalized and tourism flows predicted, while also providing evidence of tourism’s characteristics from as an objective and value-free position as possible. Statistical tools are often used, to supplement qualitative tourism research because as noted by Riley and Love (2000, p. 181), “qualitative research may not provide the generalizability necessary to translate findings into increased visitation and income”. To exemplify these statements further, Jennings’ (2007) study during the late 1990s of four major tourism journals (*Journal of Travel Research*, *Annals of Tourism Research*, *Tourism Management* and *Journal of Travel and Tourism Marketing*) found the format required for publication reinforces the rigid yet defining attributes of positivism/post-positivism.

The researcher acknowledges that travel and tourism is vastly different in the 21st Century (compared to tourism in the 20th Century) and that other paradigms or approaches are being widely adopted in today’s tourism research, however, they are not the dominant paradigm. Positivism and post-positivism continue to be widely employed in the tourism discipline. Although many tourism researchers do not

explicitly state their paradigm in journal articles, it can be inferred from the terminology and methods used to gather the research data (e.g. questionnaires, simple random sampling, probability, empirical, etc) – for examples see Alegre & Cladera, 2006; Breen & Breen, 2009; Buch, Milne & Dickson, 2011; Davis & Banks, 1997; Dearden, Bennett & Rollins, 2006; Draheim, Bonnelly, Bloom, Rose & Parsons, 2010; Hsieh & Chang, 2006; Kyle, Graefe, Maning & Bacon, 2004; Orams, 2001b; Petrosillo et al, 2007; Ryan, 2002; Saveriades, 2000; Snepenger, Murphy, O’Connell & Gregg, 2003; Tassiopoulos & Haydam, 2008; Yuksel, 2004.

The mathematical orientation employed by post-positivists is also used to supplement the methods of tourism researchers employing other paradigms. For examples, see Fitzsimmons, 2009; Frey & George, 2009; Higham & Carr, 2002; Mbaiwa, 2005; Murphy, 2000; Oppermann, 2000; Williams & Soutar, 2009.

Although challenging the notion of absolute truth, post-positivism submits to the central approaches of positivism – empirical observation, measurement, determination, reductionism and theory verification (Cresswell, 2009) but also allows for the researcher’s intuitive interpretation. Questionnaires are employed as an instrument for quantitative research with the intention of measuring “how intensely people *feel* about issues, as opposed to what they know or can do” and “reflect strength of attitudes, perceptions, views and opinions” (Black, 1999, p. 215).

A focused and disciplined observation of the physical setting and the setting’s inhabitants also facilitates the collection of valid data within the post-positivist approach (Morris, 2006). Observations in a social setting may be determined by observing and recording any activity which may be of interest to the research project. One strategy to collecting observational data is ‘invisibility’ – a technique that requires the researcher to be in the setting over a sustained period of time (although not necessarily as a participant), so eventually people begin to ignore the researcher and behave normally (Gray, 2004).

Such observation techniques may include spending short periods of time watching people from a distance participate in certain activities or moving around a particular setting, or listening (eavesdropping) to casual conversations as the researcher moves about the site. Notes of the observed key practices, for example actions, words or

phrases and sequences of events, should be written immediately after the observation in a notebook.

This form of data collection adds depth and context to empirical data and adds insight into the research project (Gray, 2004).

The researcher takes this approach when considering the paradigm for this study. The post-positivist ontological paradigm is best suited as it allows for an approach that accomplishes the aims of this research: Firstly, empirical research is conducted with an instrument which encourages respondents' opinions and secondly, it permits the researcher's interpretation of visitor behaviour.

4.3 Methods employed in this study

4.3.1 The self-reply questionnaire

According to Orams and Page (2000), tourists are “highly mobile individuals” (p. 126) who are often in unfamiliar surroundings, which become problematic when social scientists study this population group. Several research techniques are available to social scientists who wish to gather data on tourists, such as face-to-face or telephone interviews, on-line surveys and postal questionnaires, however, the self-reply questionnaire is one of the most popular (Orams & Page, 2000). It is important in a survey to ask everyone in the sample group the same questions, in the same order, with a list of topics that are easily understood so as to elicit an answer (Payne & Payne, 2004). Designing a survey in the form of a self-reply questionnaire is not easy and there is a chance that inaccurate data may result if the survey is poorly designed (Oppenheim, 1992; Orams & Page, 2000). The survey must also produce credible results which can be believed or argued (*reliability*) and accurately reflect the nature of the study group (*validity*) (Orams & Page, 2000; Payne & Payne, 2004).

A review of literature on the design of self-reply questionnaires suggests the content, appearance and length of the instrument plays a vital role in influencing data gathering (Black, 1999; Oppenheim, 1992; Orams & Page, 2000; Payne & Payne, 2000). The design of the instrument and sequence of the questions should aim to keep the respondents interested in the topic, which should encourage completion of all questions. The English language was employed in this structured, self-reply questionnaire (Appendix A) as it was assumed that the majority of visitors would reside in Auckland and that English would be their first language. In addition, it was assumed that English is the most recognised international language in New Zealand and that most international visitors have an understanding of the English language. The questionnaire consisted of four sections, which elicited information on the following:

- Section A: visit-related factors.
- Section B: activities and impressions of the experience.
- Section C: knowledge of marine protected areas.
- Section D: general demographics.

Closed and open-ended questions were employed, the former providing response options from which the respondent chose an answer and the latter had space to allow the participant to share additional information or express their opinions. The researcher acknowledges that both types of questions may have limitations when applied in a short self-reply questionnaire. However, Oppenheim (1992) suggests that using sets of closed and open-ended questions that relate to the same attitude or variable throughout the study provides more reliable data than limiting the respondent's options and requesting a single opinion only at the end of the instrument.

Likert-type scales are popular and reliable tests that investigate the attitudes of respondents to certain topics by allowing them to place themselves on an attitude continuum (Bernard, 2006; Black, 1999; Oppenheim, 1992, Orams & Page, 2000). In this study, a five-point Likert-type scale was employed to elicit attitudinal responses on the importance of viewing marinelife (from 'not important at all' to 'extremely important') and to ascertain levels of satisfaction of the marine ecotourism experience (1=very dissatisfied, 5= very satisfied). Negative options were offered first, thereby reducing the potential of skewed results (Orams & Page, 2000). An additional response item, designated 'not sure / don't know' was included to allow the respondent a way to opt out of the question.

The layout of a self-reply questionnaire is just as important as the information that will be derived from it and influences response levels and types (Orams & Page, 2000). The instrument employed for this study was specifically developed to answer the research questions and adhered to the following guidelines:

A generally agreed pattern is that the order of questions should descend from easier, general questions to more specific complex ones and that personal questions such as those soliciting information on income, political beliefs or sexual preference should be left until last. (Orams & Page, 2000, p. 132)

It must be remembered that visitors' and tourists' main motivation is enjoyment and relaxation and potential respondents may not wish to be disturbed for 'work' unless it is interesting and non time consuming. In order to capture and hold respondents attention as they were completing the self-reply questionnaire, the instrument underwent several iterations. Questions were condensed to avoid repetition of answers and the instrument

‘pruned’ to reduce the overall length of the document to four pages. It was hoped that these changes would increase completion rates and avoid low return rates.

4.3.1.1 Reliability and validity of the research instrument

Reliability is measured in the way in which the data are collected and whether similar results will be found if the survey is repeated and this is reflected in the constitution of the questions (Orams & Page, 2000). For example if a question in study A is repeated in study B but is changed from a closed question to an open question, the resulting answers will differ considerably and therefore the data collected may not be reliable (even though the population group and timing may have been the same). If the phenomenon being studied is consistent and measurable, then two kinds of reliability can be sought. Temporal reliability requires the answers to be equivalent in repeat studies and representative reliability requires answers to be similar in context in repeat studies, the generalisation of a population group can be made from the latter (Payne & Payne, 2004).

Validating the study is also a challenging task for any researcher. Validity refers to the “accuracy and trustworthiness of instruments, data, and findings in research” (Bernard, 2006, p. 53) and is the most important facet of any study. The research instrument should accurately encapsulate “the characteristics of the concepts being studied” (Payne & Payne, 2004, p. 233) (i.e. content validity) and must be a reliable instrument, able to measure what it intends to measure (Black, 1999; Oppenheim, 1992) (i.e. construct validity). However, as noted by Oppenheim (1992), reliability and validity are intertwined because a “measure which is unreliable cannot attain a degree of validity – its error component is too great” (p. 162). The respondents must also perceive the instrument as being valid, if not, responses may be skewed and the value of the survey reduced (Bernard, 2006; Black, 1999).

4.3.2 Real-time satisfaction (RTS) measurement

Customer satisfaction is related to the confirmation of expectations, “which are formed mainly through information provided via tourism advertisements, commercials, brochures, mass media and informal information from friends and relatives” (Akama & Kieti, 2003, p. 75). Data on visitor satisfaction are often collected post-consumption, achieved through interviews or self-reply questionnaires conducted at an exit point or

by giving visitors a structured questionnaire to be completed and returned to the researcher by post by a later date (Coghlan & Pearce, 2010). However, both of these methods have drawbacks, namely, the problem of recall (Cary, 2004), the social desirability bias (Smith, 2007) and having to step out of the context and evaluate the experience (Hultsman, 1998), which may result in low response rates (Walker, Hull & Roggenbuck, 1998).

Mannell and Iso-Ahola's (1987) investigative work on real time satisfaction (RTS) is well documented and has produced interesting results (Cary, 2004). The phrase RTS refers to the monitoring of satisfaction levels while the consumer is engaged in the "actual, onsite, real-time nature of the experience" also referred to as the "immediate conscious experience" approach (Mannell & Iso-Ahola, 1987, p. 318). When measuring satisfaction in this manner, the consumer is not disconnected by time, distance or other memory loss. The respondent's ability to provide valid answers and offer additional information about an experience is vital to any study. The potential for valuable information to be lost, and the questions to become un-testable if the respondents do not have the ability to answer a question, was thereby removed in this study. The RTS measurement approach ensured visitors were engaged in the 'actual, onsite, real-time' experience. The prerequisite before being asked to complete a self-reply questionnaire was a minimum stay of one hour at the study site.

4.3.3 Sources of supporting data

Researchers can employ a variety of resources to keep a permanent record of what has taken place during fieldwork, including note taking and photography (Gray, 2004). The researcher openly entered field notes into an A4 hard-covered notebook while waiting for respondents to complete the self-reply questionnaires. Influenced by what was impressed upon the researcher at the time of writing, the notes contain a variety of data, such as:

- information about the weather;
- a list of activities people were engaged in;
- a list of floatation devices used;
- questions posed by visitors to the researcher;

- observations of unusual, irresponsible or liminal human behaviour;
- quotations and summaries of impromptu conversations between visitors and the researcher;
- boat counting;
- visitor-birdlife interactions and birdlife sightings;
- possible limitations of the day's research.

Reasons for refusing to partake in the study were also recorded as best as possible in the notebook. As all respondents were guaranteed anonymity, the researcher was only able to record data that was observed, stated or obvious, such as the respondent's gender, first language or the approximate size of the group.

The researcher used a small digital camera to acquire visual data. The use of generic images throughout this thesis supports the researcher's observations and / or information offered by respondents.

Gray (2004) suggests note taking and photography are popular sources of qualitative data, which are used to support or give additional information to quantitative research. Fieldnotes are "a running commentary to oneself" (Eisenhardt, 1989, p. 539) about what is happening in the field and may be ideas, hunches, queries or recounts of actual incidents. They offer a different perspective to the research data, especially if the researcher does not previously decipher what to write in or what to leave out of the notebook. As acknowledged by Eisenhardt (1989), it is "often difficult to know what will and will not be useful in the future" (p. 539). Photographic images can be used to enhance the researcher's knowledge and memory recall of the phenomenon for long after the data collection period (Gray, 2004).

4.4 Ethical considerations

Ethical considerations in social science research concern the “appropriateness of the researcher’s behaviour in relation to the subjects of the research or those who are affected by it” (Gray, 2004, p. 58). Potential participants were advised, via a two-page participation information sheet (Appendix A) attached to the front of the self-reply questionnaire, of the nature and purpose of the study, the sponsor of the study (i.e. NZTRI and AUT University) and the approximate time it would take to complete the survey (approximately 10 minutes). The researcher also verbally advised each potential participant that the survey was anonymous (meaning names would not be requested), that all data collected would be kept confidential and participation in the survey was voluntary. The AUT University Ethics Committee (AUTECH) approved the research instrument and the methods of data collection and data analyses on 6th May 2010 (AUTECH approval number 10.98) (Appendix B).

4.4.1 Treaty of Waitangi

This research is not ethnically focussed nor specifically engages with Māori, however, the Treaty of Waitangi emphasises that knowledge gained and shared must incorporate the three principles of *partnership, participation and protection*.

The Treaty of Waitangi describes the relationship between the Crown and Māori as a *partnership*. Partnership requires that researchers work together with Māori communities to ensure that their individual and collective rights, as members of the community or participants in the study, are considered and protected. The researcher feels that establishing a good partnership with all members of the local community, both Māori and non-Māori is important. This research project represents a partnership between the researcher (NZTRI and AUT University), the research participants (all visitors) and key stakeholders – namely DoC, Auckland Council (formerly Rodney District Council); ATEED (formerly Tourism Auckland); Leigh Marine Laboratory and local *iwi* represented by the Manuhiri Omaha Kaitiakitanga Ora (MOKO) Trust Board. The researcher made contact with a member from each of these groups, either by telephone, email or in person, a few months prior to commencing the study. The assistance and guidance provided by these stakeholders was invaluable in refining the proposal and the research instrument. The researcher appreciates their support and engagement in this study.

The concept of *participation* requires that Māori are extensively involved in the overall research process, especially in research involving Māori. Although this project did not target Māori specifically, inclusivity of Māori was encouraged, for example via telephonic conversations with a representative from the Manuhiri Omaha Kaitiakitanga Ora (MOKO) Trust Board. The researcher chose to undertake all data collection alone rather than enlisting the assistance of a research assistant as this may have jeopardised the reliability of the study (Oppenheim, 1992) however, this decision did not have a negative impact on Māori, nor any other cultural group.

In the Treaty of Waitangi, the duty of active *protection* of Māori in New Zealand, on the part of the Crown, is a central principle and requires that researchers actively protect all aspects of Māori individual and collective rights and culture (including values, practices, norms, beliefs, language and so forth) in the research process. The principle of protection is highly valued by the researcher and all measures were taken to ensure that all participants (including Māori and other cultural groups) were protected. The researcher continues to ensure that the privacy and rights of respondents are maintained at all times. All data are confidential and anonymous and no participant will be able to be identified in this thesis or in reports or publications emerging from this study.

4.5 Best practice

Self-reply questionnaires are a popular instrument for the collection of data by tourism academics (Orams & Page, 2000). The instrument used in this study was designed to ensure, as best as is possible, that participants were comfortable and did not feel threatened. All participants knew they had the option to withdraw from this research at any time.

The self-reply questionnaire was designed in accordance with the suggestions and accepted guidelines made by Black, (1999), Oppenheim (1992), Orams and Page (2000), Payne and Payne (2004) and Ryan and Garland (1999) and therefore represents best practice.

4.6 The study sample

4.6.1 Sample size

‘Sample size’ refers to the number of people in the group or sub-groups to be surveyed and depends on estimated proportions, precision and confidence levels (Bernard, 2006; Gray, 2004). Recent data from DoC suggest that approximately 375,000 people visited the marine reserve in the year ending February 2008 (Hunt, 2008). The exact number of visitors is unknown and the estimation was calculated using vehicle counters and previously unpublished visitor surveys. However, the researcher considers the figure inaccurate due to:

1. *Duplicate counting:*

On peak summer days, visitor car-parks were full and vehicles parked along the Goat Island Road. As noted by Hunt (2008) on 11th January 2008 “...at 3pm 52 cars were parked south of the counter” (p. 35). The report also notes that all vehicles parked up the road throughout the day “...had all driven over the counter (bar one)” (p. 35). Websites (<http://www.discovergoatland.co.nz> and <http://www.seafriends.org.nz>) and a locally distributed DoC brochure advocate utilizing the five-minute loading zone near the beach “...to allow easy drop off and pick up of gear” (DoC, 2010b). Due to the zone’s easy access, it is very popular with passengers who have parked further away from the marine reserve. However, bringing the vehicle to the loading zone requires the vehicle to cross the vehicle counter once again, thus duplicating the vehicle count.

2. *Insufficient (or no) data was available on the following:*

Number of occupants per vehicle;

Year-round visitor numbers (as the vehicle counter did not always work);

Leigh Marine Laboratory staff and visitor numbers;

Boat numbers, and the number of people in the boats;

DoC / Auckland Council visits (for maintenance, rubbish removal, building work, etc);

The number of local residents who live close to the marine reserve.

As a result, a conservative figure of 200,000 annual visitors to GIMR was used as a baseline for this study. The researcher estimated that 40% of annual visitors realistically visit the reserve between the peak summer season of mid-December and mid-January. Recreational visitation to New Zealand beaches increases considerably during this period, as the time coincides with warmer weather, public holidays, weekends, school holidays and the time of year when families holiday together. Consideration was given to the potential issues of non-response, incomplete data and the possible reduction in the number of participants available on any given day due to adverse weather / sea conditions. Consequently, a target of no less than 300 completed self-reply questionnaires was set ($n=300$). This was deemed an appropriate sample size to provide opportunity to apply inferential statistics to generalise within suitable confidence about the target population.

4.6.2 Simple random sampling

Sampling is the process of selecting suitable cases which represent the population from which they are taken for the purpose of being included in a study project (Neuman, 1997). Simple random sampling (probability sampling) was employed in this research project to minimize bias in the data. This method allows each member of the target population an equal probability of being selected to participate in the study and is useful when prior information of the target population is unknown and where the collection of data can be efficiently conducted (Hair, Babin, Money & Samouel, 2003; Neuman, 1997; Oppenheim, 1992). According to Hair et al (2003), “in probability sampling, sampling elements are selected randomly and the probability of being selected is determined ahead of time by the researcher” (p. 211).

4.6.2.1 Respondent selection

Care was taken to ensure participants were randomly selected during data collection. Visitors were approached in an orderly fashion from four directions (north, east, south and west) closest to the previously identified marker in their area (the four different geographic areas are explained in detail in section 4.8). If the group closest had already been sampled, the next closest group was approached, and so on. The researcher introduced herself and the reason for the approach, then verified that the group had been at the marine reserve for longer than one hour (to allow for the RTS measurement approach), if it was not obvious to the researcher. If the visitor did not fit the criteria,

the researcher thanked them and explained why the minimum one hour criteria was important to the study and moved to the next closest party within that site to ask for their participation. The visitor was identified by asking people in the group 18 years and over who had the next birthday and asking them to complete the survey. If the person declined, the person with the next birthday was requested to participate (and the refusal noted in the researcher's fieldnotes). (Note: For ethical reasons, children under the age of 18 were not selected as respondents for this study).

This simple random sample selection process catered for the different age groups, education levels, cultures, languages, genders and social values of visitors (Oppenheim, 1992) and helped to reduce biases in the responses. As a result, the amount of variance between the individual results in the data should be representative of the overall variance of the target population being studied which has allowed the researcher to present findings that generalized about the latter (Bernard, 2006).

4.6.2.2 Date / day selection

The specific days on which to conduct this empirical research were randomly selected. It was important the study was completed between mid-December 2010 and mid-January 2011 as this time is recognized as the peak summer season in New Zealand (TNZ, 2011b). Days chosen were representative of a range of days including public holidays, week days, weekends and some days which coincided with the school holidays. Fine, warm days with calm sea conditions were important selection criteria as this was when the majority of visitors would be likely to engage with the marine reserve.

4.7 Piloting the instrument

4.7.1 Pilot study pre-test

After the basic formation of the participant information sheet and the self-reply questionnaire, time was allowed for its refinement; in this instance, four months was allowed before the actual study was undertaken at the site. During this time, several iterations condensed the instrument to four pages. Requests from stakeholders were adopted as best as possible and then it was made consistent with the NZTRI Puhoi to Pakiri tourism research survey, so that comparisons in data may be made in future (see www.nztri.org.nz for further information on these surveys). The self-reply questionnaire was peer reviewed several times by a small sample of postgraduate AUT University students from New Zealand, Netherlands, Germany and Serbia and senior tourism lecturers and researchers from the NZTRI. All were asked to be critical and offer advice to make a more improved and reliable instrument. The design, test, adjust and retest of a survey instrument such as a self-reply questionnaire is known as piloting and helps to reduce non-response rates and increase the validity of the instrument (Oppenheim, 1992).

4.7.2 Pilot study

A pilot study tested the usefulness of the instrument (a two-page participant introductory letter and a four-page self-reply questionnaire) which was to be completed on site and returned to the researcher immediately upon completion. Pilot studies allow researchers time, before the main data collection commences, to identify any flaws that may be present in the instrument, which is important because, unlike an interview, “the respondent seldom has the opportunity to seek clarification or obtain assistance when answering questions” (Orams & Page, 2000, p. 130).

Pilot testing also allows the researcher to check if any hypotheses can be tested and whether questions can be answered without difficulty (Orams & Page, 2000). Checks should also be conducted for language barriers including colloquial speech (jargon or slang) that visitors, particularly international visitors, may not understand, the time needed to complete each questionnaire and that the flow of the questionnaire elicits respondents’ information in an easy manner (Oppenheim, 1992; Orams & Page, 2000).

During a pilot study, researchers gain valuable experience in selecting, approaching and requesting participation from strangers and in handling the completed questionnaires. This can be particularly helpful for those new to field research (personal observation).

The pilot study was conducted at the study site by the researcher and her supervisor on Labour Day Monday 25 October 2010 (a public holiday). This day was chosen because, traditionally, Labour Weekend signifies the beginning of the New Zealand summer (Wade, 2010) and the start of the life-saving season on New Zealand beaches (Surf Life-Saving New Zealand [SLSNZ], 2010). The day was warm, sunny and windless (air temperature 21°C), with calm conditions in the water (water temperature 15°C) (J. Atkins, personal communication, June 23, 2011).

The site was reasonably busy with visitors sunbathing, snorkelling, diving, swimming, looking into rock-pools, playing on the beach and in the water, picnicking and generally relaxing. Thus the day was deemed representative of the type of visitors the site could expect during the peak summer season.

Fifteen randomly selected individuals piloted the instrument at four pre-selected locations between the hours of 11am and 3pm. Visitors were approached according to the respondent selection noted in section 4.6.2.1. The participant was advised they were taking part in a pilot study and encouraged to be critical of the instrument, to ask questions and offer comments during or after completion of the survey. The researcher sat a short distance from the participants during survey completion.

The 15 participants completed the self-reply questionnaire within the suggested period and without any difficulties, save an ambiguity with the word 'walkway', which was duly amended in the final script.

It was noted that approaching people in the carpark was difficult as they were carrying their belongings and moving away from the researcher. Two people declined to complete the instrument, as they were getting ready to leave the marine reserve, with one citing the timing of the approach as being the reason for his decline.

Subsequent to these objections, it was noted that when conducting the actual fieldwork during the peak summer days, approaching visitors at their vehicle might not be useful to the study. It was also suggested that visitors would not be asked to complete the questionnaire if they were not engaged in the experience of the visit (i.e. when they

were leaving). This also encapsulated the RTS measurement approach; that visitors be *in* their experience before being approached.

The result of the pilot study pre-test suggested that no further piloting or modification of the questionnaire was necessary and that the instrument would produce data that were reliable and valid. Thus the 15 completed questionnaires were included in the overall sample for the study.

Pilot studies help to develop the research instrument and provides a baseline from which the larger project can commence. The research instrument for this study was successfully piloted according to best practice guidelines offered by Bernard, (2006), Oppenheim (1992) and Orams and Page (2000).

4.8 Research data collection

Research was conducted on 12 days (Table 8) (with fine weather and relatively calm sea conditions) between 12 December 2010 and 13 January 2011. Data collected from the pilot study on Monday 25 October 2010 are also included, thus 13 days in total were sampled. The study days included eight week days (including one public holiday) and five weekend days (including three public holidays). The study was also conducted during school and non-school holiday dates.

Table 8

Research days at Goat Island Marine Reserve, 2010-2011

Research days ($n=13$)		
Day of the week	Date	Detail
Monday	25 October 2010	Public holiday
Sunday	12 December 2010	
Wednesday	15 December 2010	
Tuesday	21 December 2010	
Thursday	23 December 2010	
Sunday	26 December 2010	Public holiday
Wednesday	29 December 2010	
Saturday	1 January 2011	Public holiday
Sunday	2 January 2011	Public holiday
Wednesday	5 January 2011	
Saturday	8 January 2011	
Tuesday	11 January 2011	
Thursday	13 January 2011	

A simple random sample of visitors (minimum $n=300$) aged 18 years and over were selected to complete the four page self-reply questionnaire. They were approached during the busiest time of the day, between 10.30am and 5pm. Collection of data was originally set from 11am to 3pm, however this was extended due to daylight saving during the summer months and the fact that many visitors arrived early and continued to arrive after 3pm.

Visitors were asked to complete the survey in accordance with section 4.6.2.1.

As a consequence of initial site visits, four different geographic areas were identified (Figure 15), each with an identifying marker. Throughout the day, the researcher rotated through the sites continuously and at each site three visitors (from three separate

groups) closest to the site marker was asked to participate in the survey. The following sites were allocated for this study:

Site 1: The beach to the west of the entrance steps and under the large pohutukawa trees in which several pied shags were nesting, with the cliff at the south. The western marker was a fallen tree next to two large rocks and the eastern marker the largest of the fallen trees on the beach (quite dominant in the landscape). During low tide exposed rocks were visible in front of this entire site. The marker was the closest fallen pohutukawa tree stump below the main bird nesting tree.

Site 2: The main beach, the area immediately in front of the entrance steps and the entrance to the Whakatuwhenua Creek. The western boundary was adjacent to site 1 and the eastern boundary was the start of the rocks and adjacent to site 3. During low tide a sandy beach emerged with very few rocks. The glass bottom boat used this site to load / offload passengers. The marker was a large fallen pohutukawa tree in the sand in the middle of this site.

Site 3: A large flat rocky area and steep grassy embankment with a small beach, the latter only useable approximately two hours each side of high tide. The eastern boundary was the Leigh Marine Laboratory outfall pipe, visible on the exposed rocks at low tide, the western boundary bordered site 2 and the southern boundary was a black plastic fencing at the top of the grassy embankment. The marker was a prominent rock sticking out of the cliff between the rocks and the grassy bank.

Site 4: The area top the cliff including five permanent picnic tables, two information boards, the outdoor showers and toilet building and grassy areas in between. The boundaries were initially the car parks and the beach areas with the central marker being table no. 3. During the high and very high use days many people chose to picnic or relax on grassy areas surrounding the main car park, or inside their vehicles in the case of vans or motorhomes, as there was insufficient room and no shade for visitors to congregate elsewhere. Contrary to the pilot study day, approaching visitors on the grass or at their vehicles proved highly successful.

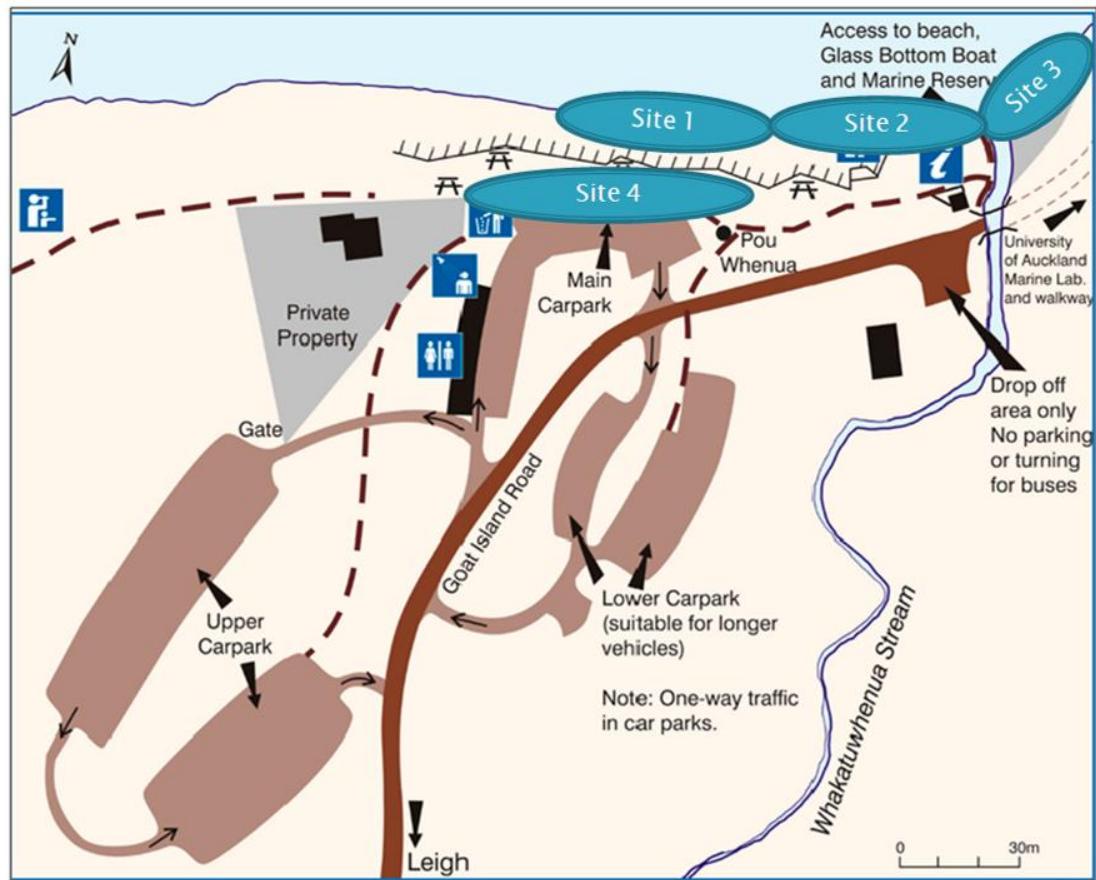


Figure 15: Indication of the four sites where the research instrument was completed.
 Adapted from Cape Rodney-Okakari Point (Goat Island) Marine Reserve, by the Department of Conservation, 2010 [Brochure]. Copyright 2010 by the Department of Conservation. Reprinted with permission.

4.9 Limitations to the study

It can be easy to assume that data collected at a certain site or during a particular period are representative of the population studied. However, even when every effort is made to ensure a sample is representative, there will always be some biases or limitations and this study is no exception. As noted by Orams (2001b): “It is important in any piece of research to explicitly recognise potential sources of bias and, if possible, to consider those biases in terms of the findings of the study” (p. 132), thus limitations are noted:

The days chosen were assumed to be representative of the entire peak summer season however the study was not conducted daily during this time, nor was it conducted on days that were considered to have highly unfavourable weather (for example it rained heavily for five consecutive days; 16-20 December inclusive). Thus, this study only focuses on visitation during fine-weather, summer days and during peak use times.

The self-reply questionnaire was only produced in English, thus non-English speakers were excluded from the study. Respondents who spoke English as a second language may have had trouble understanding the questions however, this was not apparent to the researcher while respondents were completing the instrument. The researcher was asked to explain the meaning of ‘no take’ on several occasions as the term was not understood by several respondents (see question C1 & C2, Appendix A), however, this is not seen as a limitation and was noted in the researcher’s field notes for use in the discussion chapter.

Children under the age of 18 were not asked to take part in this study, thus their views are not represented.

Social desirability bias, where the participants respond in a way they perceive will be interpreted positively by the researcher, may be a source of bias as the researcher was visible at all times. However, Vogt (2007) suggests that once a respondent agrees to complete a survey, their answers will generally be truthful.

Fieldnotes were made throughout each day of the study. The researcher’s book was open and constantly being written in, in view of all participants. Consequently, some respondents (or non-respondents) may have modified their behaviour and stopped acting naturally if they thought they were being observed (Herrera, 1999).

Although unknown to any of the respondents, the researcher was constantly mindful of observing the social phenomenon in a dispassionate, impartial manner. However, several respondents chose to engage in dialogue with the researcher upon completion of the self-reply questionnaire. This information was recorded as best as possible in the fieldnotes but the conversations were not taped, thus, they were subject to the interpretation of the researcher. This is a potential source of bias.

4.9.1 The researcher

The sole researcher for this study was responsible for the collection of all data and written material. The researcher is a mature married European woman with 25 years experience in the travel and tourism industry. She has travelled extensively throughout the world including living in South Africa for a number of years while raising a family. This background may influence the researcher's interpretation of events. In addition, the gender, age and ethnicity of the researcher may have influenced respondents' behaviour. This influence (if any) cannot be known.

The experience of moving between groups and asking for voluntary participation in this study was found to be enjoyable and a good rapport was achieved with the majority of the respondents, even though contact was short. Many respondents, along with other members in the respondent's group and visitors sitting close by who were not asked to participate in the study, engaged the researcher in conversation about the study and the marine reserve. Those who refused to participate did so in a non-aggressive, almost apologetic manner, each validating their refusal with an excuse that they wanted the researcher to understand and accept (suggesting the refusal was not personal to the researcher). Srivastava (2004) cites literature that suggest many women fieldworkers "achieve good rapport with both male and female respondents in a short period of time" (p. 349) and have a different experience to their male counterparts who undertake similar research, because they are more people oriented and observant, seem less threatening and are able to communicate better. The reliability of this study may lie in it being replicated by another female researcher with similar demographics.

Chapter 5 RESULTS

5.0 Introduction

This chapter presents an analysis of the results gathered from self-reply questionnaires, administered to visitors at GIMR, in an attempt to answer the five research questions posed in chapter 3.

These research questions are:

Question 1: What are the demographics of visitors to GIMR?

Question 2: What are the characteristics of a visit to GIMR?

Question 3: What factors influence a person's decision to visit GIMR?

Question 4: What is the level of satisfaction with the various attributes of GIMR?

Question 5: What is the level of awareness of being in a marine protected area?

Quantitative and qualitative data were analysed using SPSS version 18. Frequency distribution tests were used to determine the “properties of the distribution of scores” (Field, 2009, p. 18) – in other words the number of times each value occurs (Coakes, Steed & Ong, 2010; Green & Salkind, 2005). General descriptions and numeric trends for each variable are presented in tables. Cross tabulation, using Pearson's chi-square test (χ^2), was performed to evaluate whether there were significant differences between variables such as gender, age and snorkelling ability. A confidence level of 95% was used ($p=0.05$). The different sample sizes for some of the questions was a result of incomplete or unanswered questions by respondents.

The researcher's field notes were used to complement and add depth to the data gathered from the questionnaire.

5.1 Self-reply questionnaire

5.1.1 Survey completion rate

Three hundred and thirty-three (333) people were approached to participate in the study and complete a self-reply questionnaire, 28 of those approached declined to participate. The study's total sample size was therefore 305, representing a 92% completion rate; 70 (23%) responses were gathered from site 1, the beach west of the main beach, 68 (22.3%) from site 2, the main beach, 66 (21.6%) from site 3, the rocks and grassy embankment and 101 (33.1%) from site 4 (grassy area atop cliff including picnic tables and lower car parks) (Table 9). Data were collected as outlined in sections 4.7 and 4.8 and are representative of peak summer visitation (see section 4.6 for sampling design).

A higher number of questionnaires were collected from site 4 because the beach (site 1 & 2) and rocky area (site 3) (see Figure 16) were significantly reduced in size for at least two hours either side of high tide. Consequently, the displacement of many visitors occurred from these sites to site 4.

In contrast to the pilot study, when the researcher found approaching visitors in the car park difficult, surveys were easily obtained from site 4. This area was predominately grass and contained the picnic tables, however, due to overcrowding visitors also picnicked beside their vehicles in the main car park and on grassy areas surrounding their vehicles in the lower car park. No attempts were made to administer questionnaires to visitors along Goat Island Bay Road (i.e. past the vehicle counter).

Table 9

Questionnaire completion rate

Questionnaire completion by site, <i>n</i> =305			
		Frequency	Percent
Location	Site 1 - Western beach	70	23.0%
	Site 2 - Central beach	68	22.3%
	Site 3 - Eastern beach / rocks	66	21.6%
	Site 4 - Picnic tables / grass	101	33.1%
	Total	305	100.0%

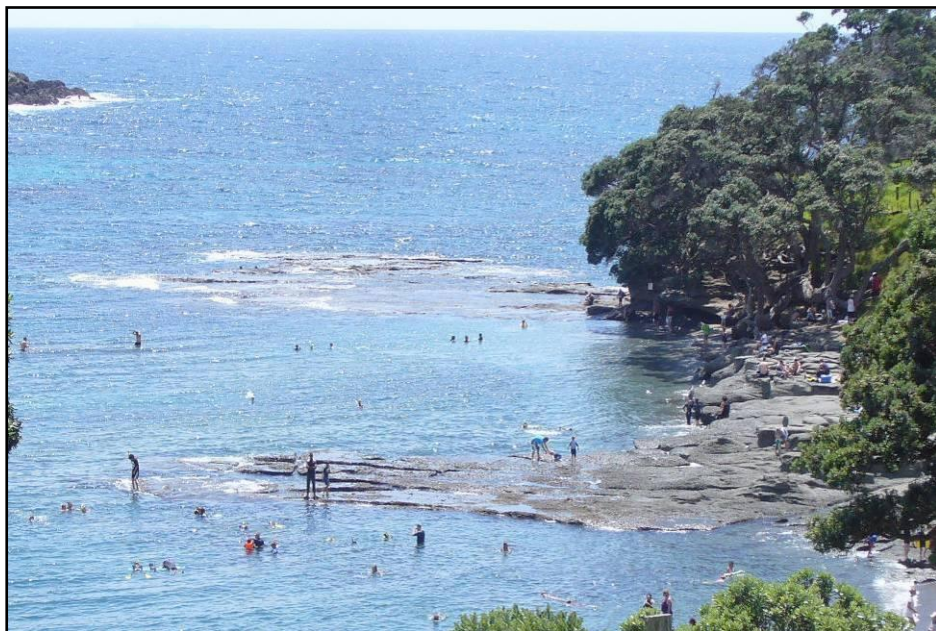


Figure 16: Race (2011). Site 3 at low tide (top) and high tide (bottom) showing visitor displacement [Photograph].

5.1.2 Invitations to participate declined

Participation in the study was declined by 28 people, mostly due to a language barrier. Often group members did not speak English or felt they could not complete the questionnaire comfortably. Young children were sent to the researcher to represent the group, because their English was better than the adult approached as a potential respondent, however, they were often too young to participate in the study (i.e. under 18 years of age).

5.1.3 Adjustment to research instrument

Two questions were added to the instrument after the first day of data collection. The researcher was notified that a man had drowned while snorkelling at GIMR the previous day (11 December 2010) and that several visitors had required emergency in-water assistance in the previous few weeks. As a consequence, two safety-related questions (see D3 and D4 of Appendix A) were added, which related to a person's ability to snorkel and the type of equipment used while snorkelling. Data collection from D3 and D4 commenced on 15 December 2010 (day two of data collection).

5.1.4 Weather conditions during study

Weather conditions varied considerably during the four-week study period. A La Niña weather pattern brought warmer than normal temperatures and humid conditions to north eastern areas of New Zealand, including several low-pressure systems that resulted in significant rainfall and gale force winds (NIWA, 2011a; 2011b). Consequently, 10 days during December were not suitable for conducting the study.

Table 10 indicates the various weather conditions during the study days and the number of respondents who completed a self-reply questionnaire on those days. By separating the weather into a simple bi-polar classification, data show that of 305 respondents, 63% ($n=193$) completed the questionnaire during favourable weather conditions (e.g. sunny, light breeze, calm seas) and 37% ($n=112$) during unfavourable weather conditions (e.g. cloudy, strong winds, choppy seas) (see Figure 17).

Table 10

Weather conditions during the study period

Date of study	Weather conditions	Number of participants
25 October 2010	Sunny & warm, clear skies	15
12 December 2010	Humid, low cloud, drizzly in morning, sunny and fine afternoon, hot	30
15 December 2010	Hot sunny, little cloudy by afternoon, very humid, calm sea	14
21 December 2010	Humid, cloudy, strong N onshore winds (25-30khr), sunny afternoon, water very murky	12
23 December 2010	Humid, cloudy in morning, clear and sunny afternoon, sea fairly calm	26
26 December 2010	Partly cloudy, humid light breeze morning, sunny and hot afternoon	30
29 December 2010	Cool cloudy start. Cloudy all day, clearer afternoon, humid, light NW breeze onshore	28
1 January 2011	Morning cloudy, light breeze. Strong S wind by noon, partly cloudy for rest of day	23
2 January 2011	Morning light E breeze, N from noon. From 4pm no wind, very hot, clear skies	31
5 January 2011	Sea choppy from NE. Light wind & cloudy during day. Very windy (25-30kh) late afternoon	29
8 January 2011	Sea very calm on surface, no waves. Slight SE breeze, nice temp, hot sunny, no clouds	22
11 January 2011	Morning cloudy, light breeze SE all day, nice warm conditions	27
13 January 2011	Morning slight S breeze, cloudy, humid, hot when no clouds. Stronger breeze from 2pm onwards	18
Total		305



Figure 17: Race (2011). Favourable (top) and unfavourable (bottom) weather conditions during the study period [Photograph].

5.2 Research question 1:

What are the demographics of visitors to GIMR?

5.2.1 Gender

Of the 305 respondents that completed the questionnaire, 38% were male and 62% were female.

5.2.2 Age

A descriptive analysis of the age of 305 respondents shows the majority (54%) were between the ages of 25-44 years, with the median age range of 35-44 years.

Approximately 19% of respondents were in the 18-24 age group and 17% in the 45-54 age group. There were lower numbers of visitors aged 55 and over (Table 11).

A Pearson's chi-square test shows there is no significant difference between the proportions of gender over age groups.

5.2.3 Place of residence

The general patterns of results from this question are skewed (skewness 2.722) towards respondents who reside in New Zealand (76%) (Table 11). Thirteen percent resided in United Kingdom / Europe (specifically UK - England, Northern Ireland, Scotland and Wales; Europe - Denmark, France, Germany, Netherlands, Spain and Switzerland).

Three percent of people resided in the Americas (specifically USA, Canada and Bahamas), 2.3% resided in Eastern Europe and Middle East (Czech Republic, Dubai [UAE], Israel, Poland and Turkey), 2% resided in Australia, 2% resided in Asia (China, Hong Kong, Indonesia, Korea, and Malaysia) and 2% resided in other countries (India, New Caledonia and South Africa).

The majority of New Zealand residents lived in Auckland ($n=198$, 86%). Other residents live in towns or cities in the North of Auckland ($n=6$, 3%), the Rest of the North Island ($n=22$, 10%) and in the South Island ($n=5$, 2%).

In total, 65% ($n=198$) of the study group resided in Auckland.

Table 11

Demographic profile of gender, age and place of residence

Variable	Total sample (n=305)		Variable	Total sample (n=303)	
	n=	Percent		N=	Percent
<i>Gender</i>			<i>Usual place of residence</i>		
Male		38%	New Zealand	231	76.2%
Female		62%	UK / Europe	38	12.5%
<i>Age</i>			Eastern Europe/Middle East	7	2.3%
18-24 years	58	19.0%	Australia	6	2.0%
25-34 years	80	26.2%	Asia	6	2.0%
35-44 years	84	27.5%	Americas	9	3.0%
45-54 years	53	17.4%	Other	6	2.0%
55-64 years	17	5.6%			
65+ years	13	4.3%			

5.2.4 Education

The majority (54%) of respondents had a university degree (undergraduate 28%; post-graduate 26%) (Table 12). Almost 19% of respondents' highest educational attainment was a high school qualification and almost 18% had a post school certificate or diploma. Other post-high school qualifications accounted for 10% of respondents. Eight respondents did not answer the question (Figure 18).

A Pearson's chi-square test showed there was a highly significant difference in the proportions of age over education levels ($n=297$, $\chi^2 = 61.610$, $df\ 25$, $p=0.000$), indicating that respondents in the 35-44 year age range were the most qualified.

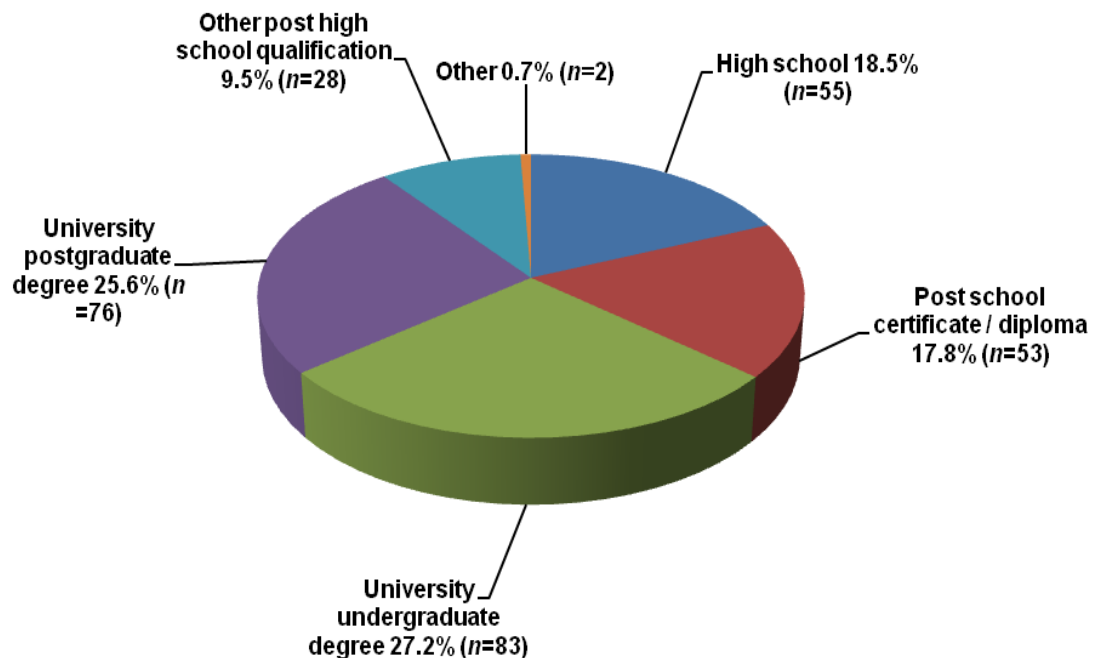


Figure 18: Respondents' highest educational attainment, measured in percentages and frequencies [Graph].

5.2.5 Occupation

Respondents' primary occupation was categorised following the NZ census classes into professional/education/health care (such as teacher, nurse, lawyer, accountant, veterinarian, etc), construction/retail (such as builder, electrician, shop assistant, etc), student, house executive, retired and other (including traveller, unemployed, unknown professions and a variety of occupations stated such as clairvoyant, photographer and SPCA volunteer).

Results indicate that almost half (49%) of the 284 respondents' primary occupation was in a professional/education/health care capacity. The most popular occupations in this category were in teaching (e.g. at primary, college and tertiary institutions) (Table 12).

A Pearson's chi-square test showed a highly significant difference between the proportions of males and females over various occupations ($n=284$, $\chi^2 = 15.806$, $df\ 5$, $p=0.007$), indicating that females were more likely to have an occupation in the professional category than males.

5.2.6 Income

The descriptive results from 264 respondents show the medium total household income was between NZ\$60,001–NZ\$80,000. Twelve percent of respondents were in the lowest income bracket (NZ\$20,000 or less) and eight percent were in the highest income bracket (NZ\$200,001+) (Table 12).

A Pearson's chi-square test showed a highly significant difference between the proportions of age over total household income ($n=264$, $\chi^2 = 115.071$, $df\ 35$, $p=0.000$). Results indicate the 35-44 year age group earned the highest incomes and the 18-24 year age group earned the lowest incomes. There was no significant difference between the proportions of gender over total household income.

Table 12

Demographic profile of education level, occupation and total household income

Variable	Total sample (n=297)		Variable	Total sample (n=284)		Variable	Total sample (n=264)		
	n=	Percent		n=	Percent		n=	Percent	Cumulative %
<i>Highest level of educational attainment</i>			<i>Occupation</i>			<i>Total household Income NZ\$</i>			
High school	55	18.5%	Professional	140	49.3%	\$20,000 or less	31	11.7%	11.7%
Post school certificate / diploma	53	17.8%	Trade / retail	54	19.0%	\$20,001 - \$40,000	29	11.0%	22.7%
University undergraduate degree	83	27.9%	Student	39	13.7%	\$40,001 - \$60,000	32	12.1%	34.8%
University postgraduate degree	76	25.6%	House executive	14	4.9%	\$60,001 - \$80,000	42	15.9%	50.8%
Other post high school qualification	30	10.1%	Retired	14	4.9%	\$80,001 - \$100,000	44	16.7%	67.4%
			Other	23	8.1%	\$100,001 - \$150,000	45	17.0%	84.5%
						\$150,001 - \$200,000	19	7.2%	91.7%
						\$200,001+	22	8.3%	100.0%

5.2.7 Ethnicity

The data for ethnicity are presented in Table 13 and divided into New Zealand Resident (NZR) ($n=215$) and International Visitor (IV) ($n=68$).

Of NZR, 107 (49.8%) respondents, out of 215, stated their ethnicity as New Zealand European (Kiwi or Pakeha were also included in this group). The second largest representation was Other European ($n=43$, 20.0%) which included British, Caucasian, European, Macedonian, Scottish, Ukrainian and White South African. The Asian/South East Asian category ($n=27$, 12.6%) included Filipino, Chinese, Indonesian and Korean ethnic groups. The NZR ethnicity profile was completed with representations of Māori ($n=15$, 7.0%), Indian ($n=11$, 5.1%), Pacific Islander ($n=8$, 3.7%) and Other ($n=4$, 1.9%) which included African-American and Israeli Jew (Table 13).

IV ethnicity ($n=68$) was dominated by Other European ($n=55$, 80.9%), followed by Asian / South East Asian ($n=5$, 7.4%) and Other ($n=4$, 5.9%). The other ethnicities each had very low representations.

According to a Pearson's chi-square test, there was a highly significant difference in the proportions of country of residence over ethnic groups ($n=283$, $\chi^2 = 95.821$, $df=6$, $p=0.000$). Results indicated that Other Europeans were more likely to be IV. All other ethnicities were likely to be NZR.

A Pearson's chi-square test also indicated a highly significant difference in the proportions of age over ethnic groups ($n=283$, $\chi^2 = 51.254$, $df=30$, $p=0.009$). These data suggest the Asian / South East Asian ethnic group were predominately 18-34 year olds and respondents who were 55 years and older mainly belong to the New Zealand European or Other European ethnic categories.

Table 13

Demographic profile of ethnicity, divided into New Zealand Residents and International Visitors

		Ethnic Group							Total
		New Zealand European	Other European	Asian / South East Asian	Māori	Indian	Pacific Island	Other	
New Zealand Resident (NZR)	Frequency	107	43	27	15	11	8	4	215
	% within NZR or IV	49.8%	20.0%	12.6%	7.0%	5.1%	3.7%	1.9%	100.0%
	% within ethnic group	98.2%	43.9%	84.4%	93.8%	91.7%	100.0%	50.0%	76.0%
International Visitor (IV)	Frequency	2	55	5	1	1	0	4	68
	% within NZR or IV	2.9%	80.9%	7.4%	1.5%	1.5%	.0%	5.9%	100.0%
	% within ethnic group	1.8%	56.1%	15.6%	6.3%	8.3%	.0%	50.0%	24.0%
Total	Frequency	109	98	32	16	12	8	8	283
	% within NZR or IV	38.5%	34.6%	11.3%	5.7%	4.2%	2.8%	2.8%	100.0%
	% within ethnic group	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

5.2.8 Language

The data for language is also presented by dividing respondents into New Zealand Resident (NZR) and International Visitor (IV).

Table 14 indicates that of 303 respondents, 69% noted English as their first language. Although large, this figure also shows that for 31% of respondents English was *not* their first language. Data indicated moderate representations of the Chinese, German, Korean and Afrikaans languages.

The Other category contained 25 different languages spoken by 52 respondents, including Czech, Danish, Dutch, French, Hebrew, Hindi, Hungarian, Indian, Indonesian, Khmer (Cambodia), Macedonian, Malaysian, Māori, Niuean, Polish, Portugese, Russian, Serbian, Sinhalese (Sri Lanka), Spanish, Swedish, Tagalog (Philippines), Tongan, Turkish and Vietnamese.

A highly significant difference between the proportions of New Zealand residents (NZR) and international visitors (IV) over first language was found using a Pearson's chi-square test ($n=303$, $\chi^2 = 34.176$, $df\ 5$, $p=0.000$). Results indicated the majority of respondents who speak Chinese, Korean, Afrikaans and Other languages as their first language were New Zealand Residents. Respondents who speak German were mostly International Visitors. There was no significant difference between the proportions of gender over first language ($n=304$, $\chi^2 = 5.961$, $df\ 5$, $p=0.310$) or age over first language ($n=304$, $\chi^2 = 30.051$, $df\ 25$, $p=0.222$).

5.2.9 Environmental (conservation) membership

Question D11 asked if respondents were a member of an environmental (conservation) organization. Of 282 respondents, 90% answered in the negative and 10% ($n=29$) in the affirmative.

Table 14

Demographic profile of first language divided into New Zealand Residents and International Visitors

		First Language						Total
		English	Chinese	German	Korean	Afrikaans	Other	
New Zealand Resident (NZR)	Frequency	172	11	1	8	6	33	231
	% within NZR or IV	74.5%	4.8%	.4%	3.5%	2.6%	14.3%	100.0%
	% within ethnic group	82.3%	84.6%	10.0%	80.0%	66.7%	63.5%	76.2%
International Visitor (IV)	Frequency	37	2	9	2	3	19	72
	% within NZR or IV	51.4%	2.8%	12.5%	2.8%	4.2%	26.4%	100.0%
	% within ethnic group	17.7%	15.4%	90.0%	20.0%	33.3%	36.5%	23.8%
Total	Frequency	209	13	10	10	9	52	303
	% within NZR or IV	69.0%	4.3%	3.3%	3.3%	3.0%	17.2%	100.0%
	% within ethnic group	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

5.3 Research question 2:

What are the characteristics of a visit to Goat Island Marine Reserve?

5.3.1. Length of visit

The estimated length of a visit to GIMR, by 303 respondents, ranged from one hour to 12 hours. The mean length of visit was slightly longer than four hours. The majority of respondents ($n=176$, 58%) suggested they may stay for a visit of 3-6 hours duration. Twenty-two percent ($n=68$) may stay for a shorter visit of up to three hours and 20% ($n=59$) may stay for a longer visit of more than six hours (Figure 19).

A Pearson's chi-square test showed a long stay (> 6 hours) is not favoured by people aged 55+ years, while a moderate length stay (3-6 hours) was more favoured by people aged 25-44 years ($n=303$, $\chi^2 = 20.417$, $df\ 10$, $p=0.026$).

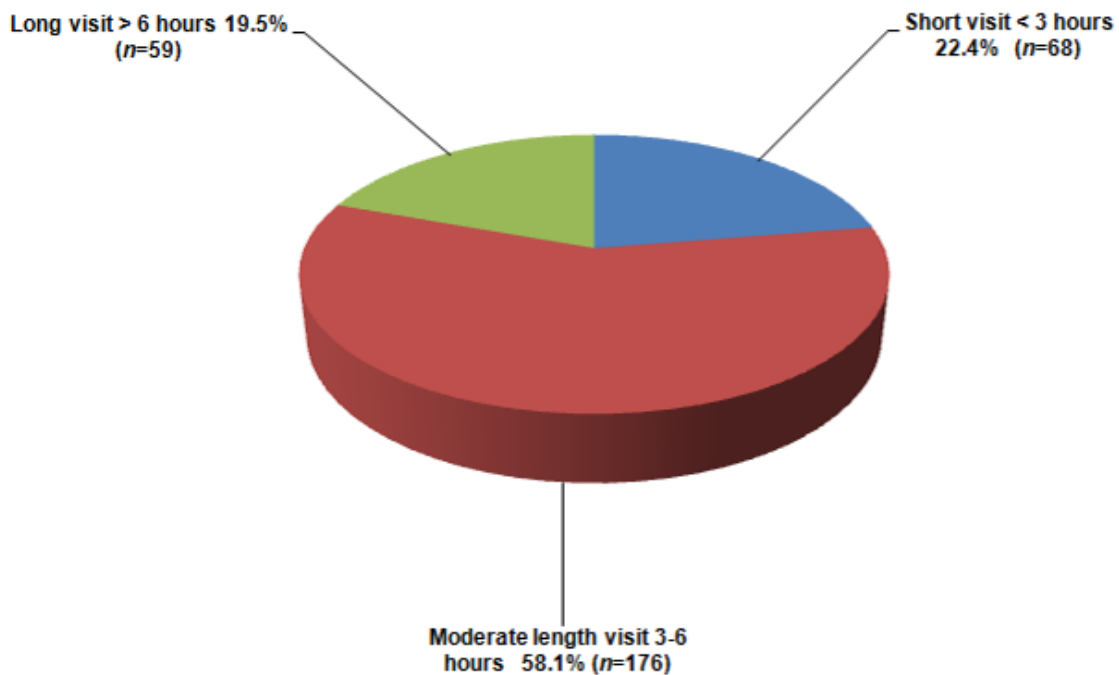


Figure 19: Visitors' estimated length of stay, measured in percentages and frequencies [Graph].

5.3.2 Potential place of overnight stay

More than a quarter of the sample ($n=80$, 26%) were likely to stay overnight in the local area (see definition of a local area in the next paragraph). Respondents (to question A1 of Appendix A) noted a variety of establishment and locations, with Leigh being the most popular town catering to 43% ($n=34$) of potential overnighers. The Leigh category also includes Goat Island Camping (which caters to almost 60% of this group) and the towns of Matheson's Bay, Ti Point and Whangateau. Other popular towns are Omaha ($n=15$, 19%), which also includes the towns of Matakana and Point Wells, and Pakiri ($n=12$, 15%) (note: the Pakiri Holiday Camp caters to 100% of this group).

The term 'local' was not restricted to a particular area on the self-reply questionnaire. As a result, respondents mentioned a number of towns or districts where they were likely to spend the night. Towns not mentioned above were placed into the 'other' category ($n=19$, 24% of potential overnighers) and included Algies Bay, Bay of Islands, Mangawhai and Mangawhai Heads, Orewa, Sandspit, Snells Beach, Tarwharanui, Torbay and Warkworth.

A variety of 'establishments' were named such as Dad's farm, a local B&B, a friend's house, my parent's bach, an apartment, the nearest wild camping place and in our campervan in a local parking lot, which are also included in the 'other' category unless a town was specified.

A Pearson's chi-square test showed no significant difference in the place of overnight stay between NZR and IV, however the distribution of numbers suggests IV were more likely to stay at Leigh and less likely to stay at Omaha.

These data show insights into the various accommodation category and price range options visitors are likely to choose from for their overnight base – namely camping or self-catering and budget or free.

Visitors did not seem to associate the term 'local' to be within any particular boundary, as suggested by the distance between overnight areas mentioned – from Bay of Islands in the north to Torbay (North Shore) in the south.

5.3.3 Place of stay prior to GIMR visit

Question A4 asked respondents to specify from which town they had started their journey on the day they visited GIMR. As expected, due to the place of residence of most visitors (see 5.2.3), the majority travelled from towns in Auckland ($n=273$, 90%).

A small number of respondents stayed in locations North of Auckland ($n=24$, 8%). Five respondents stayed elsewhere in the Rest of the North Island.

No significant difference was found using a Pearson's chi-square test between the proportions of NZR and IV over place of stay prior to visit, however results suggest that IV were more likely to travel from towns North of Auckland while NZR were more likely to travel from Auckland.

5.3.4 Transportation

Of 304 respondents, the majority visited GIMR by private vehicle ($n=256$, 84%). The remainder arrived via rental car ($n=22$, 7%) or campervan / minibus ($n=12$, 4%). Six respondents walked from Goat Island Camping, six arrived via motorbike, bicycle, boat or private guided tour and two arrived by bus (Figure 20).

A Pearson's chi-square test showed a highly significant difference between the proportions of NZR and IV over transportation usage ($n=303$, $\chi^2 = 107.934$, $p=0.000$).

Only one NZR respondent hired a rental car, compared to 21 IV and three NZR respondents arrived by motorhome / campervan, compared to nine IV.



Figure 20: Race (2011). Motorcycles (top) and a selection of transportation options (bottom) [Photograph].

5.3.5 Group size

There was a positive skew (skewness +0.299) towards visitation in large groups (standard deviation 2.276). Thirty-two percent ($n=96$) of respondents visited in a group of 5-7 people and 20% ($n=59$) visited in a group of eight or more. Group sizes ranged from one person to 40 people, with the mean group size being a group of five (Table 15; Figure 21).

A Pearson's chi-square test showed a highly significant difference between the proportions of age over group size ($n=305$, $\chi^2 = 65.416$, $df\ 40$, $p=0.007$) with the 18-34 age group likely to visit in small groups and the 35-55 age group likely to visit in larger groups. The 55+ age group visited predominately in couples or groups of three people.

There was also a highly significant difference between ethnicity and group size ($n=283$, $\chi^2 = 79.211$, $df\ 48$, $p=0.003$), with Asian / South East Asians visiting in large groups of predominately 5-12 people and Pacific Islanders visiting in large groups of predominately 7-12 people, while New Zealand Europeans visited in small groups of predominately 2-4 people.

There was no significant difference between NZR and IV over group size.

5.3.6 Travelling companions

Popular respondents' companions included friends only (20%), family only (15%), spouse/partner only (12%) and spouse/partner & children (12%). The other category represented various combinations of companions mentioned above as well as organized groups (such as a work party, church group, school outing and tour bus) (Table 15).

Results of a Pearson's chi-square test showed a highly significant difference between the proportions of age over travelling companions ($n=305$, $\chi^2 = 76.961$, $df\ 20$, $p=0.000$), with the majority of respondents in the 18-24 year bracket visiting primarily with friends only, while other age groups visit with a variety of companions.

There was no significant difference between NZR and IV or ethnicity over travelling companions.

Results were positively skewed (skewness +0.470) towards respondents visiting GIMR without children under 18 years of age (44%) (standard deviation 1.390). These data also indicated that 56% of respondents travel *with* children (Table 15).

Further Pearson's chi-square tests showed a highly significant difference between the proportions of NZR and IV over those visiting GIMR with children ($n=303$, $\chi^2 = 15.012$, df 4, $p=0.005$) and age over those visiting GIMR with children ($n=305$, $\chi^2 = 80.166$, df 20, $p=0.000$). IV visited with two or less children and 18-24 year olds mostly visited with no children.

Table 15

Characteristics of a visit based on group size and travelling companions

Total sample (n=305)			Total sample (n=305)			Total sample (n=305)		
Variable	n=	Percent	Variable	n=	Percent	Variable	n=	Percent
<i>Group size</i>			<i>Travelling companions</i>			<i>Number of children</i>		
1-2 people	60	19.7%	Friend(s) only	62	20.3%	None	133	43.6%
3-4 people	90	29.5%	Family only	50	16.4%	1 Child	35	11.5%
5-7 people	96	31.5%	Spouse / partner only	36	11.8%	2 Children	59	19.3%
8 or more people	59	19.3%	Spouse / partner & children	35	11.5%	3-5 Children	54	17.7%
			Other	122	40.0%	6+ Children	24	7.9%



Figure 21: Race (2011). A group of nine arrive at site 1 (top) and a group of 18 sit at one of the picnic tables at site 4 (bottom) [Photograph].

5.3.7 Previous visits to GIMR

The majority of 305 respondents ($n=185$, 61%) had previously visited GIMR (Table 16). New / first time visitors accounted for 39% ($n=120$) of respondents. Because the majority of visitors resided in Auckland, there was a highly significant difference between the proportions of NZR and IV over previous visits ($n=303$, $\chi^2 = 67.483$, $df\ 1$, $p=0.000$).

Table 16 shows that almost half of the respondents that had previously visited GIMR ($n=86$, 46.5%) had done so between two and five times. Several respondents ($n=20$, 6.5%) suggested they had visited ‘numerous times’ (see category 11 or more previous visits). The number of visits was not offered, as noted by comments on the self-reply questionnaire:

“Heaps! I’ve always come here, ever since I was a kid”

A Pearson’s chi-square test showed a highly significant difference between the proportions of word-of-mouth communication over first-time visitors ($n=304$, $\chi^2 = 41.772$, $df\ 1$, $p=0.000$), which indicated that new visitors to GIMR received their primary source of information from other people and ethnicity over first-time visitors ($n=304$, $\chi^2 = 54.176$, $df\ 9$, $p=0.000$). Data show that Asian, European and Indian are more first-time visitors than other ethnic groups.

No significant differences were found when the chi-square tested gender, age or place of residence over the number of previous visits.

5.3.8 Most recent visit to GIMR

Respondents who were repeat visitors to GIMR recorded their most recent visit to GIMR (Table 16). Of 179 respondents, 41% ($n=74$) last visited between January 2009 and September 2010. An equal number of respondents ($n=39$, 22% each) visited between 2005-2008 and October 2010 and 13 January 2011 (the last day of this study) (Table 16).

Figures reduced to 10% ($n=17$) of respondents who last visited between 2000-2004 and 6% ($n=10$) who last visited before 2000. Six respondents, who stated they had visited the site previously, did not record the month and year of the visit, although the majority of visitors stated they visited GIMR during the summer months of December, January and February.

No significant differences were found when testing gender, age or place of residence over the most recent visit.

Table 16

Characteristics of a visit based on the number and time of previous visits

Variable	Total sample (n=305)		Variable	Total sample (n=179)	
	n=	Percent		n=	Percent
<i>Number of previous visits</i>			<i>Most recent visit (year)</i>		
None - first time	120	39.5%	Before 2000	10	5.60%
1 previous visit	53	17.3%	2000-2004	17	9.50%
2-5 previous visits	86	28.1%	2005-2008	39	21.80%
6-10 previous visits	26	8.5%	2009-2010	74	41.30%
11 or more previous visits	20	6.5%	Summer 2010/2011	39	21.80%

5.3.9 Snorkeler's level of experience and equipment used

Questions D3 and D4 were added to the self-reply questionnaire after the death of a snorkeler at the study site on Saturday 11 December 2010. As a consequence, data from the pilot study and day 1 of the study (i.e. a total of 45 respondents) are not included in these results.

Table 17 indicates how respondents self-rated their snorkelling ability. Rating was based on the number of times respondents had snorkelled prior to visiting GIMR. Of 204 respondents, 90% ($n=183$) had snorkelled before and only 10% ($n=21$) of respondents were first time snorkelers.

Inexperienced snorkelers accounted for 28% ($n=56$) of respondents, followed by snorkelers with some experience ($n=50$, 25%), quite experienced ($n=40$, 20%) and very experienced ($n=37$, 18%).

A Pearson's chi-square test showed a highly significant difference between the proportions of males and females over snorkelers' self-rated ability ($n=204$, $\chi^2 = 16.123$, $df=4$, $p=0.003$). Females were more likely to be first-time or inexperienced snorkelers, whereas males rated themselves as having very high levels of snorkelling ability.

Self-evaluations of 195 snorkelers' equipment showed 39% ($n=76$) used a mask, snorkel and fins when snorkelling, 35% ($n=69$) also wore a wetsuit with the same equipment. A reasonably large number of visitors used a mask and snorkel only (i.e. no fins) ($n=43$, 22%) while a small number ($n=7$, 4%) also wore a wetsuit with this equipment.

Researcher's observations

In addition to data gathered using the self-reply questionnaire, the researcher kept a detailed field notebook in which observations of activities and behaviour relevant to the research questions were recorded.

The researcher noticed that people of all age groups used a variety of devices to help keep them afloat while snorkelling (Figure 22). Devices included:

- Inflatable arm bands.
- Body board / boogie board.
- Skim board.
- Inflatable boat / ski tube.
- Pool noodle.
- Child's inflatable swimming ring.
- Child's inflatable pool toys (e.g. dolphin, duck).
- Inflatable pool lounger / lilo mattress.
- Wetsuit.
- Life jacket / PDF (personal floatation device).
- Kayak / canoe.



Figure 22: Race (2011). One of the many floatation devices used by snorkelers
[Photograph].

Outdoor clothing (i.e. T-shirts) and water shoes / bare feet were often worn in lieu of a wetsuit and fins, more particularly by males (Figure 23).



Figure 23: Race (2010). Males observed wearing water shoes (above) and T-shirt (below) while snorkelling [Photograph].

Children were observed snorkelling in wetsuits and life-jackets (Figure 24). The researcher did not observe adult snorkellers wearing PFDs of this nature.



Figure 24: Race. (2010). Children observed snorkelling while wearing PFDs (snorkel not visible in image) [Photograph].

The researcher observed indecisive behaviour regarding the use of snorkelling equipment and was, on a number of occasions, requested to provide assistance. Some of the comments directed to, or overheard by, the researcher were:

"How do you get these things to fit?" (mask)

"Do you know how to get this fitting tight? The water keeps coming in!" (mask)

"How do we get these on without getting sand in them too?" (fins)

"Do we need gloves to snorkel or is there something we can hold on to in there?"

"Why do we need fins? ...not going far!"

During the course of the study period, several visitors suggested that information boards should be erected which taught people how to snorkel. Comments from the self-reply questionnaire and notebook were similar in context:

Comment from questionnaire:

"More safety awareness structures are needed especially for beginners"

Comment from notebook:

*"Is there anyone else here who could teach us how to do this properly
– or even a sign board or a brochure?"*

The researcher also observed behaviour that can be regarded as irresponsible in this setting, such as alcohol consumption prior to snorkelling or swimming, snorkelling alone or becoming separated from a buddy and people who had possible breathing difficulties (i.e. used an asthma-type pump before entering or upon exiting the water).

Table 17

Characteristics of a visit based on snorkelling self-rated ability and snorkelling equipment used

Variable	Total sample (n=204)		Variable	Total sample (n=195)	
	n=	Percent		n=	Percent
<i>Snorkelling ability</i>			<i>Equipment used to snorkel</i>		
First time today	21	10.3%	Mask, snorkel and fins	76	39.0%
Inexperienced < 5 times	56	27.5%	Mask, snorkel, fins & wetsuit	69	35.4%
Some experience 5-10 times	50	24.5%	Mask and snorkel	43	22.1%
Quite experienced >10 times	40	19.6%	Mask, snorkel & wetsuit	7	3.6%
Very experienced > 30 times	37	18.1%			

5.4 Research question 3:

What factors influence a person's decision to visit GIMR?

5.4.1 Purpose of visit

A variety of reasons to visit GIMR was offered by 304 respondents (Table 18). The categories, allocated by the researcher according to observations during the study (including the pilot study) and referenced literature (e.g. DLS, 1984; DoC, 2003; Hunt, 2008), were snorkelling, diving, swimming, relaxing, seeing marinelife, taking a trip on the glass bottom boat and other.

Snorkelling was the main reason for visiting GIMR for 47% ($n=143$) of respondents. Other important reasons included relaxing ($n=58$, 19%), seeing marinelife ($n=37$, 12%) and swimming ($n=30$, 10%). There were lower numbers for scuba-diving ($n=12$, 4%), glass bottom boat tours ($n=8$, 3%) and the other category ($n=16$, 5%). The latter included sightseeing or passing by, childrens' birthday parties, Christmas work functions and for a Māori ceremony (to lift a *Tapu*) after the death of a snorkeler.

Results of a Pearson's chi-square test indicated International Visitors (IV) were more likely than NZR to visit GIMR for the purpose of scuba-diving or a glass bottom boat trip ($n=303$, $\chi^2 = 12.941$, $df\ 6$, $p=0.044$), however as the frequencies in these categories were small ($n=12$ and $n=8$ respectively), this result should be interpreted with caution. No significant differences were found when testing gender, age or ethnicity over the purpose of visit.

5.4.2 Types of activities

Respondents participated in a variety of activities during a visit to GIMR, as reported in Table 18. The most popular activities were relaxing ($n=242$, 79%), swimming ($n=227$, 74%), snorkelling ($n=225$, 74%), swimming to look at the fish ($n=169$, 55%) and sunbathing ($n=163$, 53%).

Taking photographs ($n=99$, 33%), playing on the beach ($n=99$, 33%), exploring rock pools ($n=92$, 30%) and taking beach walks ($n=87$, 29%) were also popular activities.

Reading the signage about marinelife ($n=60$, 20%) and glass bottom boat tours ($n=41$, 13%) had some popularity, while bird-watching ($n=26$, 9%), kayaking ($n=15$, 5% hired and $n=5$, 2% brought own), scuba diving ($n=14$, 5%) and walking along the coastal walkway ($n=12$, 4%) had limited popularity.

Results from a Pearson's chi-square tests showed significant differences between the proportions of NZR and IV over the activities of swimming ($n=303$, $\chi^2 = 4.318$, $df\ 1$, $p=0.038$), swimming to look at the fish ($n=303$, $\chi^2 = 10.480$, $df\ 1$, $p=0.001$) and playing on the beach ($n=303$, $\chi^2 = 6.018$, $df\ 1$, $p=0.140$). In each case, NZR were more likely to participate in these activities than IV.

There was also a significant difference between the proportion of gender over the activities of relaxing ($n=304$, $\chi^2 = 6.292$, $df\ 1$, $p=0.012$), exploring the rock pools ($n=304$, $\chi^2 = 4.035$, $df\ 1$, $p=0.045$) and sunbathing ($n=304$, $\chi^2 = 4.600$, $df\ 1$, $p=0.032$). In each case, females were more likely to participate in these activities than males.

Highly significant differences were also found between the proportion of age over the activities of snorkelling ($n=304$, $\chi^2 = 23.867$, $df\ 1$, $p=0.000$) and swimming to look at the fish ($n=304$, $\chi^2 = 13.870$, $df\ 1$, $p=0.016$), where visitors aged 18-54 were more likely to participate in these activities than those aged 55 years and over; and playing on the beach ($n=304$, $\chi^2 = 23.188$, $df\ 1$, $p=0.000$), where 35-44 year olds were more likely to participate in this activity than other age groups.

No significant differences were found between gender, age or previous visitation over the reading of the signage boards, however, the researcher noticed an archetypical phenomenon: on busy days visitors did not, or were unable to, stop to read the boards as often as they did when the reserve was quieter. This was mainly due to the size of the crowd passing by the signboards to get to the beach, particularly at peak times, but also to the positioning of the signboards right next to the walkway (Figure 25).

These results suggest that the activities of snorkelling, swimming (including swimming with the fish) and viewing marinelife were important influences on the decision to visit GIMR.



Figure 25: Race (2011). Visitors are observed reading signage boards (top), however on busy days most visitors did not stop to look (bottom) [Photograph].

Table 18

Influential profile of reason for visit and activities undertaken during visit

Total sample (n=304)			Total sample (n=304)					
Variable	n=	Percent	Variable	n=	Percent	Variable	n=	Percent
<i>Reason for visit</i>			<i>Activity</i>			<i>Activity</i>		
Snorkelling	143	47.0%	Relaxing	242	79.0%	Sightseeing	77	25.0%
Relaxing	58	19.1%	Swimming	227	74.0%	Other activities*	76	25.0%
See marinelife	37	12.2%	Snorkelling	225	74.0%	Read signage about marinelife	60	20.0%
Swimming	30	10.0%	Swim to look at fish	169	55.0%	Glass bottom boat tour	41	13.0%
Scuba diving	12	3.9%	Sunbathing	163	53.0%	Bird-watching	26	9.0%
Glass bottom boat tour	8	2.6%	Photography	99	33.0%	Kayak (hired)	15	5.0%
Other	16	5.3%	Playing on the beach	99	33.0%	Scuba diving	14	5.0%
			Explore rock pools	92	30.0%	Coastal walkway	12	4.0%
			Beach walk	87	29.0%	Kayak (brought own)	5	2.0%
* Including: picnicking, feeding the ducks, visiting Goat Island & sleeping on the beach.								

Researcher's observations

In addition to those activities mentioned on the self-reply questionnaire, visitors were also observed engaging in several other activities:

Adults played games with each other or with children, for example, beach bats, badminton, touch rugby, frisbee, football, hacky sack and cricket. Two large groups of children set up cricket games (Wednesday 15 December 2010 and Tuesday 21 December 2010), although were forced to stop playing when large numbers of customers appeared around the glass bottom boat's ticketing table at S2 (Figure 26). A few visitors also threw rocks at the cliff (from S1 & S2) and climbed over the fencing at S4 and down the cliff face to get to the beach.

Groups set up BBQs or coal Webers / braziers on the beach (S2 and S3) and on grassy areas next to picnic tables (S4). Most visitors were observed eating food or picnicking during their visit, regardless of their length of stay. Visitors did not always take their litter with them: food wrappers, unwanted food and empty cans were found discarded on the beach or rocks area. Some visitors consumed alcohol and several glass beer bottles were found discarded in the sand or under rocks.

Women tended to stay close to the shoreline to supervise children at the water's edge, particularly when motorised boats and kayaks were in the same area, or watched over their personal items on the beach. Children played at the water's edge with buckets and spades and on body-boards and skim-boards. The researcher perceived that more men were in the water than women, however, actual numbers are not known. Considering the results of the differences in gender numbers, this may be one of the limitations of the study.

Children chased and fed the mallard ducks and adults physically abused them (i.e. kicked them and threw sand over them) to remove them from their equipment (i.e. towels, clothing and food). The eels in the Whakatuwhenua Stream were abused by children who tried to catch them or throw small rocks at them to make them move. The eels were also fed.



Figure 26: Race, S. (2010). Children stop a social cricket game to accommodate glass bottom boat customers, December 15, 2010 [Photograph].

5.4.3 Previous visits to other MPAs

Of 304 respondents, 128 (42%) had previously visited another MPA, either in New Zealand or elsewhere around the world. More than one third of all respondents ($n=108$, 36%) had not visited a MPA and 22% ($n=68$) were not sure.

A significant difference was found between age over previous visits to MPAs ($n=304$, $\chi^2 = 22.442$, $df\ 10$, $p=0.013$). Visitors aged 18-34 years were more likely to respond 'No' or 'Not sure', while visitors aged 35-54 years were more likely to respond in the affirmative.

Question A8 (Appendix A) also asked respondents to name the marine reserve / marine park / marine protected area(s) they had previously visited. Although the Great Barrier Reef Marine Park was the most correctly named MPA, very few answers were correct. The name offered was not the formal name of the MPA but rather its more popular or public namesake or reduced version (Table 19). Examples included a popular west coast Auckland beach, Piha, instead of the West Coast North Island Marine Mammal Sanctuary, coastal towns such as Kaikoura and Cooks Beach where there is no MPA close by, and Tongariro National Park and Rotorua, which are land-locked locations.

Respondents were also unsure as to whether the site they had visited was a designated MPA. Comments and symbols on the questionnaire demonstrated indecisive behaviour. For example, respondents crossed out answers they felt were incorrect (e.g. Bay of Islands), left a message if they did not know, for example, "*Don't know names - good question!*" and /or added a question mark next to a MPA name if they were unsure, for example, "*Cape Reinga?*".

Table 19 lists the names of the previously visited New Zealand MPAs including the respondents' version and the formal MPA name. Table 20 indicates the international MPAs noted and also respondents' comments in lieu of not knowing MPA names.

Table 19

List of previously visited MPAs as noted by respondents

Name offered by respondent	Formal MPA name	Name offered by respondent	Formal MPA name or borders/adjacent to MPA
Cathedral Cove	Te Whanganui-A-Hei Marine Reserve	Abel Tasman National Park	Tonga Island Marine Reserve
Gemstone Bay, Coromandel	Te Whanganui-A-Hei Marine Reserve	Anchor Bay	Tawharanui Marine Park
Hahei	Te Whanganui-A-Hei Marine Reserve	Awhitu Regional Park	West Coast North Island Marine Mammal Sanctuary
Island Bay, Wellington	Taputeranga Marine Reserve	Bay of Islands	None
Kermadec Islands	Kermadec Marine Reserve	Blockhouse Bay Park	West Coast North Island Marine Mammal Sanctuary
Long Bay	Long Bay-Okura Marine Reserve	Brown's Bay	Hauraki Gulf Marine Park
Long Island Marlborough Sounds	Long Island-Kokomohua Marine Reserve	Cape Reinga	None
Mimiwhangata	Mimiwhangata Marine Park	Cook's Beach	None
Pollen Island	Motu Manawa (Pollen Island) Marine Reserve	Kaikoura	None
Poor Knights	Poor Knights Islands Marine Reserve	Kapiti Island	Kapiti Marine Reserve
Stingray Bay, Coromandel	Te Whanganui-A-Hei Marine Reserve	Mahurangi Peninsula	Hauraki Gulf Marine Park
Tawharanui	Tawharanui Marine Park*	Mairangi Bay	Hauraki Gulf Marine Park
Waiheke Island Marine Reserve	Te Matuku Marine Reserve	Matauri Bay	None
Whangarei Harbour & Estuary	Whangarei Harbour Marine Reserve	Milford Sound	Piopiotahi (Milford Sound) Marine Reserve
	* Awarded marine reserve status Sep 2011	Mt Maunganui Park	None
		Orere Point	Hauraki Gulf Marine Park
		Piha	West Coast North Island Marine Mammal Sanctuary
		Reotahi Beach, Whangarei	Whangarei Harbour Marine Reserve
		Rotorua	None
		Ruakaka Estuary	None
		Shakespeare Regional Park	Hauraki Gulf Marine Park
		Tiritiri Matangi	Hauraki Gulf Marine Park
		Tongaririo National Park	None
		Torbay	Long Bay-Okura Marine Reserve
		Wellington	Taputeranga Marine Reserve
		Wenderholm Regional Park	Hauraki Gulf Marine Park
		Whatipu Scientific Reserve	West Coast North Island Marine Mammal Sanctuary
		Whitianga	Hauraki Gulf Marine Park

Table 20

International MPAs visited (L) and respondents' comments when MPA name was unknown (R)

Names of previously visited international MPAs		Responses offered in lieu of MPA name
Name given by respondent		Names
Addo National Park, South Africa	Palolo Marine Reserve, Apia Samoa	Loads in New Zealand most probably
Big Pine Key, Florida, USA	Philippines	Many, many, many!
Cape Schanck, Australia	Point Nepean, Australia	Don't know names – good question!
Castaway Island, Fiji	Rarotonga	Various oceanariums
Cook Islands	Red Sea, Egypt	Maybe others in NZ, not sure of names
Great Barrier Reef, Australia	Reserve Cousteau, Guadeloupe	One near Cathedral Cove - Poor Knight Island?
Cozuneil, Mxico	Rose island Gorlding Cay, Bahamas	Lots in Malaysia
Eilat, Israel	Santa Barbara, California	I can't remember exactly which areas are protected
Egypt	Sharm el Shiek (Red Sea), Egypt	One similar in Hawaii, years ago
Everglades National Park, Florida, USA	Sipadou, Malaysia	All of them in New Zealand
Fiji	Sodwana Bay, South Africa	Maybe, but I wouldn't know their names
Galapagos Islands, Equador	Studland Bay, UK	
German North Sea	Sydney, Australia	
Grassy Key, Florida, USA	Tahiti	
Hawaii	Thailand	
Ilse de Pines, New Caledonia	Treasure Island, Fiji	
Jarvis Bay, NSW, Australia	UK	
Juan de Fuca, Vancouver Island	Vanuatu	
Monterey Bay, California, USA	Wattenmeer	
New Caledonia	Wilson's Promontry, Australia	

Researcher's observations

Respondents unsure of an answer for this question displayed a variety of behaviours. For example, some individuals consulted with members of their group (including children), while others found MPA names in a book or map.

On days when the site was highly populated, respondents were observed corroborating with individuals from other nearby groups (seemingly strangers), in order to recall a destination's name. When visitor numbers were high and space constrained, these interactions became very social and often ended in loud laughter or intense discussions.

The researcher was also brought into discussions, particularly if the respondent (or group) was unsure of the response or wanted their answer verified before returning the self-reply questionnaire.

Comments from notebook:

*“Is there one on Waiheke Island? We think we kayaked there,
but none of us can remember the name.”*

On occasion, respondents felt the need to advise the researcher they had ‘cheated’ after conferring with someone else. One respondent admitted:

“Oh, I texted my mum about this one!”

It seemed important that respondents sought clarification to their response to this question.

Note. If respondents' answers were incorrect or incomplete, the questionnaire was in no way altered, thus data is a true reflection of respondents' indecisiveness.

5.4.4 Opportunity to view marinelife

Of 304 respondents, the majority ($n=260$, 86%) stated that it was 'important' or 'extremely important' they had the opportunity to view marinelife during the visit to GIMR, 11% ($n=33$) were 'neutral' to the concept and 2% ($n=7$) felt it was of 'limited importance' or 'not important at all'. A smaller number ($n=4$, 1%) answered 'not sure/don't know' (Figure 27). No significant differences were found when the Chi-square test was conducted between gender, age, ethnicity and place of residence over the opportunity to view marinelife.

Respondents gave a variety of reasons why the opportunity to view marinelife was important (or not) to them. Examples from the questionnaire are noted below.

Not important at all or limited importance because...

"Too hungover to care!"
"We just needed a rest from driving! And a loo!"
"I'm here because the kids wanted to come here"

Neutral because...

"Spending time with friends"
"Came more for the purpose of family / relaxation, not necessarily for marinelife"

Important or extremely important because...

"Encourage a love & respect of the ocean for the 5 children we brought here today"
"The opportunity is disappearing"
"It has allowed me to feel closer to nature"
"It's rare to see fish at normal beaches in NZ, interesting & educational for kids"
"With today's climate problem, it's nice to share a natural place with my kids"
"Education, make next generation value the area, resource"
"Opportunity to see fish in their natural habitat"

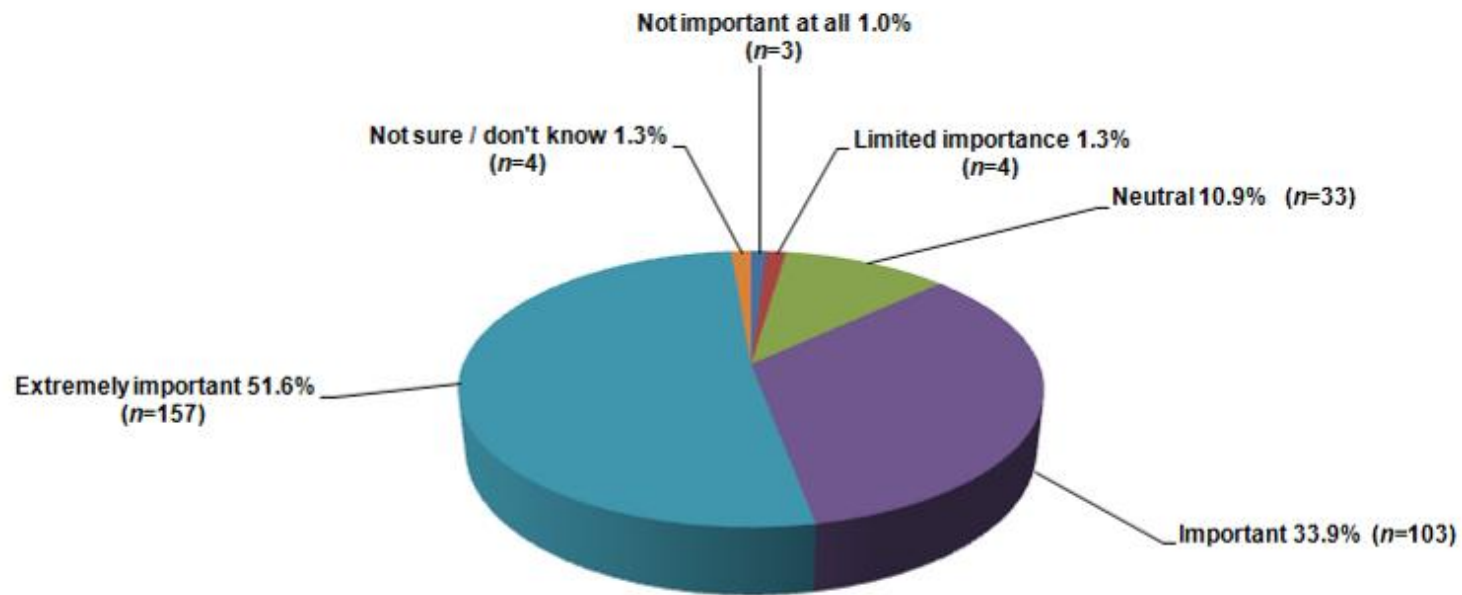


Figure 27: Indication of the importance of viewing marinelife, measured in percentages and frequencies [Graph].

5.4.5 Information sources

Question A10 (Appendix A) allowed respondents the opportunity to indicate more than one source of information about GIMR prior to their visit (Table 21). The majority of visitors reported their main source of information as ‘been here before’ ($n=152$, 50%) and ‘word of mouth’ ($n=152$, 50%).

Visitors found information from a variety of sources: printed media ($n=41$, 13%), such as brochures, magazines, newspapers, pamphlets and books (particularly Lonely Planet, $n=20$ of the 41); the internet ($n=27$, 9%); iSite offices and tourism operators ($n=17$, 6%), such as car and motorhome rental companies, accommodation establishments and the glass bottom boat; and diving / snorkelling centres ($n=16$, 5%).

According to a Pearson’s chi-square test, NZR were significantly more likely to have previously visited the site than IV ($n=303$, $\chi^2 = 56.648$, $df\ 1$, $p=0.000$). IV are also significantly more likely to have used printed media ($n=303$, $\chi^2 = 31.650$, $df\ 1$, $p=0.000$) and iSite / tourism operators ($n=303$, $\chi^2 = 21.799$, $df\ 1$, $p=0.000$) than NZR.

5.4.6 Snorkel / scuba diving equipment – own or hire

Specific equipment is required to engage in the activities of snorkeling and scuba diving. Data showed the majority of respondents ($n=141$, 63%) did not hire equipment but brought their own to GIMR. Of the 37% ($n=83$) that hired equipment, most ($n=71$) hired from diving operators within the Leigh area (Figure 28).

A Pearson’s chi-square test indicated that NZR were significantly less likely to hire snorkelling / scuba diving equipment than IV ($n=223$, $\chi^2 = 19.767$, $df\ 5$, $p=0.001$).

Table 21

Details of where information on GIMR is sourced, prior to visit

Variable	Total sample (n=304)	
	n=	Percent
<i>Source of information</i>		
Been here before	152	50.0%
Word of mouth	152	50.0%
Printed media	41	13.0%
Internet	27	9.0%
iSite / tourism operators	17	6.0%
Diving / snorkelling centre	16	5.0%

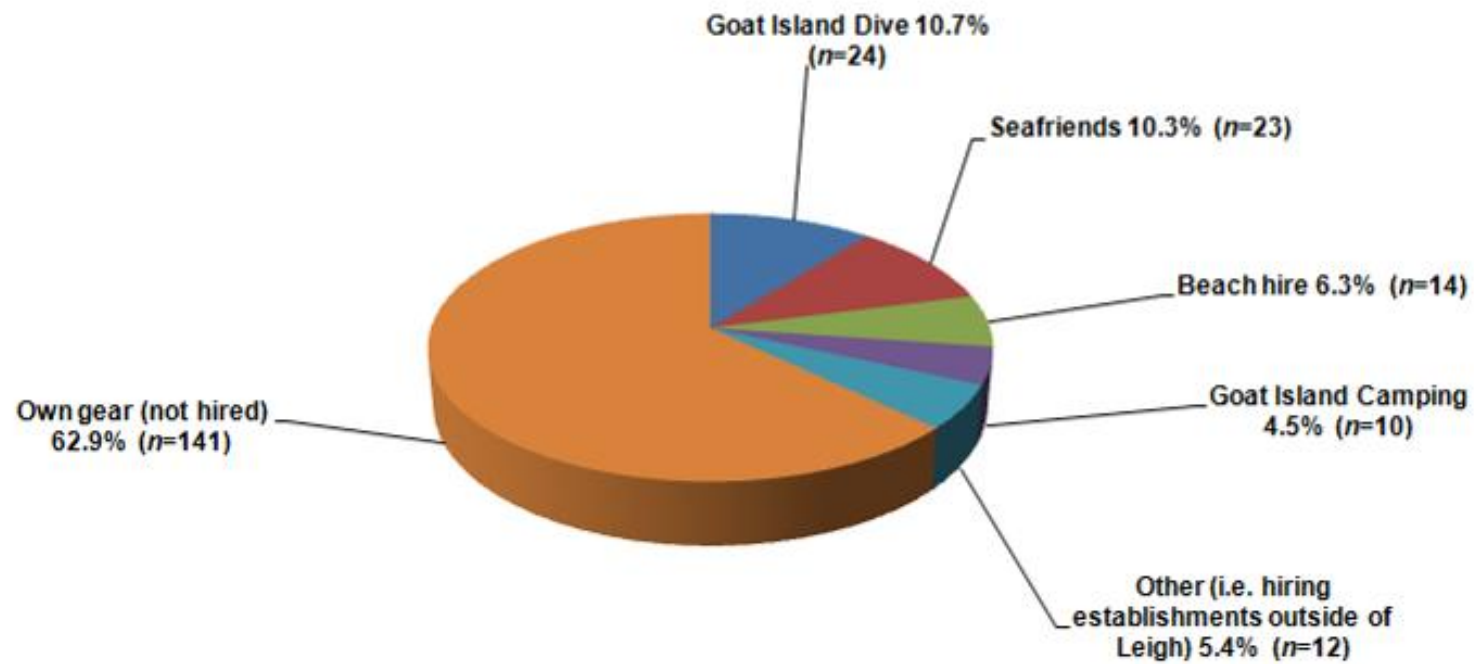


Figure 28: Indication of where snorkelling and scuba diving equipment is hired, measured in percentages and frequencies [Graph].

5.5 Research question 4:

What is the level of satisfaction with the various attributes of GIMR?

5.5.1 Satisfaction levels and influences

Question B5 tested respondents' levels of dissatisfaction / satisfaction with 12 attributes found during a visit to GIMR. These attributes were determined through correspondence with the local DoC office prior to this study, as noted in previous studies undertaken at this site by DLS (1984) and DoC (2003) and from other literature on the facilities and attributes that may alter satisfaction levels in visitors at other marine reserves or MPAs around the world. The 12 attributes are:

1. Numbers of people on the beach
2. Parking
3. Signage information (how well did the signage board, panels & pamphlets explain the marinelife?)
4. Road access to Goat Island Marine Reserve
5. Snorkel / dive experience
6. The marinelife (sea creatures, animals and plants)
7. Clarity of water
8. Walkway from the carpark to the beach
9. Birdlife
10. Visitor facilities (picnic tables, toilet block, etc)
11. Learning about marinelife at Goat Island Marine Reserve
12. Clifftop walking track (from above Leigh Marine Laboratory and to the east)

Response categories ranged from 'very dissatisfied', 'dissatisfied', 'neutral', 'satisfied' and 'very satisfied'. In addition, a 'not applicable / don't know' option was provided for respondents. These respondents were excluded from the analysis. Variables were allocated numerical values as per the following: very dissatisfied = 1; dissatisfied = 2; neutral = 3; satisfied = 4; very satisfied = 5.

Results suggest respondents were reasonably satisfied with the various attributes of the visit. The snorkel / dive experience rated the most satisfying attribute ($\bar{x} = 4.18$) and the number of people on the beach the most unsatisfactory attribute ($\bar{x} = 3.36$) (Table 22).

The signage information ($\bar{x} = 4.17$) received the second highest rating after the snorkel / dive experience. The two interpretative sign boards, located in site 4, are recent additions to GIMR and play a large part in educating the public on the various species and habitats found in the marine environment.

The marinelife ($\bar{x} = 4.11$) was also very satisfying, particularly on favourable days. The clarity of the water and access to view marinelife may determine satisfaction levels with this attribute.

Despite its reasonably satisfactory rating, road access to GIMR ($\bar{x} = 4.07$) may have been a little ambiguous as the name of the road in question was not stated. Satisfaction levels may also have depended on the where visitors parked (which was not known) and should therefore be viewed with caution.

The walkway from the car park to the beach ($\bar{x} = 4.03$) received a satisfactory rating. DoC recently upgraded the footpaths and increased the length of the walkway when the new car parks were built, however during busy days, it was observed that the walkways were not wide enough. The use of this facility may depend on where vehicles were parked and the route taken to walk to the beach (i.e. Goat Island Road has no footpaths and using the loading zone may exclude the need to use the footpaths). These factors may have reduced the satisfaction level of this attribute.

Respondents rated visitor facilities as almost satisfactory ($\bar{x} = 3.86$). This rating may have depended on factors such as whether respondents used the facilities or their visual appearance (i.e. cleanliness). Overcrowding at the facilities may also have reduced satisfaction levels.

Learning about marinelife ($\bar{x} = 3.81$) was almost a satisfactory attribute. The interpretation panels (S4) and information kiosk by the steps to the beach are the only places at the site where learning about marinelife can take place. Personnel are not onsite to answer queries, which reduced visitor satisfaction (see comments section).

The clarity of the water ($\bar{x} = 3.74$) is fundamental to viewing marinelife, whether on-, in- or under the water and is influenced by a number of factors, such as weather conditions, discharge and disturbance of silt on the seabed. Satisfaction levels may have varied according to these factors and based on previous experiences in the marine environment.

Parking was rated as neutral ($\bar{x} = 3.55$) and varied between very satisfactory and very dissatisfactory. This range likely depended on the length of time it took visitors to find a car parking space and the distance from which visitors parked, which was not known. Comments suggest a serious issue with parking still exists despite the two new car parks, built during 2010, which increases vehicle capacity considerably.

A low number of respondents ($n=34$) rated the cliff-top walking track as neutral ($\bar{x} = 3.47$). There was some confusion between the walking track and footpath, possibly as a result of different terms that are used by different cultures. Consequently, the results of this attribute should be treated with some caution.

Birdlife received the second lowest rating ($\bar{x} = 3.45$) of the 12 attributes tested (i.e. neutral). A number of seabird species frequent the marine reserve, however, there are no interpretive signs about birdlife or their importance to the marine environment. As well, visitors were annoyed with the mallard ducks (*Anas aucklandica*) that roam the beach. These factors may cause visitor dissatisfaction with this attribute.

The number of people on the beach received the lowest attribute rating ($\bar{x} = 3.36$). Over-crowding is a significant (and known) issue at GIMR, which increases during the peak time of the day (i.e. between 11am and 4pm) and when at high tide, subsequently decreasing satisfaction. As noted in previous studies, this rating is not surprising.

A Pearson's chi-square test indicates that weather conditions and the clarity of the water had the most significant impacts on satisfaction ($n=274$, $\chi^2 = 9.950$, $df\ 4$, $p=0.041$). Respondents were very dissatisfied / dissatisfied with the marinelife when viewed during less than favourable weather conditions and gave the opposite response when the weather conditions were favourable. In addition, respondents were highly satisfied with both the snorkel / dive experience ($n=235$, $\chi^2 = 126.282$, $df\ 16$, $p=0.000$) and marinelife when the water was clear ($n=268$, $\chi^2 = 150.834$, $df\ 16$, $p=0.000$).

No significant differences were found between the proportions of gender, residence, age, ethnicity, time of high tide, reason for visit or the number of previous visits over the 12 individual variables.

Table 22

Satisfaction level rating of 12 attributes

Variable	Very dis- Satisfied	Dis- satisfied	Neutral	Satisfied	Very satisfied	Total <i>n</i> =	Mean \bar{x}
	Percent	Percent	Percent	Percent	Percent		
<i>Attribute</i>							
Snorkel / dive experience	0.8%	3.8%	15.5%	36.6%	43.3%	238	4.18
Signage information	0.4%	3.2%	15.2%	41.5%	39.7%	277	4.17
The marinelife	0.7%	4.4%	16.1%	40.5%	38.3%	274	4.11
Road access GIMR	1.1%	1.8%	15.2%	52.7%	29.3%	283	4.07
Walkway from carpark to beach	1.4%	2.1%	17.3%	50.2%	29.0%	283	4.03
Visitor facilities	1.1%	7.9%	20.1%	45.7%	25.2%	278	3.86
Learning about marinelife	0.8%	3.6%	30.3%	44.6%	20.7%	251	3.81
Clarity of water	1.8%	11.8%	20.4%	42.3%	23.7%	279	3.74
Parking	4.2%	14.0%	22.8%	40.4%	18.6%	285	3.55
Cliff-top walking track	2.9%	2.9%	47.1%	38.2%	8.8%	34	3.47
Birdlife	2.4%	5.5%	47.6%	33.9%	10.6%	254	3.45
Number of people on the beach	3.2%	14.5%	40.3%	27.2%	14.8%	283	3.36

Question B6 was an open-ended question that queried the most important influence on respondents' dissatisfaction or satisfaction with regard to the overall GIMR experience. Common factors are categorised and explained and two quotes per section are given. See Appendix C for further quotations.

Influences on satisfaction (n = 153)

1. *Quality and abundance of marinelife and the conservation of the marine environment / natural environment (n=81, 52.9%).*

First-time visitors (and children, as observed by the researcher) are highly satisfied with the quality and abundance of the marinelife. Appreciative comments on the state of the ocean.

“The fish are SOOOOO amazing!”

“I love this place because of it beautiful and clean environment”

2. *The site itself - including the high quality of the facilities, overall cleanliness and the non-commercialised feel of the site (n=24, 15.7%) (Figure 29).*

Respondents were satisfied with the quality and cleanliness of the facilities, particularly the toilet block and new picnic tables. Although some respondents were disappointed with the sale of ice-creams in January (by the snorkel hire company at the beach), the majority of visitors were very satisfied with the non-commercialised nature of the marine reserve and would like it kept that way.

“Awesome place! Keep as is!”

“Don't commercialise this place (ice-creams!) – it's lovely as it is”

3. *The experience of being able to snorkel, the ease of access to marinelife and species recognition (n=20, 13.1%).*

Success at snorkelling influenced visitor satisfaction. Beach access and the reasonably shallow depth of the seafloor allowed easy access to marinelife. The recognition of certain marine species, without looking at the signboard also satisfied respondents.

“Awesome to see the fish so close – the water is very clear in the channel”

“Unique opportunity, even for the inexperienced”

4. *Good weather conditions (n=14, 9.2%).*

Favourable weather conditions impacted positively on the experience and clarity of water and the ability to view marinelife. Favourable weather also allowed respondents to relax and play games on the beach.

“The weather is lovely – we wouldn’t come if it was cold or raining”

“Water’s nice and clear and the weather is perfect!”

5. *Social occasion, crowds made experience enjoyable, rules adhered to (e.g. no touching) (n=12, 7.8%).*

People that enjoyed being at the site with their family and friends also seemed to enjoy the camaraderie of strangers, especially when compressed on the beach at high tide. Visitors were encouraged by the adherence of marine reserves rules, such as no touching of marinelife, by others.

“Very packed compared to Tawharanui, but nice crowd on the beach”

“Great to see everyone obeying all the rules”

6. *Other special occurrences (n=12, 7.8%).*

Special moments or occurrences increased satisfaction, such as having Australasian Gannets (*Morus serrator*) diving into the water surrounding the snorkeler, or the taking of underwater photographs.

“The diving gannets were so awesome – right in front of us while we were snorkelling!”
“I felt like a National Geographic photographer!”

Influences on dissatisfaction (n = 121)

1. *Overcrowding on the beach and in the water (n=34, 28.1%).*

Too many people on the beach (S1 & S2) and rocks (S3) negatively affected respondents' personal space, particularly if the reason for the visit was to relax. Too many people in the water negatively affected visitor satisfaction because of the change in water clarity.

“I felt like I was in the middle of a penguin colony by midday!”
“Too many people makes the water murky - what's the point?”

2. *The site itself (lack of facilities), interpretation signs and the intimidating mix of people, kayaks and boats in the same sea area as snorkelers (n=26, 21.5%).*

Respondents suggested the following changes could be made: convert the old DoC building (by the loading zone) into a changing room (it currently stands empty); add more picnic tables; move interpretation signs closer to the beach to allow for easier species identification; change interpretation signs to include a second language. The combination of snorkelers, kayakers and boats in the same zone / area concerned respondents, particularly families with children, inexperienced snorkelers and first-time visitors.

“The old DoC building by the loading zone should be turned into a changing room”
“Was very disappointed to see the glass bottom boat so close to all the snorkelers”

3. *Unfavourable weather conditions (n=22, 18.2%).*

Unfavourable weather changed the clarity of the water and the ability to view marinelife was impaired, negatively impacting on the quality of the snorkel / dive experience.

“Praying for better weather and nicer sea conditions! I’m only here for one day!”

“Sea was rough and water not clear”

4. *Parking (n=17, 14%).*

Car parks full, parking on road a safety concern especially with children and equipment. Lack of signage, disorganised drivers, long time to park, long distance to walk to beach. No designated parking for large vehicles (e.g. car and trailer, campervan), motorbikes or bikes.

“Took us ages to park - needs signs to show which direction to go”

“Could use golf carts to move people up the hill? Really dangerous with the kids.”

5. *Abundance / quality of marinelife and lack of staff to answer queries (n=12, 9.9%).*

Respondents were disappointed they were not able to swim with large schools of fish and that fish were not brightly coloured, as advertised. Respondents suggested rangers should be available to answer questions and check that visitors obey the marine reserve rules.

“Information about this place is deceiving. No large schools of fish - bad advertising”

“You need someone to check the divers, as everyone is touching and disturbing the kina/shells when diving”

6. *Other issues: remove annoying ducks, lifeguards absent (needed for the safety of snorkelers / swimmers), create diver kit-up areas and erect a suggestions box (n=10, 8.3%).*

Scavenging birds annoyed respondents who want mallard ducks removed from GIMR.

Respondents were very concerned about the lack of in-water safety management and want lifeguards (or similar) on duty. Previous suggestions offered to DoC seem ignored.

“Seagulls and ducks scavenging food annoyed us all day”

“Where are the lifeguards? This beach is really busy”



Figure 29: Race (2011). The quality of the facilities (left) is one of the influences of satisfaction and too many people in the water (right) is one of the influences of dissatisfaction [Photograph].

Table 23

Overall influences on satisfaction of visit

<i>Positive influence</i>	<i>N=</i>	<i>Percent</i>
Abundance/quality of marinelife, conservation and state of the marine environment / natural environment	81	52.9%
Site - high quality of facilities, cleanliness and non-commercialised feel of the area	24	15.7%
Experience of being able to snorkel, ease of access to marinelife and species recognition	20	13.1%
Good weather conditions, clarity of water (impacts on ability to view marinelife and enjoy occasion)	14	9.2%
Social occasion - crowds made experience enjoyable, marine reserve rules adhered to (e.g. no touching)	12	7.8%
Other special occurrences e.g. snorkelling with diving gannets, taking underwater photographs	2	1.3%

Table 24

Overall influences on dissatisfaction of visit

Variable	Total sample (n=121)	
<i>Negative influence</i>	<i>n=</i>	<i>Percent</i>
Numbers of people on the beach and / or in the water (impacts on personal space & water clarity)	34	28.1%
Site - lack of facilities, signage, in-water mix of boats/kayaks/snorkelers/swimmers	26	21.5%
Poor weather conditions (impacts negatively on clarity of water and ability to view marinelife)	22	18.2%
Parking - safety of foot passengers, distance/length of time to park and disorganisation of drivers	17	14.0%
Abundance/quality of marinelife, fish not colourful, no ranger/staff to answer queries or help identify species	12	9.9%
Other - ducks annoying, lifeguards absent - required for safety, diver kit-up area, suggestions box for DoC	10	8.3%

Table 25

Suggestions offered by respondents, via self-reply questionnaire

Themes (in order of priority, according to recurrence)	
1	Enlarge size of marine reserve and visitor area - create a 2nd beach-access point within the marine reserve. This site is too popular and too small to cater for the numbers that visit.
2	Parking - need attendants to organise flow / direction of traffic and indicate parking full at the top of Goat Island Bay Road. Require separate parking for large vehicles i.e. campervans, car and trailer, coaches, etc
3	Separate zones / flagged buoy lanes required for boats and swimmers / snorkelers - particularly when the glass bottom boat is operational
4	Full-time, onsite rangers required during summer to provide education, identification and interpretation of the marine environment, particularly at water level or in the water
5	Remove commercialisation at GIMR: particularly refers to increased opportunity to join tours, hire equipment and Purchase food at the beach - suggest move to Leigh or another access point
6	Limit numbers - suggestions include charge admission fees, erect signage advising GIMR full (at the top of the road), reduce advertising
7	Make use of old DoC buildings at loading zone for changing rooms
8	Lifeguards required for safety
9	Ducks - remove or confine to stream (they are a nuisance and not natural). Stop feeding
10	Separate diver entry point
11	Connect walkway between campsite and GIMR
12	Better access to site 3 (rocks) - walkway, handrails, etc
13	Council to pave the road from Pakiri to Goat Island Bay Road
14	Accessibility access for wheelchairs, people on crutches, prams, etc (at beach and rocks area)
15	Hot showers - install solar panels on WC roof
16	Children's snorkel tour and bush walks
17	Increase publicity about other marine reserves in New Zealand

Researcher's observations

The following observations, overheard comments and conversations with the researcher and taken from the field notebook relate to the positive and negative influences on the GIMR experience by visitors throughout the study period. They are categorised according to the previous themes for ease of analysis.

Influences on satisfaction:

Visitors were impressed with the clarity of water and the ability to view marinelife without having to be *in* the water, particularly from rocks (S3).

“WOW, it's so clear...yeah it's amazing what happens when you don't fish”
“I'm amazed how much you can see – it's like what you see on the TV documentaries”

As visitors left the marine reserve, they were overheard reflecting on their experience, the uniqueness of the attraction and the consideration to return.

“WOW that was so awesome! Such a neat place, we'll have to come back!”

Self-actualisation and species recognition were commonly observed as snorkellers emerged from the water. The former was also noted in visitors' body language. For example, people smiled and laughed, hugged each other and gesticulated with their hands to emphasise sightings.

“I saw a fish! I saw a fish! OMG I saw a real live fish! It was so awesome. It swam right pass me – I could almost touch it!”

“Bro, that was cool as eh – did you see that blue maomao?... gees sounds like you know what you're talking about eh bro? ha ha!!”

The beach under the pohutukawa tree (S2) was very crowded on sunny days. Despite the lack of privacy and space, groups seemed to converse pleasantly with each other. Some of the larger sized groups located at S1 & S2 played music (guitar / ukulele / playlists from iPhone), sang and danced, but did not seem to offend other visitors (none observed).

Influences on dissatisfaction:

Statements and facial expressions (e.g. frowns and gasps) indicated some visitors were shocked at the numbers of people on the beach and in the water. Overcrowding occurred particularly between 11am and 4pm and during incoming and high tide periods.

"OMG it's like being in Torremolinos! I thought I'd left that all behind."

"Geez there's nowhere to sit down here! I'm so hot, what a f..... mission to get here!"

Equipment (i.e. towels and other personal belongings) were so close together at times (particularly at S1, S2 & S3) that the researcher had difficulty determining which individuals belonged to which group. Consequently, interruptions upset some visitors.

On busy days, the researcher received verbal requests for a P90 sign to be erected on picnic tables, to ensure visitors had equal access or to provide more tables. On one occasion (3pm, Saturday 1st January 2011) the researcher was asked to vacate a picnic table for a large group! However, due to a lack of shade, on hot sunny days some visitors vacated tables to seek shelter from trees.

Visitors suggested the changing rooms should be closer to the beach because the walk up the hill (to the main toilet block) is difficult. They expressed concern at allowing children to go alone or leaving equipment (and other children) unattended. The current use of the old DoC building (by the loading zone) was queried.

“There’s a perfectly good building over there, the old DoC toilet – why don’t you guys do that one up?”

There were numerous concerns over the safety of snorkelers and swimmers in the same area as motorised boats and kayaks. During the study period, the number of motorised boats anchored in the bay did not exceed eight on any given day. Boats anchored close to Goat Island where other recreationalists frequented. Three motorised boats (excluding the glass bottom boat) launched on the beach (S2) to off-loaded visitors, where shallow-water recreationalists frequented. Swimmers were observed arguing with kayakers after being hit with a paddle.

The glass bottom boat caused visitors the most concern; particularly when using the same area as snorkellers and swimmers (i.e. the shoreline and channel). Children requested the boat to stay away when it intruded on their playing space at the shoreline. Other visitors were disrupted in the shallows or had their view blocked by customers who purchased tickets, waited, boarded and off-loaded the boat in front of those sitting on the beach (S2).

“What’s that boat doing coming in here? They’re scaring the shit outa my kids”

“Stop please, thank you, thank you. Stop! Oh gees, no closer, no, no!”

Visitors were disappointed to find poor weather also negatively affects the quality of the water and consequently the viewing of marinelife.

“I didn’t think about the fact that we wouldn’t be able to see anything in the water!”

Vehicle numbers exceeded car parking spaces on most days, consequently, vehicles were parked illegally (on yellow lines, across driveways and in no parking zones), on the grass and along Goat Island Bay Road (for approximately 500m up the road from the entrance to the main car park). The two new car parks were not always open when required (DoC rangers chain and padlock them when not in use). Drivers spent a long time and drove in many directions looking for parking. There was no specific parking for long vehicles, such as car and trailer or campervan. One frustrated driver suggested:

"This place needs a Director of Parking! - no-one knows where to go, it's so frustrating!"

The researcher did not (and was often unable to) answer questions relating to the marine environment as requested by visitors. Dissatisfaction and annoyance was noted.

“Do you know the name of the seaweed in this area?”

“What are you doing here if you can’t answer questions?”

Visitors were annoyed the by mallard ducks that roam the beach. The ducks were physically abused (kicked and had thrown sand over them) and the researcher was asked to have them removed.

Concern was indicated over emergency safety issues at GIMR, or lack of them, as there are no lifeguards or medical equipment for emergencies. In-water safety was regularly discussed with the researcher, particularly in light of large visitor numbers and previous drownings at GIMR, which were highlighted in the media over the summer season.

“Get the lifeguards here before someone else dies.”

The researcher received 13 requests for medical assistance due to cuts, abrasions, heatstroke or visitors feeling unwell and two requests for the location of the nearest doctor. Visitors seemed to expect medical assistance would be available because of the site’s attractions, popularity and isolation.

“Silly there’s no first aid here with all these rocks and all these people!”

5.5.2 Plans to revisit GIMR

Almost 77% ($n=229$) of respondents suggested they will revisit GIMR again, while 6% ($n=18$) suggested they will not and 17% ($n=51$) were unsure. Respondents who did not intent to return to GIMR were all international visitors.

‘Unsure’ respondents cited reasons such as:

“How do I know when it's not so congested? Perhaps another time of the year?”

Reason for wanting to return:

“It’s a great place to snorkel, but I don’t think I’ll be back;

too many people for me”

5.6 Research question 5:

What is the level of awareness of being in a marine protected area?

5.6.1 Awareness of being in a no-take marine reserve

Question C1 asked if Goat Island Marine Reserve is a “no take” marine reserve. Of 226 respondents, 76% ($n=226$) answered in the affirmative, 1% ($n=4$) in the negative and 23% ($n=68$) were unsure.

A Pearson’s chi-square test showed a highly significant difference between the proportions of NZR and IV over awareness of a no-take marine reserve ($n=297$, $\chi^2 = 33.596$, $df4$, $p=0.000$) indicating that NZR are more likely to answer in the affirmative than IV. An equal number of NZR and IV answered ‘not sure’.

There were also highly significant differences between the proportions of first-time visitors over awareness of a no-take marine reserve ($n=298$, $\chi^2 = 31.873$, $df2$, $p=0.000$) with first-time visitors likely to answer ‘not sure’ more than people who had previously visited; ethnicity over awareness ($n=298$, $\chi^2 = 74.163$, $df18$, $p=0.000$) with Asian and European ethnicities likely to answer ‘not sure’ more than other ethnicities, and language over awareness ($n=297$, $\chi^2 = 52.1066$, $df10$, $p=0.000$), with English and Others more likely to answer ‘not sure’ than Chinese, German, Korean or South African.

5.6.2 Knowledge of the term “no take”

Question C2 (Appendix A) was an open ended question which tested respondents’ knowledge about the meaning of the term “no take”. Of 260 respondents, 68% ($n=177$) offered an explanation which could be considered correct, as the answers included terminology consistent with the definition of a marine reserve. Limited or basic answers concentrated on the terms no fishing, no touching and protected area. Almost 11% ($n=28$) of respondents were unsure or had no idea of the meaning of “no take” (Figure 30).

The answer was not completed by 46 respondents, 15% of the total study group, although several respondents made a start and then crossed out their answers, indicating indecisive behaviour towards this question.

Visitors whose first language was not English, had significantly more difficulty explaining the concept of “no take” than visitors whose first language was English, according to a Pearson’s chi-square test ($n=259$, $\chi^2 = 46.374$, $df\ 20$, $p=0.001$). In addition, female respondents gave significantly more correct answers than males ($n=260$, $\chi^2 = 13.049$, $df\ 4$, $p=0.011$), which correlates with female’s higher education levels. The terms no fishing, no touching and protected area were given by NZR significantly more often than IV ($n=259$, $\chi^2 = 17.689$, $df\ 4$, $p=0.001$).

The disparity of respondents’ answers to this open-ended question ranged from full explanations to a few words. A lack of comprehension of the term was noticeable in several responses. Examples of answers are given below.

Responses from male visitors:

“Self explanatory! Don't take marine organisms”

“No fishing? LOL!”

Responses from female visitors:

“Nothing to be removed or disturbed - no sand/rocks/creatures/fish/shells. Only take what you bring, including your own rubbish”

“Not to take any creatures or sea weeds and not to disturb the natural habitats of the reserve”

Responses from visitors whose first language is not English:

“Taking no grants from government”

“No visit again - just spread the word across to my friends”

Researcher's observations

Several respondents verbally questioned the meaning of “no take” with the researcher.

For some, the question was misunderstood due to a language barrier and the answer on the questionnaire was subsequently left blank. Others were unsure if the term meant no removal of fish or if other marine creatures were also included. Queries also included the permissibility of touching marinelife.

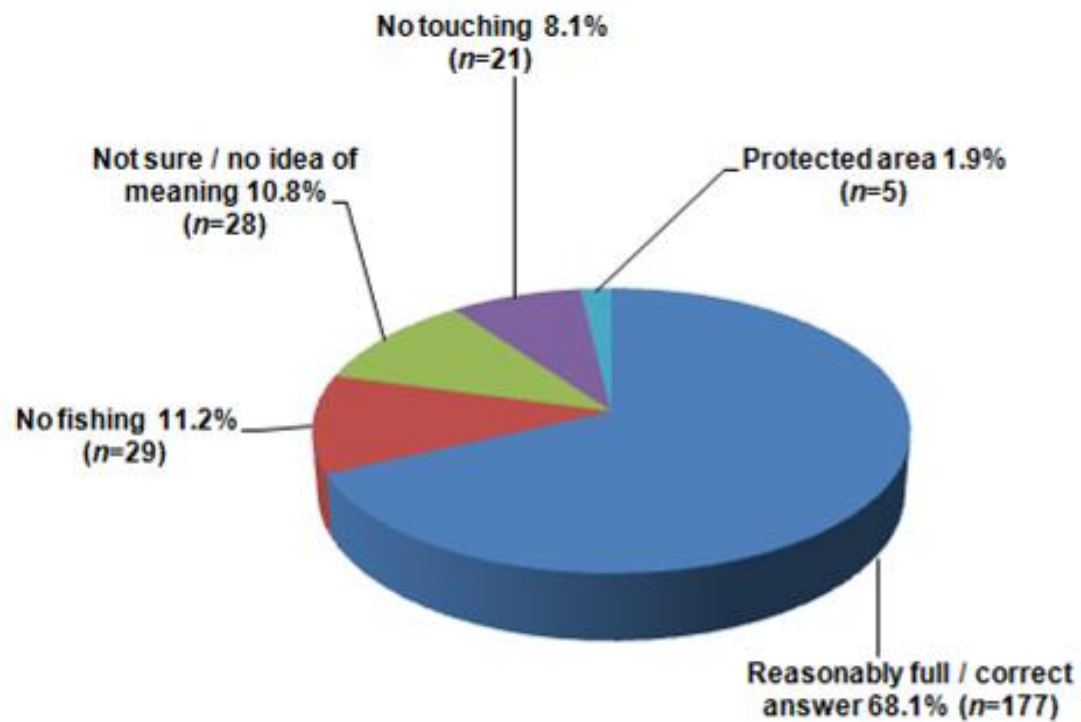


Figure 30: Understanding of the term “no take”, measured in percentages and frequencies [Graph].

5.6.3 Name of the marine reserve

The marine reserve is known by several names. Cape Rodney–Okakari Point Marine Reserve is its formal gazetted name, however of 304 respondents, just 23 (8%) knew it as such. The vast majority knew it as Goat Island Marine Reserve ($n = 292$, 96%). The name Leigh Marine Reserve was known by 44 respondents (14%) and the name Goat Island was known by eight respondents (3%). Two international visitors did not know the name of the site they were visiting.

Of the eight respondents who knew the site as Goat Island, three noted their disappointment of not being able to visit or explore the island without getting wet. One respondent who overnighted at the Goat Island Camping site stated:

*“I'm a little disappointed actually - I thought I was sleeping on the island.
False advertising!”*

No significant differences were found when gender, age, residence or number of visits were tested over the naming of the marine reserve.

Researcher's observations

The reserve name on maps, road signs, conservation literature and tourism material advertising is inconsistent and contradictory. For examples of various road and on-site signage see Figure 31. For various advertising literature see Appendix D.

The original Māori name for the site, Motu Hawere, is also noted in some documentation, although respondents in this survey did not offer any Māori names.



Figure 31: Race (2011). Road signage en-route to the site (L), refer to the names Goat Island and Goat Island Marine Reserve. Signage at the site (R) refer to the formal name of Cape Rodney - Okakari Point Marine Reserve [Photograph].

5.6.4 Managerial responsibility

Results showed respondents identified that the managerial responsibility of the marine reserve falls to the Department of Conservation or New Zealand governmental departments ($n=131$, 49%) or the Auckland Council ($n=56$, 21%) (the former Rodney District Council is also included in this category). Almost 20% ($n=53$) of respondents did not know the answer and 10% ($n=28$) of respondents suggested the responsibility falls to all members of the public utilising the facilities (i.e. visitors, residents, owners of local businesses, etc) (Table 26).

A Pearson's chi-square test showed there was a highly significant difference between the proportions of NZR and IV over the identification of managerial responsibility of GIMR, where NZR suggested the responsibility lies with combinations of DoC, Auckland Council and the general public and IV did not know the answer ($n=267$, $\chi^2 = 24.078$, $df\ 3$, $p=0.000$). In addition, males, more so than females, suggested the responsibility falls to all users ($n=268$, $\chi^2 = 10.201$, $df\ 3$, $p=0.017$).

Examples of comments regarding the public's responsibility for GIMR:

"The people - we all have a responsibility to nature"

"Everyone - we have to teach the children the importance"

"I'm not sure – I think it should be everyone's responsibility"

The following comment contrasts with these thoughts:

"Nobody really, it's just a beach"

Table 26

Suggestions for managerial responsibility of the marine reserve

Variable	Total sample (<i>n</i> =268)	
	<i>n</i> =	Percent
<i>Managerial responsibility</i>		
Department of Conservation / Government departments	131	48.90%
Auckland Council	56	20.90%
Public / visitors / residents / volunteers / businesses	28	10.40%
Not sure	53	19.80%

5.6.5 Fish feeding

Question C5 (Appendix A) tested respondents' knowledge about whether the feeding of the fish at GIMR is permitted. Of 297 respondents, 74% ($n=218$) answered in the negative and 3% ($n=10$) in the affirmative. Despite prevalent signage to the contrary, 23% ($n=69$) of respondents did not know the answer (Figure 32).

A Pearson's chi-square test showed a highly significant difference between the proportions of first language over knowledge about fish feeding ($n=296$, $\chi^2 = 22.947$, df 10, $p=0.011$) with results indicating that English speaking respondents answered 'Yes' (feeding of the fish is allowed) or 'Not sure' more than foreign-language speaking respondents. When tested against previous visits to the site, results indicate that a significant number of first-time visitors were unsure if fish feeding is allowed or not ($n=297$, $\chi^2 = 13.054$, df 2, $p=0.001$).

In addition, results indicate the majority of visitors in the 45+ age groups were aware that fish feeding is not allowed, while the majority of visitors in the 18-44 age groups were not sure ($n=297$, $\chi^2 = 18.508$, df 10, $p=0.047$).

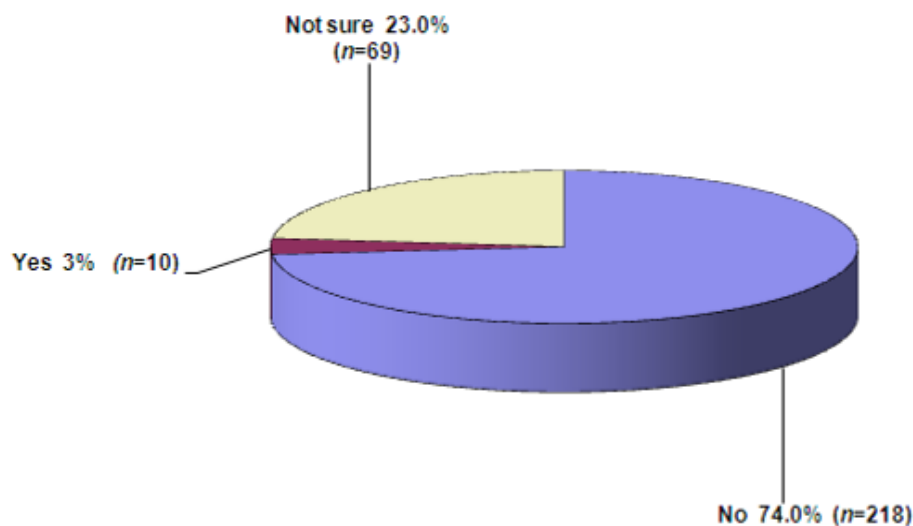


Figure 32: Response to fish feeding regulations, measured in percentages and frequencies [Graph].

Researcher's observation

Despite several signs on-site that made it clear that fish feeding is forbidden, media deliver inconsistent messages, both in imagery and comment (Figure 33).



Figure 33: Race (2011). Confusion surrounds fish feeding regulations: Signage at the site forbids fish feeding (top) but a local tour operator's promotional signboard visually advocates fish feeding (below) [Photograph].

5.7 Respondents' comments, criticisms and suggestions

In addition to open-ended questions throughout the self-reply questionnaire, respondents were also given the opportunity, on the last page, to offer comments and criticisms about their experience and suggestions for further improvements.

Respondents spent time giving a variety of comments, often using more than the three lines at the bottom of the page (which was deemed sufficient according to best practice) by writing over the page. Some visitors were complimentary about the management of the marine reserve, the people visiting and the experience they encountered, while others were critical about certain aspects, such as parking or the use of unused buildings for other purposes. There were also a multitude of suggestions, from having warm showers to banning alcohol consumption (see below and Appendix C).

Complimentary comments included:

“Leave as is!! No more changes, no commercialism – it’s fabulous just like it is!”

“Very impressed with the great work done to improve this place, it’s awesome!”

Critical comments included:

“Really lovely place, but the parking is a nightmare!”

“I’ve had a really neat time here even though it’s been so crowded!”

Suggestions included:

“If the glass bottom boat doesn't operate, someone else must do it. It’s not a good look for tourism in our country.”

“Foot shower at the top of the steps”

However, a large number of respondents found it easier to discuss their concerns directly with the researcher as they returned the clipboard. These concerns engaged the researcher in conversation. Conversations were not taped, however, comments were noted in the field research book as they were mentioned to the researcher.

For example:

I thought this place was a protected nature reserve?... So what's that bloke doing selling ice-creams and making a movie house? I hope you're going to tell him to piss-off – this is not fucking Disneyland!

What's that bloody awful building up there? Are you [AUT] part of that? It's not in keeping with nature is it? Why does it have to be so big?

Someone's gotta tell that [glass bottom] boat they don't own the joint – sooner or later someone's going to get run over in there [water]...

You know, Tawharanui isn't as busy as this place. Perhaps you could suggest that some of them [visitors at GIMR] go there?...

I'm just wondering if there's a ban on drinking alcohol here?... Might be an option, it's not necessary in this kind of environment is it? Well you know, it's a bit special this place isn't it?

How much do you know about these fish?... Well, is there anyone else I can ask?... There should be! Write that down in your book, please!

5.8 Conclusion

The data analyzed in this chapter answered the five research questions posed in Chapter 3. To reiterate, these were:

Question 1: What are the demographics of visitors to GIMR?

Question 2: What are the characteristics of a visit to GIMR?

Question 3: What factors influence a person's decision to visit GIMR?

Question 4: What is the level of satisfaction with the various attributes of GIMR?

Question 5: What is the level of awareness of being in a marine protected area?

The important findings of this study are:

1. *Demographics:* There was a diverse mix of visitors, mostly Auckland residents, who spoke 30 different languages. The female gender dominated, the majority of visitors were in the 35-44 year age range and visitors were highly educated. Membership with environmental organisations was low.
2. *Characteristics:* People visited in large groups, mainly with friends and family including children, and stayed for four hours on average. There were a large number of first-time visitors and word-of-mouth was the most popular form of learning about GIMR prior to a visit. Many visitors were first time or inexperienced snorkellers.
3. *Influences:* The main reasons for visiting were to snorkel and relax, while the main influences were the weather, water clarity and the ease of access to marinelife. The opportunity to view marinelife was considered extremely important. Previous MPA visits did not seem to influence visitation to GIMR.
4. *Satisfaction levels:* The snorkel / dive experience was the most satisfactory attribute and overcrowding on the beach the most unsatisfactory attribute. Good water clarity and favourable weather conditions were important influences on satisfaction. Most local visitors were sufficiently satisfied to envisage a return visit sometime in the future.

5. *MPA knowledge:* Awareness of being in a marine reserve was high, although the term ‘no take’ was not well interpreted and visitors had difficulty naming other MPAs they had visited. Goat Island Marine Reserve is its well known name – its formal name barely known. Managerial responsibilities were given to DoC, however, visitors suggested that anyone who used the facilities should also take responsibility. Conflicting signage and media messages surrounding the rules and regulations of fish feeding confuse visitors.

These findings are discussed in more detail in the next chapter and also refer to the four primary research objectives for this study.

Chapter 6 DISCUSSION

6.0 Introduction

This chapter interprets the key findings of the five research questions and discusses the significance of the main points to emerge from the results. It also provides a comparative analysis between data from the self-reply questionnaire and researcher's notes. References to supplementary literature will, as necessary, allow the thesis to build an extended knowledge base.

It is important to understand basic demographics and characteristics of visitors to GIMR, in order to create a baseline of information. This section also identifies visitor activities, satisfaction levels and MPA knowledge. This information will assist management with the future planning of the social aspects of the marine reserve.

The chapter also addresses GIMR's community value, profiles the GIMR visitor and proposes a Marine Reserve Visitor Experience model, which indicates the influences on visitor experiences. Key findings of the research project conclude the chapter.

6.1 Summary and success of the study

6.1.1 Purpose of the study

The purpose of this study was to determine the characteristics and experiences of summer visitors to Goat Island Marine Reserve. As no published empirical research exists on this subject, these findings are an important contribution to increasing our understanding of visitors to New Zealand's most popular marine reserve.

6.1.2 Data collection

The study achieved a 92% completion rate (305 self-reply questionnaires), with 22 participant declinations due mainly to a language barrier. The completion rate was acceptable when compared with similar studies at popular coastal marine reserves (see Lankford et al, 2008) and can primarily be attributed to the use of the real-time satisfaction (RTS) measurement (Mannell & Iso-Ahola, 1987). Respondents were onsite (with a minimum stay of one hour before participation in the study) and completed the instrument during the visit, rather than pre- or post-visit. Consequently, they were unrushed and able to provide more valid answers relevant to the actual experience.

6.1.3 Nature of data collection

Quantitative data, assisted by the qualitative data from open-ended questions, collected from the self-reply questionnaire gave a clear description of the characteristics and experiences of visitors to this marine reserve. The researcher's field notes, which included accounts of actual incidents, ideas and queries, have added a different perspective to the results, as indicated by Eisenhardt (1989). The generic photographic images support observations and have enhanced the researcher's knowledge and memory recall of the study period, as noted by Gray (2004). Additional information, gained from impromptu conversations between visitors and the researcher, add depth and value to the research findings.

6.2 Analysis of findings

6.2.1 Visitor demographics

The marine reserve's multi-cultural visitor mix was highlighted with a diversity of nationalities and languages. More than three quarters of the visitors (76%) were New Zealand residents and, as GIMR is located within the boundary of Auckland City, it is not surprising that the large majority (86%) resided in Auckland. In total, 65% of the study group resided in Auckland suburbs.

A large number of languages were spoken at this reserve: 30 including English. Europeans (New Zealand European and Other European) made up the bulk of all visitors (almost 70%) and Asian / South East Asians comprised the next largest group (13%). This latter phenomenon was observed when potential respondents declined to participate in the study and is a result of New Zealand's changed immigration policy. Since 1987, the country's population has swiftly diversified with many immigrants residing in suburbs within the greater Auckland region (Auckland Regional Council, 2007; Collins & Friesen, 2011; Johnston, Poulsen & Forrest, 2008). The diversity of languages may need to be considered for future research at this site.

The demographic composition of visitors to GIMR was consistent with visitor surveys at other international MPAs. Females dominated on a gender basis (62%) and more than half (54%) of all respondents were between 25-44 years old, which is similar to Coghlan et al's (2009) study of visitors to the GBRMPA, Australia and Davis, Banks, Birtles, Valentine and Cuthill's (1997) study of visitors to the Ningaloo Marine Park, Australia, particularly when in- and on-water activities are compared.

The lower numbers of visitors in the 55+ year age group (10%) suggest that GIMR is more popular with younger people during the summer months. This may be due to the types of activities offered (i.e. in-water activities such as snorkelling and swimming to look at the fish) and that elderly people visit at other times of the year, as suggested by Taylor and Buckenham (2003). Additional studies during alternate seasons are necessary to confirm this.

The significant number of visitors in professional employment (49%) and the high levels of education (54% had a university degree) are not uncommon in nature-based tourists (Fennell, 1999; Shackley, 1996). Wildlife viewing experiences can be

expensive and wildlife tourists often seek specialised holidays, such as overland safaris, bird-watching tours and whale-watching trips and are motivated to be further informed and educated (Curtin & Wilkes, 2005; Fennell, 1999; Newsome et al, 2005; Shackley, 1996). The results of this study also concur with a recent report on international education levels and employment, released by the Organisation for Economic Co-operation and Development (OECD, 2011).

6.2.2 Characteristics of a visit

GIMR is a destination that predominately attracts day-trippers in private vehicles, primarily because of marine reserve is located within a rural region and there is a dearth of public transport available from Auckland suburbs and local towns. This result is comparable to a NZTRI (2011) study which indicates a large number of day-trippers to the Matakana region also visit GIMR, the vast majority travelling by private vehicle.

The majority of visitors stayed slightly longer than four hours, however a reasonably high number (20%) stayed longer than six hours. The site attracts large groups of people. More than half of the respondents visited in a party of five or more (the median number was four), whose travelling companions were mainly friends and family, including children. These data generally match Auckland's summer leisure patterns of behaviour (DLS, 1984; Hunt, 2008; Taylor & Buckenham, 2003). December to February is New Zealand's family summer holiday period and beaches are popular destinations for day-trips and overnight stays, for locals and international visitors alike (Tourism New Zealand, 2011a).

More than a quarter of the sample suggested they were likely to stay overnight, however the term 'local', which was used to describe the potential overnight location, did not necessarily relate to the towns surrounding GIMR but rather to the greater Auckland region. The suggestion that GIMR is 'close enough' for short or half-day trips may be of concern to the local economy, considering the marine reserve's economic value (Hunt, 2008) and is most likely due to the increased road infrastructure north of Auckland City. The new SH1 Northern Gateway Toll Road, which opened during 2008, has reduced the travelling time between Auckland and GIMR by up to 25 minutes making GIMR more accessible to Auckland residents (Northern Gateway Toll Road, 2011). This increased accessibility may encourage further visitation to GIMR, a phenomenon which was recorded at Hanauma Bay Nature Preserve, Hawai'i. Visitor

numbers to this popular snorkelling attraction are now almost uncontrollable as a result of expanded road systems to the attraction (Gardner, 1999; Lankford et al, 2008).

6.2.2.1 Destination loyalty – novelty seeking

GIMR attracts a reasonably high number of repeat visitors (61%), indicating that a level of loyalty to the destination has developed and that visitor expectations are being fulfilled (Alegre & Cladera, 2006; Opperman, 2000), although this number has dropped slightly since a 1983/1984 survey (down from 67%) (DLS, 1984). The reduction in repeat visitation may be correlated with increasing migration into Auckland since 1987, or it may suggest that some visitors were dissatisfied with an aspect of a previous visit and are ‘voting with their feet’ by staying away from the reserve. The latter is not an uncommon phenomenon. As noted by Eagles, McCool and Haynes (2002), globally visitors are “attracted to destinations that have a positive reputation, and are actively avoiding destinations that have social or environmental problems” (p. 20). When particular markets are displaced, the social dynamics of the destination often changes too (Miller & McCool, 2003).

Repeat visitation, usually a sign of a positive attitude and high satisfaction levels, is directly linked to positive word-of-mouth effects (Opperman, 2000). The latter is displayed significantly in the results with more than 70% of first-time visitors stating that word-of-mouth was one of their main sources of information prior to a visit.

The data indicate most respondents were not regular visitors. Aside from the 39% which were first-time visitors, 38% of the study group visited only once or twice every 5-10 years, mainly over the summer holiday period. Destination loyalty and repeat visitation is influenced by a number of variables including existing alternatives (or lack there-of), satisfaction with previous visits and novelty (Niininen et al, 2004).

Novelty is an experiential need that can be met in a number of ways. It implies newness or uniqueness and comprises the dimensions of “change from routine, escape, thrill, adventure, surprise and boredom alleviation” (Lee & Crompton, 1992, p. 738). Data suggest first-time and inexperienced snorkelers to GIMR engaged in novel activities which were consistent with thrill and adventure, as noted in visitors’ comments: *“Oh my god, it’s absolutely brilliant. I’ve never seen anything like it in my life!”* and *“It’s a unique opportunity, even for the inexperienced”*.

Novelty is identified as one of the pull factors for this destination; it plays an important role in visitor's decision-making, repeat visitation and, ultimately, loyalty to the destination (Crompton, 1979).

6.2.3 Visitor activities

Peak summer visitors identified GIMR as a place to snorkel and view marinelife, as indicated by the high level of importance placed on marinelife viewing opportunities by 86% of visitors. Snorkelling was the main reason for visiting for half of all visitors (47%), while scuba diving (4%) and glass bottom boat tours (3%) were the least mentioned reasons for visiting. These are surprising results considering the marine reserve is promoted as a snorkelling and scuba diving destination by many agencies and businesses (see Appendix D). Relaxation was the second most popular reason for visiting. It was also the most popular activity undertaken by visitors, regardless of their demographic status. Interestingly, reasons for visiting GIMR did not include the fact that it is a protected reserve, which was the second most popular reason for visiting during a 1983/1984 visitor survey (DLS, 1984).

Popular in-water activities such as snorkelling and swimming to look at the fish were dominated by younger visitors, while the passive on-shore activities of sunbathing, playing on the beach, exploring rock pools and taking beach walks were undertaken mostly by females, confirming that in-water activities were not the only attraction. Scuba diving and glass bottom boat tours attracted small numbers of predominately international visitors, while reading the information panels and bird watching had limited popularity. Visitor activities at GIMR are consistent with studies of the behaviour and characteristics of visitors to other MPAs (Inglis et al, 1999; Moscardo, 2008). The variety of recreational activities and easy access to marinelife viewing opportunities also reflect the popularity of coastal marine areas worldwide (Inglis et al, 1999; Moscardo, 2008; Needham & Szuster, 2011).

Over the past three decades, there has been a distinct change to the type of activity pursued at GIMR. During the 1980s, the most popular activity was scuba diving (65%) (DLS, 1984). Once the dive was completed, 75% of scuba divers left the site and did not engage in other recreational activities. Repeat visitation was high because scuba divers returned 1-2 times per year. Non-divers stated that swimming and land-based activities, such as walking on the beach, sunbathing and picnicking were the most

favoured activities. Snorkelling was not popular and a glass bottom boat was not yet in operation (DLS, 1984).

The change in recreational activity from scuba diving to predominately snorkelling suggest that some summer visitors, particularly scuba divers, may have been displaced.

6.2.3.1 Snorkelling skill and equipment

Males self-rated their snorkelling ability higher than females, who implied they were less experienced or novice snorkellers. This phenomenon may be an indication that males have prior experience with other marine recreational activities (Inglis et al, 1999), that females are underestimating their abilities (Miller, Ogilvie & Branch, 2008) or that males have higher expectation and acceptance of task completion levels than women (Stake, 1990). To undertake this activity safely, snorkelers must know how to swim, particularly in the ocean (Harada et al, 2011), however, as respondents' swimming ability was not tested in this study, further studies into snorkelers' abilities may be required to determine the skill level of GIMR's snorkelling visitors.

The majority of snorkelers took their own equipment to GIMR – primarily, a mask, snorkel and a pair of fins. The indecisive behaviour among many visitors regarding how and why to wear such equipment suggests a lack of basic snorkelling and water safety knowledge, as was noted in a number of incidents. For example, the researcher received queries on mask tightening and the viability of wearing fins and observed snorkelers without a wetsuit, using floatation devices meant for swimming pools, and engaging in behaviour that could be deemed to be irresponsible in this setting i.e. consuming alcohol, entering the water alone and using asthma-type pumps before entering the water (the latter may suggest a pre-existing medical condition exists).

The warm, sunny weather conditions gave the impression that wetsuits were not a necessary item for snorkelling, however, GIMR's water temperature is only between 15 and 22 degrees centigrade throughout the summer season (J. Atkins, personal communication, June 23, 2011). These are not tropical temperatures and can cause hypothermia when the swimmer is exposed "to water temperatures less than thermo-neutral (35 deg C)" (Edmonds, 1999, p. 198) for long periods of time. The lack of wetsuits was especially noted with males, many of whom snorkelled in outdoor clothing

and without a life-jacket or other approved PFD. Note: No adults were observed wearing an approved PFD.

An array of floatation devices, including children's pool toys and arm bands, were used to keep swimmers and snorkelers afloat, although most items were not life-saving devices, especially when used by adults and in the open sea (as noted on their manufacturing labels). This perceived concept, of in-water safety while using floatation devices, may be the result of a number of issues, such as a lack of swimming ability or inexperience with swimming in the ocean or a lack of equipment to perform the activity safely (e.g. no wetsuit or no fins). Alternatively, snorkelers may be trying to heed warnings to be 'water safe' (Davis et al, 2002; Edmonds, 1999; WSNZ, 2008, 2010). Also see section 6.3.1 which covers water safety issues in more depth.

Considering the lack of opportunities in Auckland to snorkel to view marine life, it is likely that, for most respondents, their only encounter with this recreational activity is during a visit to GIMR. For many, however, visits are extremely infrequent. Participants' lack of snorkelling technique and water safety knowledge confirm the importance of providing specific onsite instruction and information, while current water-safety campaigns in New Zealand may need to be revised to account for this new, yet inexperienced, marine recreation market (see section 6.3.1 for suggestions).

6.2.3.2 Scuba diving and glass bottom boat trips

Scuba diving and glass bottom boat trips were not popular activities during the peak summer season as indicated with low participation figures, 4% and 3% of visitor activity respectively. According to previous visitor surveys, numbers have declined considerably over the past three decades (DLS, 1984; DoC, 2003), this is despite intensive marketing of both activities (see Appendix D). The numbers also seem to contradict data that suggest they economically benefit the local community (Hunt, 2008). Previous studies and researcher observations acknowledge these results:

Scuba diving – Inglis et al (1999) found that scuba divers preferred “no, or very few, other people” (p. 377) in the water when they dived and Moscardo (2008) concurred, noting that scuba diving is a specialised adventure activity that is conducted in small groups. Fitzsimmons (2009) also found that the quality of the dive site plays an important role in the decision to scuba dive at a particular location. Thus, GIMR's

summer scuba divers may have been temporarily displaced because of the popularity of the site – increased numbers of people in the water and the diminishing quality of the experience, due to the inexperience of other groups – and the desire to scuba dive in more pristine locations. Further studies are required to determine the extent of this recreational activity's market.

Glass bottom boat – Glass bottom boat customers did not seem to spend long periods at the reserve. Many were observed arriving, purchasing tickets at the beach, taking a boat trip and leaving GIMR within a relatively short period of time. As a result, the researcher was unable to invite these visitors to partake in this study, either because they did not meet the 1 hour minimum stay requirement or they were not stationed at one of the four research sites long enough to be randomly selected (consequently data may not be valid with regard to this cohort). However, as these visitors make use of the destination's facilities (i.e. car parking, toilet block, footpaths, beach, etc), they may be adding to the problem of overcrowding. Further studies are required to determine the viability of this tourism operation from this site during the peak summer period.

6.2.4 Visitor satisfaction

Evaluating visitor satisfaction levels identifies the strong and weak attributes of a destination and the destination's ability to meet visitor expectations (Um & Crompton, 1990; Yoon & Uysal, 2005). GIMR's visitors accord the most satisfying attribute to the snorkel / dive experience ($\bar{x}=4.18$), and the least satisfying attribute to the number of people on the beach ($\bar{x}=3.36$). The mean of the 12 attributes suggests visitor satisfaction overall is 'almost satisfied' ($\bar{x}=3.82$).

Satisfaction is linked to a variety of experience dimensions, however, too often the idyllic image of a destination collides with disappointments, frustrations and even dangerous situations (Miller & McCool, 2003). These elements of negativity are detractors, in as much as they "diminish the quality of the experience" (Miller & McCool, 2003, p. 257), ultimately reducing the levels of satisfaction. A variety of elements from this study indicate why satisfaction levels were not as high as they could be. Attributes are discussed below in more detail:

6.2.4.1 Snorkel / dive experience (\bar{x} =4.18), The marinelife (\bar{x} =4.11) and
Clarity of water (\bar{x} =3.74)

Visitor's comments, such as "*I did it!*" and "*Bro, that was cool as eh?*" refer to the successful completion of a difficult task which required risk-taking and skill. The snorkel /dive experience, rated as the most satisfactory attribute at GIMR, may be considered as reaching the highest level of needs – self-actualisation – which is "reacted to with awe, wonder, amazement, humility and even reverence" (Maslow, 1968, p. 81). As a result of this achievement, first-time and inexperienced snorkelers have increased levels of satisfaction with the activity and an elevated appreciation of the marine environment (Cater & Cater, 2007; Coghlan et al, 2009; Orams, 1999). Benefits, derived from such successful activities, are considered personal, self-fulfilling and intrinsic and are related to egocentric behaviour (Kellert & Wilson, 1993).

GIMR's underwater topography permits easy access from the beach to a variety of underwater habitats. Visitors connect with nature when the water is clear and a variety of marine creatures are able to be identified. Satisfied visitors demonstrated several of Kellert's (1993) biophilia values. Many in-water visitors demonstrated naturalistic, humanistic and aesthetic values, while first-time visitors in particular demonstrated symbolic values with their intense verbal and physical expressions. However, interactions with one particular marine creature – the stingray – had almost the opposite effect. The fear of stingrays has increased since the passing in 2006 of popular wildlife expert Steve Irwin, who was killed when a stingray barb pierced his heart (Brown, 2010; Rodríguez, Sánchez & Méndez, 2008). Reactions to this animal were noticeably biophobic (Kellert, 1993).

Visitor dissatisfaction for these attributes relates primarily to a lack of trained, on-site personnel to answer marine-related questions, as well as a variety of misleading imagery in tourism advertising. Unfavorable weather conditions changed the clarity of the water and negatively impacted on the quality the snorkel / dive experience, although this connection was often not made until the visitors were at the water's edge (personal observation). Two concerns were raised by respondents, who also suggested how these attributes may be improved:

On-site personnel – Management should consider full-time, onsite rangers or others (such as volunteer groups or marine scientists) to provide an interpretation of the marine

environment. This request is not new, as noted by DoC (2003): “visitors seem to want the information presented differently” (p. 12). Visitors have varying levels of prior knowledge and understanding of the marine environment, but for many, the underwater environment is a novel, exciting and sometimes dangerous experience. Specialized and personalized free-choice (i.e. voluntary) interpretation programmes can prove beneficial to the overall experience and ultimately increase visitor satisfaction (Coughlan et al, 2009; Madin & Fenton, 2004; Zeppel, 2008).

Regulate tourism media – Several media messages suggest that visitors can swim with schools of fish and see an abundance of colourful marinelife (see Appendix D). This is both confusing and misleading; fish are constantly on the move so sightings are not guaranteed and many colourful marine creatures are generally found on the deep reefs which are not readily accessible to snorkellers, particularly inexperienced snorkellers (Enderby & Enderby, 2008). The natural colours of marinelife are dimmed by water and, at lower depths by the lack of sunlight, thus the photographs used in tourism media are likely to have been taken under artificial light, for example, using a dive torch or flash photography. Visitor expectations were not always met, which led to a diminished experience and reduced satisfaction levels.

6.2.4.2 Signage information ($\bar{x}=4.17$) and Learning about marinelife ($\bar{x}=3.81$)

Despite a high satisfaction rating for signage information, visitors made few positive comments about them. Signs are a regulatory management strategy at GIMR, imposing conditions of use and stating marine reserve regulations. The language of discourse is English, which concerned a number of non-English speaking visitors and, as a result, regulations may not have been clearly understood. Multi-lingual signs were considered a high priority almost a decade ago (DoC, 2003), however this recommendation has still not been implemented.

Posted signs are commonly used to manage wildlife tourism interactions, however, studies show that used alone, they are an ineffective means to increased compliance and should be used in conjunction with educational management strategies (Acevedo-Gutierrez, Acevedo, Belonovich & Boren, 2010; Boren et al, 2008; Lück, 2003; Madin & Fenton, 2004; Orams, 1999). Violations of regulations have led to environmental degradation, as a result of people feeding the fish, disturbing the marine wildlife, parking in non-designated areas and littering (witnessed at all four research sites).

Important medical and rescue signs are absent at GIMR. These include emergency rescue phone numbers, the location of the closest medical centre or hospital, the location of the closest decompression chamber for scuba divers, as well as information boards on how to perform an emergency rescue.

The satisfaction rating for learning about marinelife is below the mean of the 12 attributes. Learning opportunities at the reserve are provided by two large information display panels and an unmanned information kiosk, which proved popular on quiet days but were ignored on busy days. All displays are located in high density areas, next to the main pathway leading to the beach, not at the beach. Literature suggests that poor placement of signboards can contribute to overcrowding and an inadequate distribution of information and both may aid in diminishing the visitor experience (Baily, Blanschke, Gough, Pihema, Taylor & Warren, 2003).

6.2.4.3 Walkway from carpark to beach (\bar{x} =4.03), Road access (\bar{x} =4.07), Visitor facilities (\bar{x} =3.86) and Cliff-top walking track (\bar{x} =3.47)

GIMR's increased popularity has necessitated improvements to public facilities and road access, including the widening and tarring of Goat Island Bay Road, a new toilet block away from the beach, upgraded footpaths and picnic tables, new information panels and two new car parks. Most of these attributes rated reasonably highly and visitors commended DoC on their efforts and the modern look of the reserve.

The distance between the toilet block and the beach was the main reason for dissatisfaction with this attribute. Visitors requested the old unused DoC building, next to the loading zone area, be upgraded into a changing room (not a toilet) with an outdoor shower, or the same area upgraded and used for such purposes. Access to the main toilet block is a 100m walk up a steep hill from the beach level. Parents raised concerns about the safety of their children going to the toilet block alone or parents leaving other children and equipment alone on the beach. The elderly, infirm, scuba divers and those at the beach primarily to relax, also noted the distance and incline.

Satisfaction ratings for the cliff-top walking track, from the Leigh Marine Laboratory eastwards to Leigh, should be noted with caution due the mix up with 'tracks' and 'walkways' and the subsequent small numbers of alleged walkers. Few visitors were observed walking towards, or returning from, the cliff-top track. Data from a new

visitor counter, installed on the track prior to this study, were not made available to the researcher, despite requests, thus comparisons cannot be made.

6.2.4.4 Birdlife ($\bar{x}=3.45$)

Birdlife received the second lowest rating for satisfaction. A colony of pied shags (*Phalacrocorax varius*) nest in the pohutukawa trees above GIMR's main beaches and several mallard ducks (*Anas aucklandica*) reside in the Whakatuwhenua Stream and wander along the beach. Both species were visible and very approachable (Figure 34). Several other species of sea and garden birds also frequent the site (Table 27).

Visitors' interaction with the birds varied from photography and feeding to physical abuse. Visitors were particularly interested in the characteristics and behaviour of the pied shags, seagulls were regularly fed, particularly at the picnic tables and the mallard ducks were an annoyance and physically abused (i.e. kicked out of the way).

The birds were also messy; smelly guano from the pied shags covered the beach and cliffs under the pohutukawa trees, the picnic tables were splattered by seagulls and the ducks left their droppings on visitors' towels as they wandered along the beach.

Birds play an important role in the marine ecosystem. A third of the world's 344 seabird species breed in New Zealand's EEZ and many are threatened with extinction (Brooks, 2011; Waugh, 2009). The Northland-Hauraki region was recently identified as a potential marine Important Bird Area (IBA), which is significant considering the proposal to extend marine reserves to the edge of the EEZ zone (Marine Reserves Bill, 2002). The protection of native birds and their habitats is an important conservation activity in New Zealand (Arnold, 2004). Despite their importance, there is no interpretive signage or literature on birdlife at GIMR. Feeding and physically abusing wildlife are in opposition to the philosophy of the marine reserve. Data indicated visitor satisfaction would increase if the following suggestions were implemented:

1. Erect educational panels / signboards which discuss the importance of seabirds to the marine environment and give information about the resident pied shags.
2. Prohibit the feeding of all birdlife.
3. Remove all mallard ducks from GIMR.



Figure 34: Race. (2011). *Pied shag (Phalacrocorax varius) in a pohutukawa tree nest and on Goat Island beach* [Photograph].

Table 27

The 22 species of birdlife recorded at GIMR (by the researcher) during the study period

Name of bird	Scientific name
Pied Shag	<i>Phalacrocorax varius</i>
Black-backed Gull	<i>Larus dominicanus</i>
Red-billed Gull	<i>Larus novaehollandiae</i>
Variable Oystercatcher	<i>Haematopus unicolor</i>
Blue Penguin (deceased)	<i>Eudyptula minor</i>
Tern (species not known)	
Australasian Gannett	<i>Morus serrator</i>
Mallard Duck	<i>Anas aucklandica</i>
White-faced Heron	<i>Ardea novaehollandiae</i>
Rock Pigeon	<i>Columba livia</i>
Blackbird	<i>Turdus merula</i>
Tui	<i>Prothemadera novaseelandiae</i>
Welcome Swallow	<i>Hirundo tahitica</i>
Australasian Harrier	<i>Circus approximans</i>
Kereru	<i>Hemiphaga novaseelandiae</i>
Pukeko	<i>Porphyrio porphyrio</i>
Kingfisher	<i>Halcyon sancta</i>
House Sparrow	<i>Passer domesticus</i>
Song Thrush	<i>Turdus philomelos</i>
Fantail	<i>Rhipidura fuliginosa</i>
Silvereye	<i>Zosterops lateralis</i>
Myna	<i>Acridotheres tristis</i>

6.2.4.5 Parking ($\bar{x}=3.55$)

Parking continued to be an issue during the peak season, as was identified in previous studies (DLS, 1984; DoC, 2003), although a small number of visitors were satisfied. Parking was increased in 2010 by approximately 65 car park spaces in two parking lots, primarily to cater for excessive visitor numbers in the summer months. According to satisfaction ratings, visitor comments and the researcher's observations, they do little to relieve congestion or increase visitor satisfaction.

On most days, there were more vehicles than car park spaces, which suggests the site's carrying capacity was exceeded (DoC, 2002). Once car parks were full, drivers found parking along Goat Island Bay Road, often on both sides and for approximately 500m up the road, well beyond the entrance to the private campsite. At 2pm, Sunday 2nd January 2011, the researcher counted 63 vehicles parked past the bridge where the vehicle counter was laid, approximately 100m from the entrance to the main car park, and along Goat Island Bay Road.

These vehicles were likely to have crossed the vehicle counter more than once, perhaps two or three times, if the 5-minute loading zone at the beach was also utilized. GIMR management estimates visitor numbers using this vehicle counter, which is one of the reasons why the researcher considers the annual visitation figure of 375,000 to be inaccurate (see 4.6.1). The vehicle count data for the research period were not made available to the researcher, despite requests.

Drivers were observed parking illegally on red or yellow lines, over resident's driveways, on corners and in specially marked no-parking zones. Parking often obstructed posted traffic signs. Drivers also entered car parks from the wrong direction according to traffic flow signals painted on the road and caused blockages and traffic jams.

The main 'welcome' sign at the entrance to the reserve forbids parking of long-wheel based vehicles, such as busses, campervans and vehicles with trailers, in the main car park, however, signs to the separate parking area for such vehicles (i.e. the lower car park) are not clearly marked. As a result, the lower car park was used by all sizes and styles of vehicles. Long-wheel based vehicles parked where they could, sometimes illegally, often blocking other traffic. Requests for a separate or distinct parking area

for long-wheel based vehicles are not new (DoC, 2003). Respondents in this study also requested an area to park motorbikes and bicycles.

Visitors' negative and often illegal behaviour is displayed in other settings where the carrying capacity of the site has been exceeded. Miller and McCool (2003) suggest such irresponsible behaviour is a way of coping with the stress of too many people in a small area, but also that visitors perceive the risk of getting caught or punished is sufficiently minimal.

The safety of pedestrians may be a future concern. Visitors were observed walking in the road while carrying large amounts of equipment (e.g. picnic baskets, cooler boxes and snorkelling gear) and looking out for family members. There are no pedestrian footpaths along Goat Island Bay Road.

There is only one access road to GIMR, leading to a cul-de-sac at the main car park, which results in congestion during peak times. This "could potentially be a serious problem in the event of an emergency in the reserve complex or at the marine laboratory" (DoC, 2002, p. 6), as was observed on two occasions during the research period when emergency services were called to assist visitors who had been rescued from the water on days when visitation was very high.

The new car parks have not achieved the desired objectives of the LRCCMP plan, which was to "to avoid congestion and safety problems" (DoC, 2002, p. 25). This phenomenon was recorded at the popular Hanauma Bay Marine Park, Hawai'i, when parking lots were enlarged to cater for increased visitor numbers (Orams, 2003).

GIMR's parking issue has been extensively recorded, including suggestions on how to regulate visitor flow and concerns over the provision of more car park facilities (e.g. Cocklin et al, 1998; DoC, 2003; Taylor & Buckenham, 2003). Data from DoC's vehicle counter was not made available to the researcher, despite requests, thus data cannot be compared to previous studies.

6.2.4.6 Number of people on the beach ($\bar{x}=3.36$)

Respondents listed the number of the people on the beach as the least satisfying attribute at GIMR. The LRCCMP plan (DoC, 2002) states the site is currently designed "to provide basic recreational facilities (toilets and car parking) up to a design maximum of 620 people at a time, consistent with the carrying capacity of the area" (p.

ii) and that future considerations will be to “provide facilities to cater for a maximum daily capacity of 1500 people” (p. 9). However, since the first study of visitors to GIMR, overcrowding has been a major issue (DLS, 1984) and the site’s carrying capacity has been constantly exceeded during the summer months.

When large visitor numbers occurred, visitors related the experience to preconceived ideas of overcrowding (e.g. “*I felt like I was in the middle of a penguin colony by midday*”) or to previous experiences of overcrowding (e.g. “*OMG it’s like being in Torremolinos!*”). Large visitor numbers occurred at both beaches and the rocks areas (i.e. S1, S2 & S3) and overcrowding was noticeable, particularly when the high tide coincided with the most popular visiting hours (i.e. between 11am and 4pm). The ability to relax was rated as particularly important considering it was the second most popular reason for visiting GIMR, therefore crowding likely limits or compromises the ability to enjoy this activity.

Annual visitor numbers have nearly doubled over the past two decades (Hunt, 2008). Almost 10 years ago, more than 5,800 visitors were recorded on one summer day (DoC, 2003). Visitor numbers may now be much greater, however, comparative data are not available to confirm this.

Overcrowding is a perceived and subjective psychological and social construct (Shelby, Vaske & Heberlein, 1989) which, as noted by Butler (1980), can negatively affect repeat visitation. Visitors who do not enjoy crowds or who are dissatisfied with a deteriorating environment as a result of an exceeded carrying capacity, may choose not to return i.e. they are displaced. The results from this study indicate the displacement of certain visitors may already be happening. For example, the high numbers of first-time visitors, the number of dissatisfied visitors due to overcrowding, and comments such as “*I’ll come back when it’s not so busy*” and “*I don’t think I’ll be back soon*”.

Previous notifications about such behaviour are improvident: “people are noticing the impact but are not bothered by it” (DoC, 2003, p. 10).

It was not within the capabilities of this research to study visitors who no longer visit GIMR during the peak summer months, however, data from this study and relevant literature on the displacement phenomenon strongly suggest that significant displacement has occurred and continues to occur. It is highly likely that many

potential visitors, familiar with the crowding at GIMR, actively avoid visiting on fine summer days.

Contrary to the negative comments, and despite the lack of privacy and personal space at times, most visitors enjoyed the social occasion of the visit, particularly spending time with family and friends and engaging in exciting in-water experiences with others. A sense of camaraderie seemed to develop between (seemingly) strangers, and visitors were observed assisting each other, for example, moving towels, removing wetsuits and helping children over hot sand. These factors helped to enhance the overall satisfaction levels of the visit and are not an unusual phenomenon in outdoor settings, as noted in recent studies (Booth, Cessford, McCool & Espiner, 2011; Moscardo, 2008).

In-water visitor satisfaction was also negatively affected by numbers. Although visitors were not asked to rate their satisfaction with in-water activities, a number of comments were voluntarily offered and mostly related to the combination and numbers of snorkelers, kayakers and motorised boats in a confined area. This is an attribute that future studies would do well to consider. Also see section 6.3.2 which covers in-water management in more depth.

The most popular area of the marine reserve for these recreational activities was between the beach (S2) and Shag Rock (slightly to the west of the Island) and in the channel between the rocks (S3) and Goat Island. Very few recreationalists were observed venturing outside of this area, primarily because the inner waters are reasonably shallow and there is generally an abundance of marine life for viewing. This area was also noted as the most popular for scuba divers and swimmers in a 1983/1984 survey (DLS, 1984). The glass bottom boat and kayak hiring operations add to visitor numbers in this area (both in-water and on the beach).

The number of motorised boats anchored in the marine reserve (generally between the beach [S2] and Shag Rock) during the study period did not exceed eight on any given day and three were observed launching onto the beach (excluding the glass bottom boat). The boats brought snorkelers and swimmers to the marine reserve over the most popular time of the day (i.e. between 11am and 4pm), increasing visitor numbers in the water and on the beach.

The local part-time DoC ranger suggested motorised boat numbers are increasing and can be excessive: “up to 20 motorised boats have been anchored in that area sometimes” (T. Enderby, personal communication, January 01, 2011). Results indicated that visitors felt crowded when they encountered more than their normal tolerance for boats and other people in the same area, which is consistent with other outdoor recreation studies (see Bell, Needham & Szuster, 2011; Breen & Breen, 2009; Inglis et al, 1999; Lankford et al, 2008).

6.2.5 Memorable experiences

Memorable experiences can be described as snap-shots in time, where the tourist is completely consumed by the experience and the moment appears serendipitously (Cary, 2004). They may be defined through four dimensions: “affect, expectations, consequentiality and recollection” (Tung & Ritchie, 2011, p. 1377).

In this study, three of the four dimensions were experienced, as noted by visitors’ comments. The affect dimension was experienced by first-time visitors and inexperienced snorkelers who expressed positive emotions when viewing marinelife and elicited phrases that recalled an exciting occasion, such as “*The fish are SOOOOO amazing!*”. The expectation dimension was reflected when respondents were surprised by an aspect of the visit which was not expected and which exceeded their expectations, such as “*The diving gannets were so awesome – right in front of us while we were snorkelling!*”.

Memorable experiences that elicited a sense of achievement or importance to oneself were experienced by visitors through the consequentiality dimension as seen in comments such as “*I felt like a National Geographic photographer!*” and “*I saw a fish! OMG, I saw a real live fish!*”. Even negative responses, which suggested a certain level of fear had been conquered to undertake an action, fit into the consequentiality dimension, as was experienced by those swimming over a stingray. The memory of Steve Irwin’s death (Brown, 2010) and the threat of the stingray barb were conquered when the swimmer was not hurt. The fourth dimension, recollection, may have become apparent when stories were retold, however, it was not exemplified in this study.

Memorable experiences are articulated through narratives, particularly through the recollection dimension (Cary, 2004; Tung & Ritchie, 2011). At GIMR, memorable

experiences may be particularly important considering the significance of word-of-mouth effects on first-time and irregular users. It may also be a vital component of repeat visitation and subsequent increased visitation. Further qualitative studies may reveal these dimensions further.

6.2.6 Knowledge of marine reserves and the need for interpretation

Literature suggests that education and interpretation of the marine environment is fundamental to sustained protection of its resources and to the success of the marine tourism industry (Barker & Roberts, 2004; Boren et al, 2008; Coghlan et al, 2009; Orams, 1997, 1999; Zeppel & Muloin, 2009). Thus, this is an important section of the study. Several questions aimed to gauge visitors' general knowledge of marine protected areas, and GIMR in particular.

6.2.6.1 Knowledge of other MPAs

Only 42% of respondents confirmed they had previously visited a MPA, either in New Zealand or elsewhere around the world; 36% categorically stated they had not visited a MPA, and the remainder were unsure.

GIMR is located within the Hauraki Gulf Marine Park (HGMP) – itself a marine protected area. This MPA was not mentioned by any of the respondents, despite 65% of respondents residing in Auckland. All of Auckland's popular east coast beaches lie within the HGMP catchment area (Auckland Council, 2010).

Five other marine reserves also lie within the boundary of the HGMP (Table 1), including the Long Bay-Okura Marine Reserve, a popular beach and regional park which attracts more than one million visitors each year. It is likely that many respondents who reside in Auckland have visited this site, however, only a few associate it with being a MPA, most likely because the marinelife is not as abundant as at GIMR (Salomon et al, 2008). The four other Auckland marine reserves were incorrectly named.

Towns and regions, well-known for marine tourism opportunities, such as Kaikoura, Cape Reinga and the Bay of Islands, were incorrectly named as MPAs. These areas have been identified, and are marketed by several agencies as 'special places' (DoC,

n.d.e; NZ Transport Agency, n.d.; Tourism New Zealand, 2011c), thus it is possible that respondents felt these areas would already have MPA status.

The most popular and correctly named MPA was the Great Barrier Reef Marine Park (GBRMP) in Australia.

These findings demonstrate a lack of awareness and knowledge of marine protected areas in Auckland, New Zealand and around the world, and the terms used to identify them, such as MPAs, marine parks and marine reserves. This is not a unique incident: Petrosillo et al (2007) also found a lack of awareness amongst community members residing near a popular multi-use MPA in Italy.

The findings may also suggest that respondents use the quality and abundance of marinelife at GIMR and GBRMP as baselines for visiting (or not visiting) other marine reserves or MPAs. This was noted in visitors' comments:

“If I compare this place with Tawharanui, it's much better because of the marinelife, but I like the former because it's peaceful”

“Barrier reef in Oz, there's so much to see there!”

Marinelife at some marine reserves may not be perceived as diverse or as abundant as at GIMR, therefore visitors may subconsciously be engaging in the shifting baselines syndrome to ensure a satisfactory visit at GIMR (Pauly, 1995). It is a dangerous notion, considering one of the primary objectives of a marine reserve is not to produce an aquarium-type setting for recreational viewing but to “restore and protect biodiversity” (PISCO, 2002, p. 17).

It is, however, understandable. In New Zealand, the MPA planning process is lengthy and after protection is established, marine ecosystems take a considerable length of time to recover (PISCO, 2002; Russ & Alcala, 2004). GIMR is noted as one of the best places in New Zealand to view marinelife in their natural surroundings (Tourism New Zealand, 2011d). Community involvement is important in interpreting the local marine environment to visitors, so that misunderstandings can be reversed and a greater understanding of MPAs developed.

6.2.6.2 Defining the term ‘no-take’

More than 75% of visitors, mostly New Zealand residents, knew they were in a ‘no-take’ marine reserve and many offered a reasonably accurate definition of the term. However 25% of respondents either did not know the answer or were unsure of the answer. This was indicated on the self-reply questionnaire with crossed-out answers or answers that ended with a question mark and with a number of approaches to the researcher to clarify the term.

Information signboards at the site are in English only and this significantly affected the outcome of this question. Visitors whose first-language was not English had difficulty explaining the concept of ‘no take’. Females had a better understanding of the term than males, which is correlated to their higher levels of education.

Although the term ‘no take’ seems easy to understand (i.e. do not remove something) comprehending the reason and consequences thereafter are more difficult and may indicate the bipolar knowledge levels between marine scientists and conservationists and the layman visitor. This is not an uncommon phenomenon in science; similarities can be drawn from the medical profession where seemingly straightforward medical words used by doctors or nurses have been misconstrued by patients who employ an everyday simplistic meaning to the same word, thereby overlooking its intended meaning (Bourghis, Roth & MacQueen, 1989). For marine conservation, this communication breakdown may lead to a lack of support for further protection of the marine environment (Zeppel, 2008).

6.2.6.3 Name of the marine reserve

The vast majority of visitors (96%) know the site as Goat Island Marine Reserve, although the site has at least four names. Leigh Marine Reserve had a little popularity (14%), while the formal name, Cape Rodney-Okakari Point Marine Reserve (CROP), which is used on literature produced by DoC and other government departments, was known by just 8% of visitors. The fourth and reduced slang version, Goat Island, was known by 3% of visitors. The latter name caused disappointment to some first-time visitors when it was discovered Goat Island is not an accessible off-shore island, like others in Hauraki Gulf Marine Park.

The original Māori name for the marine reserve, *Motu Hawere*, which is also found on some documentation, was not mentioned by respondents. In a recent Treaty of Waitangi settlement, between the Crown and Ngati Manuhiri, the site was renamed and upon passage of the settlement legislation in 2011, the official Māori name will be *Te Hawere-a-Maki* (Deed of Settlement, 2011). This change may complicate matters further. Note, the settlement document also refers to another abridged version of the name “Cape Rodney Marine Reserve” (Deed of Settlement, 2011, p. 2).

Agencies would do well to consider this multiplicity of names, as they are confusing and may suggest a flippant approach to an important concept: the conservation of the marine environment. The term ‘Leigh Marine Reserve’ is sometimes used egocentrically by the local community as a means of connecting the marine reserve to the township of Leigh, not dissimilar to community ownership, as previously identified by Taylor and Buckenham (2003). This name is found in some local tourism media (see Appendix D) and is mentioned in government agency reports and in University of Auckland Leigh Marine Laboratory academic articles (e.g. Babcock et al, 1999; Cocklin et al, 1998; Haggitt & Kelly, 2004; Shears & Babcock, 2002, 2003, 2004; Taylor & Buckenham, 2003; Walls, 1998; Willis, Millar & Babcock, 2003).

The name ‘Cape Rodney-Okakari Point Marine Reserve’ is used by government agencies on official documents because that is the site’s official or formal name. It is found most often on DoC signboards at the site and on DoC brochures, or on official documents such as the LRCCMP plan (DoC, 2002).

The term ‘Goat Island Marine Reserve’ is an informal lexical expression, or a slang term, which has become socially acceptable because of its familiarity of use. Dumas and Lighter (1978) note that when slang terms are able to fill a need in society, they can “enter the language identified as slang but with a permanent place assured” (p. 9). This term is noticeable in a variety of media, from newspaper articles and tourism brochures to reports by government agencies and social scientists (e.g. DoC, 2003; Hunt, 2008; McCormack & Crothers, 2008; Rodney Economic Development Trust, 2003; Taylor & Buckenham, 2003).

Pike (2005) suggests that destination names which are easily articulated increase the appeal of the site. This may be one reason why the name ‘Goat Island Marine Reserve’ is preferred over its other names, however, it may also be due to the names given to

other parts of the site: Goat Island Bay Road, Goat Island Bay and Goat Island Scientific Reserve. Visitors identify with, and have become attached to, the most commonly used term: Goat Island.

6.2.6.4 Responsibility for GIMR

Visitors are divided on where the responsibility for GIMR lies, whether it is with government departments or members of the public. The majority correctly suggested central and local government agencies, such as DoC, Ministry of Fisheries and Auckland Council, which are responsible for developing legislation, enforcing regulations and looking after the environment. Others charge residents, visitors, volunteer groups – basically “*everyone*” – with a responsibility to look after the marine reserve and other users i.e. in educating children and setting good examples.

These results mirror those found by Arnold (2004) in an evaluation of public attitudes towards marine issues. They also epitomize the holistic Māori philosophy of *kaitiakitanga* (guardianship), which proposes that all humans are intrinsically linked with the natural environment and all play a vital role in its stewardship

6.2.6.5 Feeding the fish

During the 1980s, feeding the fish at GIMR, “either with kina or brought-in food” (DLS, 1984, p. 1) was a common activity, particularly with scuba divers. For those who were learning to scuba dive, the certainty of seeing fish up close as a result of a feeding frenzy stimulated enthusiasm for the activity (DLS, 1984).

Fish grew large and became habituated to the close proximity of humans and, consequently, visitor numbers to the site increased exponentially. However, this behavior was not in keeping with the philosophy of marine protection and disturbing the natural marine environment is a punishable offence under the Marine Reserves Act 1971. In 2001 fish feeding was disallowed by DoC and enforced by local rangers and through posted signs at the site and notifications in local newspapers (Charman, 2001; Dickson, 2002).

More than a decade later, the results of this study indicated that only 74% of visitors knew this rule. Some first-time visitors and (surprisingly) English-speaking visitors did not know the rule exists or suggested that feeding the fish *is* allowed. Younger visitors

(i.e. those in the 18-44 age groups) were not as confident with this regulation as older visitors. On the day the self-reply questionnaire was pilot tested (October 25, 2010), visitors were fined by the DoC ranger for feeding fish with a bucket of peas (T. Enderby, personal communication, October 25, 2010).

Fish feeding continues to be a problem at GIMR because there are confusing messages about whether this activity is allowed or not. A local tour operator visually advocates fish feeding on large poster boards (see Figure 32) and also encourages visitors to think twice about the ban on fish feeding (Anthoni, 2007), while online tourism media suggest fish can still be hand-fed (Virtual Tourist, 2004) and the Auckland University Underwater (dive) Club (n.d.) confirms, online, that the practice still occurs:

Fish life thrives and it is likely a flotilla of Snapper will follow you as you dive, encouraged by the not yet extinct practise of feeding the fish. Feeding the fish is no longer condoned, although you'll still see people wandering into the water with packets of Watties frozen peas. (para. 3)

Fish feeding changes the ecology of the marine environment and its inhabitants. Studies indicate snapper (*Pagrus auratus*) at GIMR exhibit diver-positive behaviour as a result of fish feeding and that the species occurs more at the reserve centre (where large visitor numbers also occur) than on the boundaries (Willis et al, 2003, p. 219). Schlacher, de Jager and Nielsen (2011) found that human food scraps feed inhabitants of natural environments. For example, food scraps that are fed to seagulls or are left behind by visitors may find their way into the ocean – when birds drop food into the water, when the wind blows or when high tides wash over the beach and rocks. The ad-hoc feeding and resultant bird /wind deposits may be creating a trophic subsidy (i.e. food scraps as an alternative or additional food source within the food web) (Schlacher et al, 2011).

The burgeoning visitor population is likely to increase this activity, and the resulting change in the ecology of the marine reserve, if the consumption of food by visitors is allowed to continue at GIMR.

6.3 Issues of significance

Three key issues have emerged from the results of this study which have a significant impact on visitor satisfaction: the safety of visitors in the water, the management of people and boats in confined areas, and overcrowding. Suggestions to reduce dissatisfaction have evolved from this study and are compared with previous literature. They aim to offer workable solutions for management.

6.3.1 Safety of visitors in the water

GIMR's reputation, as a major tourist attraction, is at risk. In less than three years, the marine reserve has had four fatalities (all drownings) – Christmas Day 2008, December 11, 2010 (at the start of the data collection period for this thesis), June 2011 and October 2011 (on the first day of the 2011 summer – Labour Day).

Several near-drownings have occurred and a number of rescues have also been made during this period. The researcher observed (or is aware of) four such incidents during this research collection period (i.e. mid December to mid January), when emergency rescue services (i.e. ambulance, fire engine and helicopter) were called to assist visitors.

These incidents are reported in local media with headlines such as *"Death sparks safety call"* (Moore, 2011, p. 1), *"Snorkelling death leads to calls for lifeguards"* (Thompson, 2010, Breaking news) and on DoC's website *"Snorkelers take risks at popular Goat Island Marine Reserve"* (DoC, 2011d, Media Release). (Note the name of the marine reserve used by DoC).

The result of these fatalities and near drownings is that the "jewel in the crown" (Taylor & Buckenham, 2003, p. 17) of New Zealand's marine reserves is gaining a reputation as a dangerous place to enjoy marine recreational activities.

A number of factors can account for these incidents, including participant's skill level, poor equipment choice, engagement in risky behaviour, a lack of multi-lingual information at the site on the potential hazards of swimming in the ocean or how to snorkel, the absence of on-site lifeguards, changeable weather conditions and cold water temperatures. Several of these factors were also noted as causing fatalities or near-drownings at Hanauma Bay, Hawai'i, as indicated in Harada et al's (2011) study of lifeguard rescues.

The high number of non-English speaking visitors may have contributed to these incidents (although this data is not known to the researcher), as they may be unfamiliar with water safety or the risks associated with New Zealand's marine environment.

Furthermore, media messages are inconsistent. A local tourism website suggests: "you don't need to be a confident swimmer to meet the friendly fishes in the water because a full floating wetsuit protects you and gives you all the safety you need" (Seafriends, 2009, Snorkel with the fishes). This message differs to those of risk prevention organisations such as SLSNZ, who suggest users must always "respect the sea" (SLSNZ, n.d.a, Education section overview) and WSNZ who suggest users should "learn to swim, learn to survive, swim for life" (WSNZ, n.d.b, Sealord Swim for Life).

A local tourism operator has rescued several swimmers from the sea (Thompson, 2010). Branche and Stewart (2001) suggest that members of the public should not be assigned, or allowed, to perform drowning rescues; they may not understand how people drown or how to perform a successful rescue and may also put other swimmers at risk, particularly when they are already distracted by their own tasks, such as operating a motorised commercial vessel.

Lifeguards have proven they increase public safety by "saving lives, lowering drowning rates, and preventing injuries in aquatic recreational environments" (Branche & Stewart, 2001, p. 5). SLSNZ is a community service organisation with first-aid qualified volunteer lifeguards who patrol many of New Zealand's popular beaches over the summer months. Statistics indicate their importance (see SLSNZ, n.d.c). Lifeguards operate in controlled areas, perform necessary preventative action or rescues to mitigate dangers, have immediate radio contact with emergency services and are highly regarded in the community for the lives they save (SLSNZ, n.d.b).

Compared to the powerful waves that can pound the surrounding beaches (i.e. Pakiri Beach, Omaha Beach), GIMR's waters are relatively calm during the summer, however, the increasing numbers of in-water incidents suggest lifeguards are an important, and currently overlooked, consideration.

The majority of recreational activities take place between the beach (S2) and Shag Rock (slightly to the west of the Island) and in the channel between the rocks (S3) and Goat Island. This is also the same area where past incidents have occurred and where patrol

lifeguards could be stationed, as beach surveillance lifeguards and in-water lifeguards. The latter could be positioned on a temporary floating (anchored) tower guard in the centre of this area, which would allow for faster access to swimmers in need of assistance.

To date, there has been no comprehensive approach (none found) to drowning prevention in New Zealand which concentrates on educating snorkelers and scuba divers in oceanic settings. This is despite open-water drownings outnumbering swimming pool or domestic drownings (WSNZ, 2010). Considering the number of first-time or inexperienced snorkelers visiting GIMR, and the number of requests the researcher received for assistance with equipment usage and technique, it is time to provide ‘hands-on’ educational instruction for visitors.

Education learnt on land prior to a visit may not be remembered in the water (Orams, 1999), thus *on site* training or instructions are necessary to safeguard visitors. Volunteers may be considered to assist in this regard.

Volunteered services are defined as “work performed without pay for the benefit of other people” (Dalziel, 2011, p. xvi). In 2008, a quarter of New Zealand’s adult population volunteered their services for sport or recreation activities; the majority were in the 35-49 year age group and 48% acted as trainers or instructors (Dalziel, 2011). Many volunteers also work with DoC (and other pro-environmental organisations) on a variety of conservation tasks and “make an important contribution to conservation in New Zealand” (DoC, n.d.f, Volunteer).

A strategy for safeguarding snorkelers and other marine recreationalists at GIMR could be established between members of various agencies, including DoC, WSNZ and volunteers (e.g. local residents, students and teachers) who may wish to share their snorkelling skills and their passion for marine conservation to help others. It is suggested that volunteers often gain a deeper understanding and appreciation for the conservation of marine environments, then go on to spread the word of ocean stewardship to others, including their family, friends and community members (San Diego Oceans Foundation, n.d.).

Harada et al (2011) suggest that “enacting prevention strategies at a specific beach requires an understanding of the unique characteristics of the beach” (p. 75). GIMR is

now well studied by biological and social scientists and a plethora of data exists on its biophysical features and the characteristics of its visitors. SLSNZ (n.d.c) have lifeguard patrol statistics and Dalziel (2011) provides data on volunteerism in New Zealand.

These data can be used to identify how GIMR's visitors can be kept safe in and near the water.

6.3.2 In-water management of people and boats

To date, there is no active in-water management at GIMR. This has been a costly omission, considering the fatalities and near-drownings and the negative publicity surrounding these incidents. In-water management was a factor in this study that raised safety concerns and reduced visitor satisfaction. Agencies would do well to consider future consequences of this factor, particularly as respondents were not asked to rate or comment on safety issues.

The most popular area for viewing marinelife was between Goat Island and the beach. It is a relatively small area considering the size of the marine reserve, yet it is an area where conflicts and concerns for visitor safety arose.

The marine reserve has only one access point for land-based visitors, the beach, which is also accessed by the glass bottom boat and other private vessels. Concern was noted because snorkelers and swimmers are usually face-down in the water, and not looking for moving vessels and because vessels were motorised. Conflicts were also observed between kayakers and other recreationalists. In-water separation may reduce these user conflicts and increase public safety.

A zoning plan is a MPA management tool, used to protect biodiversity values and enhance the visitor experience by separating users and their activities into different, smaller areas (Roman et al, 2007). Zoning plans are used extensively in popular coastal MPAs around the world (see Brown, 2001; GBRMPA, 2011; Petrosillo et al, 2007).

Roman et al (2007) note that "MPA zoning plans should be based on management objectives, policies, and legislation" (p.825). In New Zealand the Marine Reserves Act 1971 (2008) provides guidance for the protection of the marine ecosystem within a marine reserve and notes that "the public shall have freedom of access and entry to the reserves, so that they may enjoy in full measure the opportunity to study, observe, and

record marine life in its natural habitat” (p. 6). However, when visitors are declined the freedom to move within, enjoy or observe marine life because of interferences, wilful or otherwise, the Act may be considered breached. The LRCCMP plan (DoC, 2002) also confirms conflict and safety issues result between vessels and visitors. The plan suggests recreational activities should not “put visitors’ safety at risk” (p. 6).

Permanent boat lane markers to restrict beach access was considered an undesirable option, however, moorings which manage boat activities and also protect the seabed from disturbance, were considered both desirable and practical (DoC, 2002).

Zoning can be applied to small areas, the “key challenge is to integrate interdisciplinary information when formulating and implementing zoning plans” (Roman et al, 2007, p. 820). A plethora of data, spanning almost 30 years, now exists on GIMR from both natural and social science perspectives and this study provides further recent evidence of visitor experiences. As noted by Inglis et al (1999), “safety considerations may be more important in evaluations of marine environments than they are in terrestrial park settings” (p. 379).

It is time to implement an in-water management plan that safeguards not only the visitors but also GIMR’s reputation as an economically viable tourism destination.

6.3.3 Overcrowding

Data indicated GIMR’s carrying capacity during the summer months is breached and that large numbers of people occurred in many areas, including the beach (particularly at high tide), in the water, parking and at some facilities. The carrying capacity of a destination is based on the maximum number of visitors in one area that does not cause resource or socio-cultural degradation and does not diminish the quality of the tourist experience (Davis & Tisdell, 1995; Inskeep, 1991; Shelby & Heberlein, 1986). GIMR’s carrying capacity of 620 visitors at one time (DoC, 2002) may have doubled with the two new car parks which opened in 2011 to approximately 1500 people as per the LRCCMP plan (DoC, 2002), however, it was apparent during this study period that visitor numbers well exceeded even this number (Figure 35).

Excessive visitor numbers is a well-established concern, detected more than two decades ago (DLS, 1984; DoC, 2002, 2003; Walls, 1998). The site is particularly

overcrowded on weekends and public holidays during the peak summer season, when almost 6,000 visitors per day have been recorded (Hunt, 2008).

In this study, large visitor numbers, giving the perception of overcrowding, was visually noticeable and viewed (mostly) disapprovingly by respondents and other visitors. Large visitor numbers were also noticed during mid-week days and outside of the peak summer holidays, most particularly at site 2. This area is where the steps lead onto the beaches and rocks, and where the Whakatuawhenua Stream enters the bay (often washing away sand and reducing space). It is also the area where visitors seek shade from the large pohutukawa tree and where the glass bottom boat operation is conducted. The perception of over-crowding at GIMR cannot be compared with actual numbers of visitors, as these data are not available, despite requests.

Management had hoped self-regulation would occur and visitor numbers would stabilize (DoC, 2002; 2003), however, this expectation has been hindered by a number of factors, but primarily through the disproportionate marketing of this marine reserve as a major tourist attraction and an unwillingness to apply restrictive visitation controls.

Data (and previous studies) suggest strong measures are necessary to reduce visitor numbers during the summer season. Suggestions are offered in section 7.4.

Many studies have explored overcrowding in outdoor settings (see Vaske & Shelby, 2008 for a 30 year overview of research on the subject), however few studies have been conducted in MPAs. This is despite an increase in the participation of marine recreational activities around the world.

Recent studies have indicated two important aspects that require consideration by GIMR management: that overcrowding in marine settings affects visitors in similar ways to that of overcrowding in terrestrial settings (Inglis et al, 1999) and that visitors will support restrictive management actions if they specifically address issues that cause the visitor experience to diminish (Bell et al, 2011).

It is time for GIMR's crowding issue to be addressed, so the visitor experience can be enhanced.



Figure 35: Race, S. (2011). Large numbers of visitors at site 2 where the Whakatuwhenua Stream meets Goat Island Marine Reserve (note sand is washed away), visitors seek shade under the pohutukawa tree and where the glass bottom boat operation is conducted [Photograph].

6.4 GIMR's community value

The marine reserve makes a significant contribution to the local economy in a variety of ways. Hunt's (2008) economic impact analysis report indicated GIMR generated more than NZ\$18m per year for the greater Rodney District, with industries such as tourism, hospitality, manufacturing and retail directly and indirectly dependent on its existence. It also created additional employment opportunities, particularly during the peak season. Leigh and other local townships, such as Pakiri, Whangateau, Ti Point and Omaha, and the inland villages of Matakana and Warkworth all benefit from the marine reserve. As if to confirm its popularity, Hunt's (2008) study also noted that more than half of its respondents would *not* visit the greater region if the marine reserve did not exist.

Concerns about the sustainability of the natural environment have strengthened relationships between local communities. Leigh and Whangateau are now reflected as conservation-oriented communities (Earle & Foster, 2010; McCormack & Crothers, 2008).

The Leigh Business Community newsletter, Leigh by the Sea (n.d.), promotes community events in or near GIMR, such as Seaweed and constantly reminds readers of the marine reserve's regulations. Marine mammal sightings in the Goat Island Bay and underwater photographs of marinelife are regularly updated by community members.

Marine educational organisations have been supported by the existence of GIMR. Exploring Marine Reserves (EMR) offers marine education opportunities for school children and members of the public to several marine reserves in New Zealand, including GIMR (EMR, n.d.), while Marine NZ is an online information portal which provides detailed facts on the marine environment and links to marine conservation resources, including information on GIMR (MarineNZ, 2007).

The University of Auckland's, Leigh Marine Laboratory, offers unrivalled opportunities to study marine biology within GIMR and has recently opened the Edith Winstone Blackwell Interpretive Centre, overlooking GIMR (Leigh Marine Laboratory, n.d.).

The economic, community and conservation value of coastal marine reserves is considerable and agencies would do well not to under-estimate them or take them for granted. Recreational marine tourism within protected marine environments has the potential to become a multi-billion dollar industry if managed correctly.

6.5 Defining GIMR's visitor profile

GIMR reflects the profile of a marine ecotourism destination (Cater & Cater, 2001; Fennell, 2002; Newsome et al, 2005; Shackley, 1996; Wilson & Garrod, 2003).

According to Shackley (1996), "the quality of the natural environment plays, as we all know, a primary role in attracting tourists to specific destinations" (p. xv).

GIMR is a natural area with living biotic elements that attract a diversity of visitors. Its coastal location and easy access encourages the exploration of a primarily unfamiliar ecosystem and supports adventurous activities and NCWOR interactions. As a highly protected area of the ocean, it also fosters environmental awareness (cognitive) and allows visitors to have peak experiences (emotional).

Yet, there are also environmental costs, as GIMR is an extremely popular destination. The view of management, community members and visitors may differ in relation to the *raison d'être* of the marine reserve and their expectations of marine environmental protection. For example, some visitors to GIMR showed considerable interest in the conservation of the marinelife and marine habitats, some enjoyed the close proximity of marinelife and took photographs, while others desired to feed or hunt large fish.

GIMR's visitors reflect the general demographic and characteristic profiles of urban coastal beachgoers as noted in previous studies (see Coghlan et al, 2009 and Nelson, Pendleton and Vaughn, 2007). Results of this study have also indicated that a distinct user group may exist, which separates them from other marine resource users. The following attributes of a GIMR visitor profile could be considered:

1. Adherence to regulations

Marine reserve visitors must abide by strict regulations or be prepared to face penalties, for example, large fines or the confiscation of private property used in the offence. This is not (usually) the case at beaches which are not within a marine reserve.

2. Marine viewing equipment

Visitors must use specialised equipment to view marinelife, as the naked eye is not normally sufficient for clear underwater viewing and marine conditions can be unusually difficult or cold. For example, snorkelers require a mask, snorkel, fins and a wetsuit and scuba divers require oxygen tanks and other specialised diving equipment

and / or certification. Above-water marinelife viewers need access to a vessel with a transparent base, such as glass bottom boats or glass bottom kayaks.

3. Attractive destination

The destination must have a number of desirable pull factors before a visit can be considered. Marine reserve visitors expect to see an abundant and diverse marinelife. The natural beauty of the area is also important.

4. Novelty seeking

As GIMR is the only marine reserve within Auckland that ‘produces’ an abundance of marinelife, visitors find the destination and its attractions unique. Visitors are motivated by novelty seeking opportunities, such as swimming with fish, snorkelling with family members and being able to see fish from various vantage points (such as standing on rocks).

5. Engage in the marine environment and its dangers

Visitors must be willing to engage in wild and possibly unsafe marine environments. They face dangers that are generally found in the open ocean but which they are not always aware, such as the unpredictable actions of waves, predatory marine animals and hidden pollution and bacterial pathogens (Orams, 1999).

The combination of these and other attributes of a GIMR visitor profile has led to the development of the Marine Reserve Visitor Experience model. Section 6.6 shows how positive and negative influences may alter a marine reserve visitor’s experience.

6.6 The Marine Reserve Visitor Experience model

The Marine Reserve Visitor Experience model (MRVE model) is developed from the data collected and insights gained as a consequence of the research presented in this thesis. The concept for this model is derived from Booth et al's (2011) model proposed for the Milford Track (New Zealand) visitor experience. However, the Booth et al (2011) model only focuses on inputs in its attempt to explain the variables affecting the visitor experience related to walking/hiking the Milford Track. The research presented in this thesis shows that, with regard to marine reserves, a number of outputs may also affect visitor experiences.

Thus the MRVE model proposes that there are a variety of input and output factors that affect visitor experiences at marine reserves. These factors are categorised as; the biophysical environment, the managerial approach and social values. Figure 36 shows these relationships and indicates that they can be both positive and/or negative influences on visitor experiences. In addition, the MRVE model proposed that the level of influence, as well as the attitude of visitors towards each factor, influences visitor satisfaction, repeat visitation and destination loyalty.

To further explain the model, the biophysical environment can be divided into two categories; the natural environment and the built environment. Influences from the natural environment may include the scenic and natural beauty of the area, the quality and abundance of fauna and flora, the clarity of the water and favourable weather conditions. Influences from the built environment may include the distance and ease of access to the marine reserve, the level of infrastructure at the site and the facilities available for public use.

The managerial approach, although bound by marine reserve regulations, primarily focuses on the management of visitors. These depend on strategies used to regulate visitation, the efficacy of interpretation programmes, the presence and knowledge of guides, rangers or similar others, and the extent of involvement by the tourism industry and other agencies.

Social values refer to two aspects; the level of tolerable human interaction and personal biophilia values. The former refers primarily to the amount of personal space and privacy individuals or groups require so that a satisfactory experience may be achieved,

as well as the amount and type of interaction that can be tolerated before the quality of the experience begins to diminish. The latter refers to inherent biophilia values and pro-environmental behaviour of the individual or group.

The left-hand-side of the MRVE model illustrates a linear progression of positive influences on visitor satisfaction, with the most positive outcome in the inner layer. The right-hand-side depicts a reverse linear progression, indicating influences with the most negative outcomes in the outer layer.

For example, when the outer positive influences of the social values are realized, that is relationship enhancement, followed by self-actualisation, then the inner-most outcome, biophilia values, are realised. However when primary negative social influences occur, for example user conflict and safety concerns, there may be detrimental outcomes, such as visitor displacement and economic loss. The three inner-most positive influences together create a very satisfactory marine reserve experience.

The dotted lines between the three influential factors indicate fluidity and interaction exists between them, thus one factor can be more influential than another. Fluidity is important in this model because of the potential diversity of visitors to any given marine reserve and the various and dynamic influences on experiences.

Ultimately, high levels of negative influences may affect the attitude society has towards long-term marine protection and marine reserves.

Positive influences on experiences

Negative influences
(and possible outcomes)
on experiences

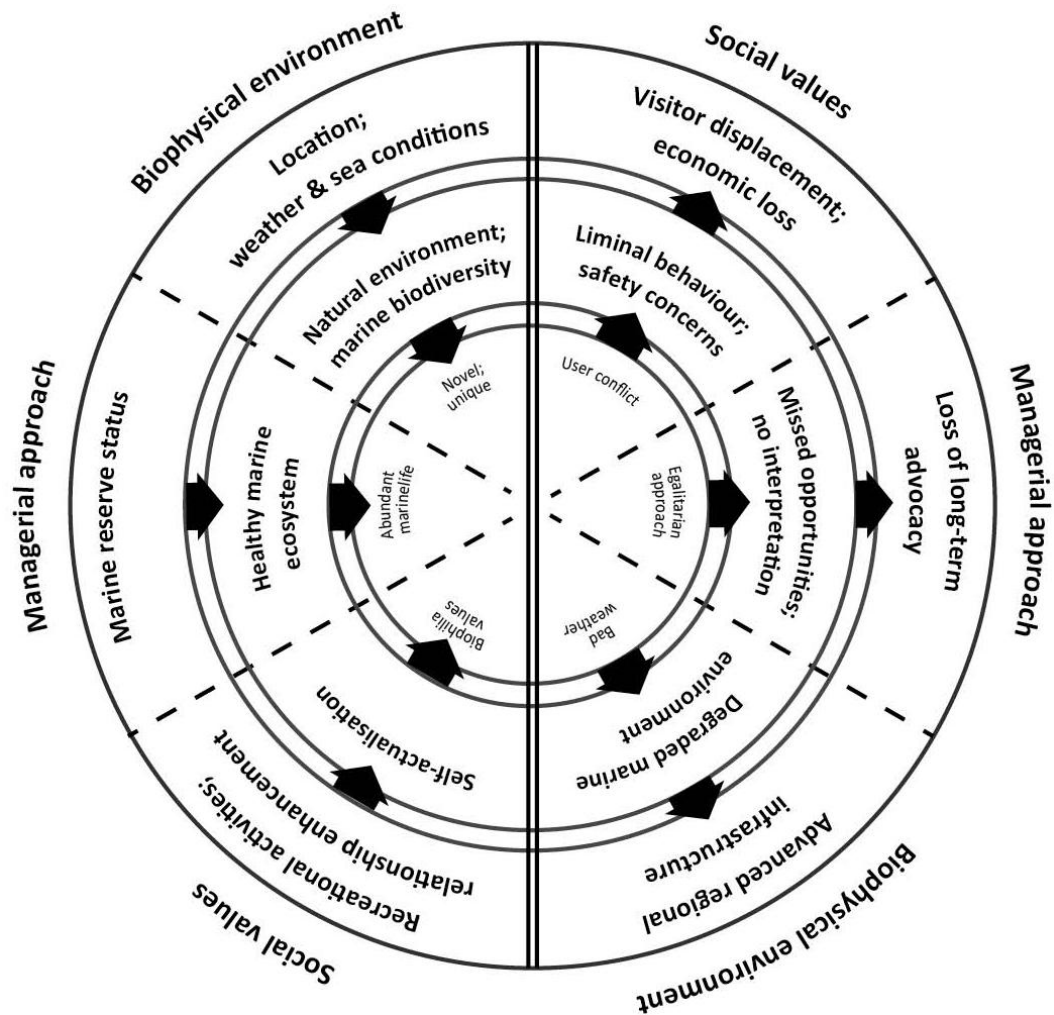


Figure 36: The Marine Reserve Visitor Experience model

6.7 Key findings and conclusion

GIMR is a highly protected area of the ocean, which has the ability to draw numerous visitors because of its location, ease of access and the abundance and quality of its marinelife. It is also marketed as one of Auckland's major tourist attractions. However, its popularity is also causing alarming social issues.

The key findings of this study are:

1. Popularity

GIMR is extremely popular, highly rated by tourism agencies, such as ATEED and Tourism New Zealand and beneficial to many community members (ATEED, 2011; Hunt, 2008; TNZ, 2011d). However, high visitor numbers have also created social issues, such as overcrowding, visitor dissatisfaction and, possibly, visitor displacement. Large numbers also create environmental risks. Ultimately these issues may decrease visitation, reduce visitor spending and negatively affect many local industries which depend on the marine reserve.

2. Changed demographics

High immigration figures to New Zealand over the past two decades have created a distinct change to visitor demographics. Large numbers of languages are now spoken and there is a diversity of cultures and ethnicities. These changes have created problems with communication and non-compliance of marine reserve regulations. They also pose water safety risks and may be hindering marine protection awareness efforts.

3. Water safety

As a direct result of increased popularity and changed demographics, water safety is now a serious social issue and fatalities and near-drownings are well documented. Zoning plans, on-site personnel to assist with recreational activities, lifeguards and other safety devices, such as multi-lingual emergency signage, must be considered to ensure visitor safety and protect GIMR's reputation as a safe visitor attraction.

4. Lack of awareness

A general lack of awareness for marine protected areas was apparent throughout all demographics. Visitors are ignorant or uninformed of the categories of MPAs that exist

in New Zealand and around the world and may not fully understand the roles they play in marine conservation. On-site interpretation of the marine environment is required to initially satisfy curiosity but to ultimately encourage pro-environmental behaviour and increase awareness of the adverse consequences of environmental problems.

GIMR has the ability to be the ““jewel in the crown” (Taylor & Buckenham, 2003, p. 17) of New Zealand’s marine reserves and the potential to increase advocacy for marine protection.

*E tangi ana nga reanga o utu, e mahara ana nga reanga
a tai ma ta aha ra e whakamahana taku ora kia tina*

When the land, river and sea creatures are in distress, then I have nothing to be proud of



Figure 37: Race, S. (2011). *Mākutu, overlooking Goat Island Marine Reserve* [Photograph].

7.0 Introduction

This final chapter summarises the fulfilment of the study's objectives as noted in Chapter 3 and the significance of the findings from Chapter 5. It also suggests future priorities for management to consider and acknowledges the study's limitations, before offering suggestions for future research.

7.1 Fulfilment of thesis aims and objectives

This study used a self-reply questionnaire to consider the following five research questions:

Question 1: What are the demographics of visitors to GIMR?

Question 2: What are the characteristics of a visit to GIMR?

Question 3: What factors influence a person's decision to visit GIMR?

Question 4: What is the level of satisfaction with the various attributes of GIMR?

Question 5: What is the level of awareness of being in a marine protected area?

Data were analysed in Chapter 5 and discussed in Chapter 6. From the findings, the profile of a GIMR summer visitor was suggested and the Marine Reserve Visitor Experience model developed. The implications of using the profile and model in other marine reserve settings were outlined in chapter 6.

The four primary research objectives (as noted in section 3.1) were also fulfilled.

Research objective 1: To identify the characteristics and experiences of summer visitors to Goat Island Marine Reserve.

Research questions no. 1 and no. 2 identified the characteristics of visitors, while research question no. 4 provided information on visitors' experiences. These questions provide a baseline for a visitor profile and also identified several reasons for the site's popularity. Visitor characteristics and experiences were discussed in Chapter 6.

Research objective 2: To comprehend visitors' motivations during the peak summer days.

Questions 3 and 4 identified a number of visitor motivations. Data were compared with existing literature on tourist motivation and GIMR's visitor profile and discussed in Chapter 6. Novelty and the uniqueness of the site, the quality of the marinelife, the biophilia values derived from being in the natural environment and the social aspect of a visit, were the main motivations for a visit.

Research objective 3: To consider the level of interest in the marine environment and marine protection.

Results from question no. 5 confirmed visitors' lack knowledge of MPAs in New Zealand, particularly in Auckland. It is likely that many Auckland residents have visited most MPAs in the region, however, they do not identify these areas as being a MPA. In contrast, however, there is a distinct interest in the marine environment, particularly in species and habitat identification, which could be leveraged to enhance local MPA knowledge and increase advocacy for global marine protection.

Research objective 4: To consider the future of the marine reserve with regards to impacts from the pressures of recreation and tourism.

GIMR's future lies with management taking a firm approach to limiting visitor numbers and the pressures from recreation and tourism. A change in the destination's life-cycle has already taken place, with improved infrastructure and a different summer visitor, despite requests from many visitors to not change anything (DLS, 1984; DoC, 2003).

The findings extend the knowledge on the typology of the marine ecotourist, provide links to pro-environmental behaviour and a platform to enhance the profile of visitors to other marine reserves, particularly those situated along New Zealand's coastline. The Marine Reserve Visitor Experience model introduces the influences on visitation, with particular emphasis on the biophysical, managerial and social aspects of an experience. The model indicates the preferences (and requirements) for a very satisfactory visit.

The findings indicate GIMR's popularity is mainly because snorkelling to view marinelife can take place relatively easily and the abundant marinelife is close to the shore. However, the findings also confirmed that GIMR is over crowded and parking is an ongoing issue, both of which diminish the overall GIMR experience.

The research offers preliminary insights into the dearth of MPA knowledge by GIMR's visitors, despite its popularity and the existence of other local MPAs. Furthermore, the findings also probed the less tangible expectations of marine ecotourists; data suggested visitors want a hands-on interpretation of the marine environment, for management to ensure their safety in the water and to keep the environment as natural as possible.

7.2 Review of important findings

In Chapter 6, the characteristics and experiences of GIMR's summer visitors was discussed and profiled. This research is significant because since the establishment of the marine reserve in 1975, visitation has increased substantially but no empirical published data exists. Visitor surveys and other social science studies undertaken at GIMR over the years have not always been made available to the public, hence, important items such as data, discussions and recommendations have also not been available for comparison or argument. Reviewing visitor responses and recommendations are critical to expanding our knowledge regarding the social use and impacts of this marine reserve.

The important findings of this study are:

1. *Demographics:* There was a diverse mix of visitors, mostly Auckland residents, who spoke 30 different languages. The female gender dominated, the majority of visitors were in the 35-44 year age range and visitors were highly educated. Membership of environmental organisations was low.
2. *Characteristics:* People visited in large groups, mainly with friends and family including children, and stayed for four hours on average. There were a large number of first-time visitors and word-of-mouth was the most popular form of learning about GIMR prior to a visit. Many visitors were first time or inexperienced snorkellers.
3. *Influences:* The main reasons for visiting were to snorkel and relax, while the main influences were the weather, water clarity and the ease of access to marinelife. The opportunity to view marinelife was considered extremely important. Previous MPA visits did not seem to influence visitation to GIMR.
4. *Satisfaction levels:* The snorkel / dive experience was the most satisfactory attribute and overcrowding on the beach the most unsatisfactory attribute. Good water clarity and favourable weather conditions were important influences on satisfaction. Most local visitors were sufficiently satisfied to envisage a return visit sometime in the future.

5. *MPA knowledge:* Awareness of being in a marine reserve was high, although the term ‘no take’ was not well interpreted and visitors had difficulty naming other MPAs they had visited. Goat Island Marine Reserve is its well known name – its formal name barely known. Managerial responsibilities were given to DoC, however, visitors suggested that anyone who used the facilities should also take responsibility. Conflicting signage and media messages surrounding the rules and regulations of fish feeding confuse visitors.

In summary, this study provided detailed information on new and important evidence about the visitors at a popular coastal marine reserve during the peak summer months. It also indicated the importance of managing the social aspects of a marine reserve.

7.3 Suggestions and priorities for management

Over the past 35 years since its establishment, increased demand for GIMR has resulted in major changes to infrastructure which has, along with the recovery of marinelife, increased GIMR's popularity and visitor numbers exponentially. During the peak summer months, this small protected area is sacrificed for mass tourism. Visitor numbers have increased more than 3000% since 1975 and almost 6,000 visitors have been recorded in one day (Hunt, 2008).

The consequences of increased visitor numbers are well documented in tourism and parks literature. A range of management strategies are available to protect these special areas; Orams (1999) divides the strategies into four categories: regulatory, physical, economic and educational (see section 2.2.4 for more detailed information regarding each strategy). Suggestions are offered here to help control GIMR's summer visitor numbers and reduce their consequential impacts. Derived from the results of this study and a range of academic and agency literature, there are 12 primary suggestions:

1. Indicate for potential visitors when GIMR is full

This study confirms the “desirable, appropriate or acceptable conditions” (McCool & Lime, 2001, p. 383) that are required for a very satisfactory visit mean that imposing limits on visitor numbers is important. Previous research by DoC has shown that this regulation will likely be acceptable to the majority of visitors: “77% of visitors agreed that restrictions should be put on the number of people that can visit the reserve – this option has the strongest support” (DoC, 2003, p. 13).

Limitations could apply to car park availability, that is, when all parking spaces are taken, the site is considered ‘full’. Access to parking outside of car parks (i.e. on the road) could be restricted to residents only. Volunteers and posted signboards stating GIMR is ‘Full’ can be placed at Warkworth, Matakana and at the entrance to Goat Island Bay Road, to assist with traffic management. Signage could also suggest the alternate destination of Tawharanui Marine Reserve. This approach is already used at another Auckland marine reserve; ‘Full’ notices have been positioned at the entrance to the Long Bay Regional Park (which leads onto Long Bay-Okura Marine Reserve) on peak summer days to restrict visitor numbers (personal observation).

Limitations could also be placed on large groups, as they have greater social needs and create greater visual and biophysical impacts than smaller groups, by regulating group size, restricting visitation to non-peak days or requiring advanced bookings (Eagles et al, 2002). In this study, almost 20% of respondents arrived in a group of eight or more, thus, placing size and time limitations on this demographic would reduce or disperse visitation to the site.

Over time, users would accept these restrictions and change their expectations of the site. Figure 21 is a reminder of the visual impacts large groups can create at GIMR.

2. Zone areas of the marine reserve

The implementation of in-water zoning would likely be amicably received, considering “45% of visitors agreed that parts of the marine reserve should be closed to the public to prevent damage to marine life” (DoC, 2003, p. 13). Zoning ensures human impacts on marinelife and the marine ecosystem are reduced and the visitor experience is increased (Roman et al, 2006).

According to Eagles et al (2002), “zoning should apply to all activities occurring within a protected area” (p. 99), including tourism operations. Decisions about the type and location of tourism operations are generally based on the degree of impact which the business causes. Results from this study indicate management should consider placing zoning restrictions on the glass bottom boat operation, as it is this vessel which caused the most concerns.

Two zones are suggested: the area most frequented by snorkellers and swimmers (i.e. between the beach and Goat Island) and a separate area for motorised vessels.

3. Charge entrance or parking fees

During the summer months, a small entrance fee collected at the main entrance to GIMR or for parking is a management practice that could help redirect visitor pressures such as vehicle congestion. Fees could be used to reduce visitation time and disperse users to other areas. Paying fees encourages visitors to compensate management for the use of the facilities and creates “an attitude of respect” (Eagles et al, 2002, p. 102) for the environment, especially when fee revenues are used to upgrade facilities.

4. Increase the size of the marine reserve...and
5. Create a second access point

If visitors can be dispersed to a second access point, pressures will be alleviated at the main access point. Extending the size and coastal boundaries of the marine reserve may become necessary, however, this option has not yet been formally considered. If areas are difficult to access, visitor numbers will also be contained, thus, a second entrance was suggested via the Omaha Block Access Road (just to the east of Cape Rodney) (Anonymous, personal communication, July 29, 2010).

6. Establish on-site, hands-on interpretation and teaching programmes

Two on-site, hands-on interpretation programmes are suggested. The first is a programme to further educate visitors about the local marine ecosystem and explain the marinelife they may encounter in the water.

Interpretation programmes satisfy a demand for learning, can enhance visitor enjoyment and have the ability to create more environmentally-friendly behaviour (Orams, 1995; 1997). Melson (2001) suggests that children who participate in educational programmes which physically connect them with animals and the natural environment are likely to develop a sense of stewardship towards all living things; more than half of all visitors to GIMR travel with children. This programme could be conducted for a diversity of visitors, by volunteer groups.

The second programme would be for visitors to learn how to snorkel safely. There are many first-time and inexperienced snorkellers at GIMR, some with little knowledge on how to use snorkelling equipment and what conditions to expect when in the water. Volunteers who are proficient snorkellers could provide assistance as and when it is required.

These programmes could also be available in additional languages.

7. Install lifeguards and multi-lingual emergency information

Management should consider lifeguards, particularly in view of the recent tragedies. Specialist organisations such as Surf-Life-Saving New Zealand and Water Safety New Zealand could be approached to supply lifeguards, primarily on weekends, public holidays and on other peak summer days. Lifeguards' presence would help visitors to undertake their recreational activities safely, they would also be immediately available to perform rescues, if necessary, and have direct contact with emergency services.

Management should post multi-lingual emergency contact details on signboards close to the beach. These may include steps on how to perform CPR. Notification regarding the dangers posed at the site may also be considered. A defibrillator should also be made readily available on-site.

8. Change the formal name to Goat Island Marine Reserve

Consideration could be given to changing the site's name, formally, to Goat Island Marine Reserve, especially as this name is known by 96% of respondents. Confusion can arise when directional traffic signposts and location signposts differ and when tourism media and conservation media differ.

Branding the site also becomes much more difficult when there are a number of names to consider.

9. Monitor and restrict commercial tourism operations

Visitors would like GIMR to be kept free of commercial activities, as noted previously: "definitely no commercialism" (DoC, 2003, p. 21). A glass bottom boat operates regular tours from a 'desk' on the beach and a commercial venture hires out snorkelling equipment and kayaks opposite the main beach.

Times and days of operation of each business were not consistent throughout the summer and visitors indicated dissatisfaction when they were not present. There were large visitor numbers at both sites, particularly on the beach, which was used to load glass bottom boat passengers and teach visitors how to use hired kayaks. The snorkel hire company also sold food (ice-creams) and set up a cinema stand for visitors.

Management should consider monitoring and placing restrictions (even closure) on tourism businesses that no longer satisfy visitor needs, or do not comply with concession or resource consents. Unwarranted commercial operations may undermine the tourism industry.

This is an important consideration, especially as one of the outcomes of the NZTS2015 (2010) is to provide a “world-class visitor experience” (p. 6). As noted by one of this study’s respondents:

“I thought this place was a protected nature reserve? – this is not f..... Disneyland!”

10. Introduce additional languages to all signs

Highlighted in previous studies (i.e. DoC, 2003) and prominent in this study, is the diversity of languages spoken by visitors. Signage (including educational and emergency) in additional languages (e.g. Asian languages) is an important consideration for visitor satisfaction and marine reserve regulation adherence.

11. Return GIMR to a Category Ia marine reserve

During peak summer months, GIMR transforms from a Category Ia MPA, a marine reserve which offers strict protection of all marine resources and limits human visitation, to almost a Category V MPA which strongly encourages human-nature interactions (Table 3). The impacts from these interactions and the egalitarian approach to visitor management are having detrimental affects on visitor satisfaction.

GIMR can be returned to a Category Ia marine reserve by restricting human visitation and prohibiting certain social activities, because they in opposition to marine environmental protection. For example, alcohol consumption could be banned, particularly as alcohol is a known factor in drowning and snorkelling fatality statistics (Avramidis et al, 2009; Edmonds, 1999). A 24-hour seasonal ban between the October and April would assist in keeping visitors safe and the environment clean. Smoking could also be restricted to areas away from the water and where visitors often congregate. Discarded beer cans and cigarette butts were found on the beach and rocks areas after visitors had left the site, which could eventually find their way into the water.

Birds play an important role in the marine ecosystem and could be incorporated into GIMR's education panels and interpretation programmes, particularly as the protection of native birds and plants are the second most important conservation activity in New Zealand (Arnold, 2004). Section 6.2.4.4 offers suggestions to incorporate the marine reserve's birdlife into the visitor experience.

12. Promote all of Auckland's marine reserves and introduce Great Marine Reserves

GIMR is promoted as a major Auckland tourist attraction, however, it has become a victim of its own success. As visitors are seemingly unaware of the other five marine reserves in Auckland, or of local MPAs such as the Hauraki Gulf Marine Park and the West Coast North Island Marine Mammal Sanctuary, it is suggested that the focus is taken off GIMR and onto the other MPAs.

Consideration could also be given to promoting New Zealand's coastal marine reserves as Great Marine Reserves, in the same vein as DoC's Great Walks are promoted (DoC, 2010c). Many of the Great Walks have regulatory management strategies to manage visitor pressures, such as entrance fees or booking systems, thus if suggestions offered in this thesis are implemented, there would be similarities which visitors may recognise as being necessary to protect special areas. A collection of Great Marine Reserves may also create advocacy for further coastal marine environment protection.

7.4 Establish Friends of Goat Island Marine Reserve (FOGI)

Many of the suggestions above may require additional funding or permanent staffing to operate effectively. Thus, a final suggestion is to establish a non-profit community conservation organisation of volunteers. In New Zealand and many places around the world, 'Friends of...' and 'Supporters of...' organisations are established to assist conservation managers with a variety of tasks, from landscaping and revenue collection to visitor education and research.

For example, the Friends of Fitzgerald Marine Reserve (FFMR), in Moss Beach, California, conduct guided tours of the intertidal environment and organise community events such as beach clean ups and family days (FFMR, 2010). Visitors to Tiritiri Matangi Island, a predator-free bird sanctuary island in the HGMP, are offered guided tours for a nominal fee to heighten the awareness of the island's conservation message (Supporters of Tiritiri Matangi, 2010), and in Wellington, the Friends of Taputeranga Marine Reserve have introduced a snorkel trail and produced brochures and a website to educate visitors about their marine environment (Friends of Taputeranga Marine Reserve, 2011).

A similar organisation, such as Friends of Goat Island (FOGI), could assist DoC with a multitude of tasks; the rocky shore can become a classroom at low-tide, visitation can be personally controlled and, by using technology such as underwater webcams, a dedicated website, maintained by the organisation, could offer a range of interesting and educational information.

DoC's new Destination Management Framework (DMF) (DoC, 2011a) suggest conservation managers engage more people in conservation and respond to visitors expectations in a more integrated manner. The establishment of a volunteer group, such as Friends of Goat Island (FOGI), would allow the local DoC office and its rangers to focus on their greater vision:

New Zealand is the greatest living space on Earth
Kāore he wāhi i tua atu i a Aotearoa, hei wahi noho i te ao
(DoC, n.d.a, Vision, role overview and statutory mandate)

7.5 Limitations of the study

This study focussed on several fine-weather days during the peak summer season, however, despite being representative of the time period and revealing some significant findings, they should be interpreted with caution. Visitation at GIMR during the remainder of the year is likely very different.

The self-reply questionnaire was conducted only in English and the researcher only spoke English. Results indicated 30 languages were spoken at GIMR, therefore some visitors may have been disadvantaged by this approach. Some of the answers may also be incorrectly answered as a result of not understanding the question.

Children under the age of 18 were not invited to participate in this study, thus their views are not represented. However, more than 50% of visitors travelled with their children, thus a study which also included their experiences at GIMR may have revealed a very different visitor profile.

The demographics of the researcher may have caused some visitors to modify their behaviour, as was noticed on a few occasions, such as when some visitors realised they were observed acting irresponsibly (i.e. littering, kicking the ducks, disturbing marinelife).

Respondents were not given the opportunity to join the study if they were not in one of the four research sites. The researcher had a sense that more men were in the water than women, which may have resulted in the gender skew towards more women in the study.

7.6 Suggestions for future research

This research is the first published empirical study of the sociological use of GIMR. As a result, many questions have been raised, giving opportunities for future research. The following are worthy areas for consideration for future research:

1. Conduct on-site visitor surveys;
 - in the off-season (i.e. outside of the peak summer days), in different languages and with children,
 - to determine scuba diver usage / displacement and how the 55+ age group uses the marine reserve,
 - to consider in-water satisfaction levels and experiences, as well as the role of children and their perspectives on marine conservation
 - using the RTS measurement, to allow for valid answers relevant to the visitor experience and so data can be compared with this study.
2. Study non-GIMR visitors to check awareness, interest level, if displaced, etc.
3. Conduct qualitative studies to reveal narratives, memorable experiences, grievances, etc.
4. Examine the value of establishing and promoting a 'Great Marine Reserves' brand.
5. Explore alternatives (including location, operational hours, safety) to the current glass bottom boat operations, particularly during the peak summer season.
6. Consider more careful management (restrictions, types, impacts) of commercial businesses and other organised or structured operations associated with the marine reserve in order to retain the site's natural and non-commercial nature.
7. Explore visitors' swimming and snorkelling abilities to determine skill level and to develop appropriate training and safety procedures.
8. Develop and test environmental interpretation and education programmes.

9. Explore the potential for the use of social media (eg. blog/webcam/Twitter/Facebook etc) to encourage visitor preparation, inform visitors of weather conditions, safety issues, visitor numbers, etc.
10. Explore the viability for separate walkway/cycleway from local campsites and bases in Leigh to GIMR to take pressure off vehicle traffic and parking.

7.7 A final word

Conservationists, such as Jacques Cousteau, David Attenborough, Sylvia Earle and others, have inspired people around the world to look more closely at our oceans and the impacts humans have on this resource.

Oceans are the birthplace of life, humans their protectors (Cattermole & Clark, 2005). Recently, New Zealand and several other countries, signed an agreement to protect Earth's marine environment by increasing the protection afforded to their territorial seas and EEZs (see section 2.1.2). Protection is, however, more than creating new MPAs or bestowing special areas with marine reserve status; it must also be about nurturing and guarding what is already protected, particularly those that some people take for granted.

Since its establishment, millions of visitors have explored GIMR (Table 6). It is New Zealand's oldest and most popular marine protected area, where marinelife has recovered to pre-exploitation status and where species are allowed to mature and procreate in abundance without fear of disturbance (Babcock et al, 1999; Ballantine & Gordon, 1979; McCrone, 2001).



Figure 38: Enderby, J. & T. (c. 2010).Eagleray (*Myliobatis tenuicaudatus*),Goat Island Marine Reserve, New Zealand [Photograph]. Reprinted with permission.

Also a natural wilderness area, it has the ability to change people's attitudes and inspire further marine protection. Yet because of excessive visitor numbers during the summer season, the numerous fatalities and near drownings in recent months and the lack of on-site interpretation, it is now in danger of transforming into what one respondent already suggests:

"just another beach".

Marine reserves are the National Parks of New Zealand's territorial sea and contain some of our most treasured wilderness areas (DoC, 2010a). GIMR's marine flora and fauna is likely as endemic and diverse as that found at the Fiordland National Park and its environment as interactive as that experienced in the Tongariro National Park (Figure 38 and 39).

GIMR is a role model for other marine reserves in New Zealand.

Action is needed now to more effectively manage its popularity and to halt its growth. As the "jewel in the crown" (Taylor & Buckenham, 2003, p. 17) of New Zealand's Great Marine Reserves...

...GIMR's legacy is a necessary obligation to our future generations.



Figure 39: Enderby, J. & T. (c. 2010). Yellow finger sponge (Callyspongia ramosa), Goat Island Marine Reserve, New Zealand [Photograph]. Reprinted with permission.

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GLOSSARY OF TERMS

Coastal waters:	oceanic waters along the shoreline, between the high tide mark and a few kms offshore
Empirical:	verifiable by observation or experience
Endemic:	regularly found in a certain area
Exclusive economic zone:	sea zone over which a state has special rights over the exploration and use
Indigenous biodiversity:	native or naturally found flora and fauna of an area
Iwi	(Māori) tribe
Kaitiakitanga:	(Māori) guardianship of natural resources
Mana-ā-kītanga:	(Māori) hospitality and respect between host and visitor
Marinelife:	any flora and fauna within the ocean
Marine protected area:	areas of the sea that have received protected area status
Marine reserve:	specially protected area of the sea where no disturbance of the ecosystem is permitted, including no fishing
Mass tourism:	large-scale tourism, typically associated with the 3S (sun, sand & sea) predominant in the 1960's and 1970's
Over-crowding:	too many people in an area beyond which is comfortable
Rangatiratanga	(Māori) control or sovereignty
Stakeholder:	independent parties or person with an interest or concern about something
Tangata whenua:	(Māori) indigenous people of New Zealand
Taonga	(Māori) natural treasures
Tourism New Zealand:	organization responsible for marketing New Zealand to the world, as a tourist destination

LIST OF ABBREVIATIONS

BPA	Benthic protected area
CBD	Convention of Biological Diversity
DLS	Department of Land and Survey
DMF	Destination Management Framework
DoC	Department of Conservation
EEZ	Exclusive economic zone
FFMR	Friends of Fitzgerald Marine Reserve
GIMR	Goat Island Marine Reserve
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
HGMP	Hauraki Gulf Marine Park
IBA	International Bird Area
IPRC	Injury Prevention Research Centre
IUCN	International Union for the Conservation of Nature
LAC	Limits of acceptable change
LRCCMP	Leigh Reserve Complex Conservation Management Plan
MPA	Marine protected area
NIMBY	Not-in-my-back-yard
NZTS	New Zealand Tourism Strategy
PISCO	Partnership for Interdisciplinary Studies of Coastal Oceans
PFD	Personal floatation device
SLSNZ	Surf Life-saving New Zealand
TDL	Travel destination loyalty
TNZ	Tourism New Zealand
TSG	Tourism Strategy Group
WSNZ	Water Safety New Zealand

APPENDICES

Appendix A: PARTICIPANT INFORMATION SHEET AND SELF-REPLY QUESTIONNAIRE

The following self-reply questionnaire appears as it was used during fieldwork at Goat Island Marine Reserve.

Participant Information Sheet

Self-reply questionnaire for visitors to Goat Island Marine Reserve.



Project Title: **The Characteristics and Experiences of Summer Visitors to**

Goat Island Marine Reserve

(formally named Cape Rodney - Okakari Point Marine Reserve,
but also known as Leigh Marine Reserve)

Date Information Sheet Produced: 06 December 2010

An Invitation

Dear Visitor

You are invited to participate in research being conducted by Sharon Race, Master of Philosophy student, who is supervised by Professor Mark Orams from the New Zealand Tourism Research Institute at AUT University. This research has the support of Department of Conservation, Auckland Council, Tourism Auckland, Leigh Marine Laboratory and local ixi.

Participation in this research is entirely voluntary and you will in no way be disadvantaged should you choose not to take part. Attached to this information sheet is a self-reply questionnaire. Answering the questions and completing this questionnaire should take you approximately 10-12 minutes.

Thank you for your willingness to consider this invitation.

Kind regards

Sharon Race

New Zealand Tourism Research Institute
AUT University, Auckland, New Zealand.

What is the purpose of this research?

This research is being conducted in order to get a better understanding of the characteristics and experiences of summer visitors to Goat Island Marine Reserve. The outcomes of this research will be used to complete a Master of Philosophy thesis and will also be of interest to the Department of Conservation, Auckland Council, Tourism Auckland and other stakeholders. Results will also be used in future academic publications and presentations.

How was I chosen for this invitation?

You have been identified as a visitor to Goat Island Marine Reserve. We are inviting visitors to the marine reserve to take part in the research by completing a written questionnaire.

What will happen in this research?

This study involves self-reply questionnaires which are administered to a sample of tourists visiting the beach at Goat Island Marine Reserve. We invite you to participate and to complete the attached questionnaire. This questionnaire focuses on your experiences, activities and satisfaction levels during your stay in this area.

Your contribution to this study is valuable as it will help give a visitor's perspective of tourism to this area.

What are the discomforts and risks?

All questions are optional, and you may choose not to answer some questions. All answers are confidential and your answers cannot be linked to your personal details. Your confidential responses are stored anonymously in a database. This database is kept confidential and is kept secure in my office at AUT University.

What are the benefits?

The research will help provide an understanding of the visitors to Goat Island Marine Reserve. It will provide an estimate of the value of this marine reserve for tourism and could provide an additional justification for marine protected areas around New Zealand. The findings will be presented in a written report which will be available online at www.nztri.org.

How will my privacy be protected?

Your name and signature will not be requested. Any other details and those of your companions will be confidential and not distributed to anyone other than me as the principle researcher. The results will only be presented in aggregate form and no individual will be identified in any of the publications relating to this research.

What are the costs of participating in this research?

There is no cost to participate in the research apart from approximately 10-12 minutes of your time.

What opportunity do I have to consider this invitation?

You may take as much time as you wish to consider the invitation to complete this questionnaire before accepting or declining to participate.

How do I agree to participate in this research?

To participate in this research, simply complete the questionnaire attached to this form. Your completion of the questionnaire gives me your consent to participate in this research.

Will I receive feedback on the results of this research?

The results of this research will be published in a written report that will be made available online at www.nztri.org by June 2011. Highlights from this research may also be presented in local media.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the project supervisor, Mark Orams: mark.orams@aut.ac.nz, phone +64 9 921 9999 ext 6410.

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTC, Madeline Banda, madeline.banda@aut.ac.nz +64 9 921 9999 ext 8044.

Who do I contact for further information about this research?

Researcher Contact Details: Sharon Race: email: sharon.race@aut.ac.nz ph: +64 9 921 9999 ext 6410

Project Supervisor Contact Details: Mark Orams: email: mark.orams@aut.ac.nz, ph: +64 9 921 9999 ext 6410

Approved by the Auckland University of Technology Ethics Committee on 8th May 2010. AUTC Reference number 10/88

**The Characteristics and Experiences of Summer Visitors to
Goat Island Marine Reserve.**

Self-reply Questionnaire

By completing this questionnaire you are indicating your consent to participate in this research.
Please answer all questions. Your answers are completely confidential. Thank you.

A) This first section asks you about your travel to and your stay in / near Goat Island Marine Reserve.

1. How long will you stay at Goat Island Marine Reserve/beach today?hours
If you are staying overnight in the local area, please name the place and location.....
2. Who did you travel with today? (please tick/check as many as apply)

<input type="checkbox"/> by myself	<input type="checkbox"/> with friends	<input type="checkbox"/> with partner/spouse
<input type="checkbox"/> with children	<input type="checkbox"/> school/student group	<input type="checkbox"/> with other family members
<input type="checkbox"/> organised group tour	<input type="checkbox"/> diving centre	<input type="checkbox"/> other (please specify).....
3. How many people are in the group you are travelling with? Adults.....Children (under 18).....
4. Where did you travel from today? City / Town.....If Auckland, what suburb?.....
5. How did you get here? (please tick/check one option only)

<input type="checkbox"/> private vehicle	<input type="checkbox"/> rental car
<input type="checkbox"/> bus/coach tour	<input type="checkbox"/> minibus/campervan
<input type="checkbox"/> walk from campsite	<input type="checkbox"/> other (please specify).....
6. What is the main purpose of your visit to Goat Island Marine Reserve today?.....
7. Have you visited Goat Island Marine Reserve before? ☐ yes ☐ no
If yes, how many times?..... Please state when you last visited: Month.....Year
8. Have you visited any other marine reserves/marine parks/marine protected areas in New Zealand or around the world?
☐ yes ☐ no ☐ not sure
If yes, please name the marine reserve /park/marine protected area(s) you visited (please also specify country)

9. How important is the opportunity to view the marine life (sea creatures, animals, plants, etc) at Goat Island Marine Reserve in your decision to visit the area today?

☐ not important at all
 ☐ limited importance
 ☐ neutral
 ☐ important
 ☐ extremely important
 ☐ not sure/ don't know

Why is this opportunity unimportant / important to you?

10. How did you find out about Goat Island Marine Reserve prior to your visit today? (please tick/check as many as apply)

☐ been here before
 ☐ word of mouth/ personal recommendation
 ☐ internet / website (please specify).....
☐ tourism office/site (please specify).....
☐ magazine / newspaper
☐ brochure/pamphlet (please specify).....
☐ diving / snorkeling centre (please specify).....
☐ overseas travel agent
☐ NZ travel agent
☐ did not find out about this marine reserve prior to visit
☐ other (please specify).....

B) This section asks you about your impressions and satisfaction with your experiences at Goat Island Marine Reserve.

1. Please indicate the activities you have undertaken (or will be undertaking) during your stay in Goat Island Marine Reserve today (tick/check as many as apply).

☐ swimming
 ☐ scuba
 ☐ snorkeling
 ☐ brought own kayak
☐ sunbathing
☐ sightseeing
☐ coastal walkway
☐ exploring rock pools
☐ relaxing
☐ surfing
☐ photography
☐ marea visit
☐ hire a kayak
☐ beach walk
☐ bird-watching
☐ windsurf
☐ swim to look at the fish
☐ glass-bottomed boat trip
☐ read signage about marine life
☐ playing on the beach

Other (please specify):

2. What was your favourite activity undertaken at Goat Island Marine Reserve today?

3. If you participated in snorkeling and/or diving activities here today, how was this activity undertaken?

☐ by myself
☐ tour (which company?).....

4. If you hired snorkeling and /or diving equipment today, where did you hire from?

5. Please rate your level of dissatisfaction / satisfaction with the following, using the scale below (please tick/circle one)

	Very dis- satisfied	Dis- satisfied	Neutral	Satisfied	Very satisfied	Not applicable/ Don't know
Numbers of people on the beach	1	2	3	4	5	na/dk
Parking	1	2	3	4	5	na/dk
Signage information (how well did the signage board, panels & pamphlets explain the marine life?)	1	2	3	4	5	na/dk
Road access to Goat Island Marine Reserve	1	2	3	4	5	na/dk
Snorkel / dive experience	1	2	3	4	5	na/dk
The marine life (sea creatures, animals and plants)	1	2	3	4	5	na/dk
Clarity of water	1	2	3	4	5	na/dk
Walkway from carpark to beach	1	2	3	4	5	na/dk
Birdlife	1	2	3	4	5	na/dk
Visitor facilities (picnic tables, toilet block, etc)	1	2	3	4	5	na/dk
Learning about marine life at Goat Island	1	2	3	4	5	na/dk
Cliff-top walking track (from above Leigh Marine Laboratory and to the east)	1	2	3	4	5	na/dk

6. Please explain the most important influence on your dissatisfaction / satisfaction with regard to your experience at Goat Island Marine Reserve today.

7. Do you plan to visit Goat Island Marine Reserve again? ☐ yes ☐ no ☐ not sure

If yes, when? If no, why not?

C) This section asks you about your knowledge of Goat Island Marine Reserve.

1. Is Goat Island Marine Reserve a "no take" marine reserve? ☐ yes ☐ no ☐ not sure

If yes, please explain how you know this?

2. How would you explain the meaning of "no take"?

3. The marine reserve you are visiting today is known by several names. Please indicate which name(s) you know this marine reserve by (please tick/check as many as apply)

☐ Goat Island Marine Reserve ☐ Leigh Marine Reserve
☐ Cape Rodney-Okakari Point Marine Reserve ☐ Other (please specify)

4. Who do you think has the responsibility for the management of Goat Island Marine Reserve?

5. Is feeding the fish at Goat Island Marine Reserve allowed? ☐ yes ☐ no ☐ not sure

D) This section asks you about yourself.

1. Please indicate whether you are male or female: ☐ male ☐ female
2. Please indicate your age group:
☐ 18-24 yrs ☐ 25-34 yrs ☐ 35-44 yrs ☐ 45-54 yrs ☐ 55-64 yrs ☐ 65 yrs +
3. If you have been / are snorkeling here today, please rate your ability / experience when snorkeling:
☐ ☐ ☐ ☐ ☐
First time Inexperienced Some experience Quite experienced Very experienced
snorkeling today (< 5 times before) (5-10 times) (>10 times) (many years experience,
>30 times)
4. If you went snorkeling today, please indicate the equipment you used:
☐ ☐ ☐ ☐ ☐
Mask and Mask, snorkel Wetsuit Life jacket or Not applicable
snorkel only and fins/flippers other floatation device
5. Please state your primary occupation (eg. student, accountant, retired, etc.):
6. Please indicate the highest educational qualification that you have obtained:
☐ High school ☐ Post school certificate / diploma ☐ University undergraduate
☐ University post-graduate qualification ☐ Other post high school qualification ☐ Other (please specify).....
degrees
7. Please indicate your total household annual income / NZ \$ (before tax)
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
20,000 or 20,001 - 40,001 - 60,001 - 80,001 - 100,001 - 150,001 - 200,001 - 200,001 +
less 40,000 60,000 80,000 100,000 150,000 200,000
8. In what country do you normally reside?
If New Zealand, which suburb / town?
9. What ethnic group do you belong to?
10. What is your first language?
11. Are you a member of an environmental and / or conservation organization? ☐ yes ☐ no
If yes, please specify:
12. Are there any other comments, criticisms or suggestions you wish to make about your visit to Goat Island Marine Reserve?

.....
Thank you very much for taking the time to complete this questionnaire.

Appendix B: ETHICS APPROVAL



MEMORANDUM Auckland University of Technology Ethics Committee (AUTC)

To: Mark Orams
From: Madeline Banda Executive Secretary, AUTC
Date: 14 May 2010
Subject: Ethics Application Number 10/98 The characteristics and experiences of visitors to Cape Rodney-Okakari Point Marine Reserve, New Zealand.

Dear Mark

I am pleased to advise that a subcommittee the Chair of the Auckland University of Technology Ethics Committee (AUTC) approved your ethics application at their meeting on 6 May 2010. This delegated approval is made in accordance with section 8.1 of AUTC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTC's meeting on 14 June 2010.

Your ethics application is approved for a period of three years until 6 May 2010.

The subcommittee commend you and the researcher on your response to section 5.7 of the application and for the level of consultation undertaken for this research. They considered the Questionnaire contents to be innocuous and therefore suggested deleting the first sentence in the Information Sheet section titled 'What are the discomforts...'; they felt it is adequate to simply advise participants that they do not have to answer any questions that make them uncomfortable.

I advise that as part of the ethics approval process, you are required to submit the following to AUTC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 6 May 2010;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics>. This report is to be submitted either when the approval expires on 6 May 2010 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTC is notified of any adverse events or if the research does not commence. AUTC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTC grants ethical approval only. If you require management approval from an Institution or organisation for your research, then you will need to make the arrangements necessary to obtain this. Also, if your research is undertaken within a jurisdiction outside New Zealand, you will need to make the arrangements necessary to meet the legal and ethical requirements that apply within that jurisdiction.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact Charles Griener, Ethics Coordinator, by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 8860.

On behalf of the AUTC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Madeline Banda'.

Madeline Banda
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: Sharon Race sharon.race@aut.ac.nz, AUTC Faculty Representative, Applied Humanities

From the desk of ...
Madeline Banda
Executive Secretary
AUTC

Private Bag 92008, Auckland 1142
New Zealand
E-mail: ethics@aut.ac.nz

Tel: 64 9 921 9999
ext. 8844
Fax: 64 9 921 9925
page 1 of 1

**Appendix C: QUOTATIONS REGARDING THE MOST IMPORTANT
INFLUENCES ON SATISFACTION OF THE GIMR
EXPERIENCE, PLUS OTHER COMMENTS AND
SUGGESTIONS**

Negative comments (or suggestions for improvement), from self-reply questionnaire:

It gets far too crowded to enjoy at weekends!

Need more space to sit on busy days

How many people are crammed onto this beach?

Proximity of their "base" to ours (people on beach)

Toilets should be closer to beach for children

I like the new picnic tables but too hot - no shade here! You should put them under the trees!

Disliked being run over by kayakers

"Boats and swimmers do not mix

Bottom toilets closed - why?

I like the signs to be in Chinese too, I don't understand all the words

The glass bottom boat comes far too close - they were almost above us when we looked at the caves.

No open toilets down by the beach

Number of swimmers close to boats with motors!

I have concerns about the speed the glass bottom boat travels around snorkels - feel it's too fast

Difficult to get my elderly parents to the beach and rocks

Glass bottom boat gets too close to divers / snorkelers. It stopped above us even though we had Alpha flag and nearly ran us over. People in boat thought it was great. I'm not a fucking tourist attraction!

Fix the bottom toilets!

Not enough picnic tables - more like these would be lovely

Tell glass bottom boat owner: no feeding allowed - that includes them!

More parking! but then I guess more people would come...

No signs to walking track??

Could do with a changing room closer to the beach & tables near the loading zone

Need somewhere to clean sand off our feet before we get to the top showers

Please can you make a bike stand - had to take my bike onto the beach/rocks

Beach is tight - there's lots of dead trees that could be removed for more space

Need information on boards about seabirds & their importance to the ecosystem

Need more learning activities and more information

Need a flagged buoy lane for the glass bottom boat

Glass bottom boat commentary focused too much on the snapper previously being fed and not enough on the benefits of a marine reserve (also not very interesting! Sorry)

Suggested separate entrance for divers so they don't knock people around in water!

I truly think admission fees should be asked to enter a marine reserve

Recommend people wear waterproof or protective footwear

Negative comments (or suggestions for improvement), from notebook:

Don't sell food! Ice creams are not needed here, this is a protected area

Put a P90 sign on here (the table) to ensure visitors have equal access to picnic tables

I think you should have a special lane for the boat; it's really scary standing here watching it so close to the snorkelers!

More info about laws surrounding the protection of the marine reserve

Can the ducks please be removed from this beach? They are not natural to NZ.

Seagulls and ducks were scavenging food and annoyed us all day

There's no birds, well, except the ducks!

Can we BBQ anywhere here?

Foot shower at bottom of stairs or top of path?

Need life guards or advisors on beach during peak times

Birds can be a nuisance, although we are more in their environment than they in ours

Diver entry point by the lab.

Wheel chair / pram access to beach required

Write "no take" in every language and make penalties much harsher

I'm surprised with the amount of people and great weather that there isn't a visible life guard service

Snorkel hire is expensive

We are disappointed because we came here especially for the glass

bottom boat – where is it today?.... there are no signs?

A tap is needed at the toilets / shower for feet washing

Can you please put a foot shower near the steps?

The council needs to pave the road from Pakiri

Suggestions: Children's snorkel tour & bush walks

Develop the way from the rock to right side will be needed for more safe & convenient walking

I'd like to go onto the island but the signs say we can't - why not short tours to see?

Positive comments (or suggestions for improvement), from self-reply questionnaire:

Lovely! I hope there are more marine reserves coming!

Keep as is!!!!

Maintain the reserve's natural environment

A lovely place to see fish up close even if it does get crowded.

There aren't many marine reserves you can drive to...

I love this place because of its beautiful and clean environment

If possible, every youngster in Auckland (at least) should have a "GIMR" experience

Would like to see marine reserve made bigger, more fish attracted

Once in the water, it was so awesome, we saw lots of fish and had so much fun!

Very clean in the marine reserve (water)

Seeing fish made the day worthwhile

Rockpools are really awesome

New toilet blocks look great although haven't used them yet

The better facilities make it easier each time

Noticed footpaths which weren't here before and they look great

Great safe spot for the children

Good clean toilets

Love the new picnic tables

Brought own snorkel gear, but hired kids outfits from beach hire guy, great!

A lovely place to spend the night while travelling around NZ

Parking has improved

Don't commercialise this place – it's lovely

Fantastic reserve and facilities

We come regularly and really enjoy it all

Information board to learn about marinelife is really impressive

Great that everything is free - parking, snorkeling, etc

Well organised facilities

Easy beach access

I truly think admission fees should be asked to enter a marine reserve

Recommend people wear waterproof or protective footwear to avoid cuts

There's a humungous fish down there, look!

Love the new picnic tables!

Water's nice and clear and the weather is perfect!

The weather is lovely - we wouldn't come if it was cold or raining

We come regularly when the weather's good and really enjoy it all

Positive comments (or suggestions for improvement), from notebook:

I'd love to have one of these on my doorstep for the kids to play in, it's really amazing

It was so awesome! I was just about to touch it when I thought of Steve Irwin! (stingray)

Oh my god, it's absolutely brilliant! I've never seen anything like it in my life! You can see so much - those blue fish just swim around ignoring you and there's loads of them!

Man that was lekker fun eh? We should have one of these - what you call it – marine reserve? - in Cape Town

Questions and comments directed to researcher:

Where is the rubbish bin?

Where is the glass bottom boat today?

What's the name of those birds (Pied Shag)?

Where is the walkway? Map is ambiguous.

Is there an information person to talk to?

Can I barbeque here?

There's no signs to show more parking so I parked on the yellow line – you're not going to ticket me are you?

I believe a snorkeller died here yesterday and some dive instructor got the bends. So is this place safe?

It's too rough to walk on these rocks, you need to make safer walkways for us

There's not as many fish by the water-edge this time, do you know why?

Where are the toilets?

Where is first aid station please?

How much does the glass bottom boat cost? Is it worth it?

What's the name of the fishes that we saw in there, it was the blue ones?

Where is the rubbish bin

First aid - cut leg

Are we allowed onto that island (Goat Island)? What's over there?

Are those cormorants (Pied Shag)?

Can I suggest you put a board up to show people how to snorkel? There's actually no signs up about that here.

Where does glass bottom boat go from?

What's the name of these black & white birds? They're so big and there's no info about them!

First aid - plaster

Silly there's no first aid here with all these rocks!

Where's the best place to snorkel?

What's the visibility like today?

I'm cold - where's the nearest coffee shop?

First aid - Panadol for headache

Why is that bird dead?

What's the water temperature?

Do the ducks bite? Can we feed them? Do they always live here?

(Sea rough, raining) so where to now? where's the closest coffee shop? What's the weather going to be like tomorrow?

What's that fucking monstrosity up there? That's not f..... Architecture. I'm an architect and that's a f..... eyesore! Who's the f..... Idiot that gave the consent for that? (Pointed to University of Auckland Visitor Centre)

How do you get these things to fit? (mask)

Do you know how do you get this fitting tight? The water keeps coming in! (mask)

What's that f..... Building up there? AUT - are you part of that? It's not in keeping with nature is it? Why does it have to be so big? (University of Auckland Visitor Centre)

First Aid -plaster for child's hand

Excuse me, can I park here? OK and where is the beach? Oh so far! You help me carry?

Is the tide going out now? Do you know how long till the rocks are exposed?

Why isn't the glass bottom boat coming today? (no signs, question asked 6 times, visitors cross)

What are those black and white birds? Are they cormorants? There's lots of information about the fish and the island but there's nothing about the birds, and they're so big!

Do we need gloves? Is there something we can hold on to down there? (elderly couple going snorkelling)

Can I park here?

Is this a no-smoking zone? It should be!

Where are the bins?

First Aid – sunstroke

Can we feed the ducks?

When's the high tide?

Is it always this crowded?

What's the point of protecting something when they're not there! This marine reserve isn't working, there were heaps more fish here 8 years ago.

First Aid - cut arm and legs from rocks

What's the name of blue fish? Where have they all gone?

There's lots of squid down there - really unusual to see them here!

(Researcher found a large crab under a rock and took pictures): Wow, what type is it?

Is that where it lives? Does it eat the fish? Will it come out?

Do you know where else we can park, this is ridiculous!

What happened to that lady? Is it still ok to go into the water? (near-drowning incident)

Concern for numbers of people in the water: get the lifeguards here before someone else dies

What time does this place close?

Do you know the name of the seaweed in this area?

I slipped on the rocks, they're quite slippery. Is there anyone here to help me?

Where is the big crab was that was under the rock yesterday? I saw it but it's gone!

How do we get these on without getting sand in them too? (fins)

Can you tell us where the coastal walk starts please? We can't see any signs anywhere.

Is there a changing room down here? Really, do I have to go all the way to the top?

OMG that's so ridiculous! (interrupted...) Actually there's a perfectly good building over there, the old DoC toilet - why don't you guys do that one up?

How do we get up there? (top car parks - signs blocked by vehicles)

Where do you buy the ice-creams?

Where do I park my campervan?

Is there a shower to clean my feet? That big one gets me all wet!

I'm from Poland. Where is the information centre?

First Aid - over heated

Why do we need fins? Not going far!

Why do the fish come here? Do we need to feed them?

Can we feed the fish?

Need changing rooms at beach especially for the kids

First aid – bee-sting

Oh my god, is that it? Is that Goat Island? How are we going to get across there, because I'm not swimming, you can forget about that!

Dad there's a humungous fish down there!.. Yeah, it's so neat! Come and look!

Fucking ducks! Piss off!

OMG they're doing research and taking photos today?! That's OK, they probably don't get much feedback. It's good to see DoC are doing their job, that's really neat.

It's so crowded down there. Yep safety in numbers! Besides if we miss something, someone else will point it out so we all win!

You should be able to feed them still eh? Then we'd be able to see them - yeah, like at Rainbow Springs, it's so cool when you can see them up close

It's nice to see the Fisheries Officers snorkelling out there today - yeah at least our rates are going somewhere good eh? Why don't they spread out? Maybe they're doing research?

Did you see that stingray - my god I just swam straight over it, it's fabulous!

Quick I found lots of starfish bring your box!...We're in a marine reserve dopey, you can't touch them!"

There's fuck all in there - you'd think they'd stock it up before the holidays. Ha ha,, yeah put the fishy nets up or something eh? Ha ha!!!

WOW do the fish really come this close? (Looking on information panel)

**Appendix D: EXAMPLES OF GOAT ISLAND MARINE RESERVE
PROMOTIONAL MATERIAL**



A place for study

The marine reserve plays a valuable educational and scientific role. It provides a place where natural and undisturbed marine environments and marine life can be studied.

The reserve protects a diversity of near-shore and reef-dwelling organisms in a clean, largely silt-free environment, which contrasts with much of the inner Hauraki Gulf.

Overlooking Goat Island is The University of Auckland's marine laboratory, a centre for the scientific study of marine life. A visitor centre will be open to the public by 2011.

If you come across any field or research equipment within the reserve please do not disturb it.

Snapper and diver. Photo: Tony and Jenny Enderby



Please remember

Visitors to the marine reserve are welcome and activities like swimming, snorkelling, scuba diving and picnicking are encouraged.

However, a number of other activities are prohibited or restricted to protect the marine life of the area. The following are offences under the Marine Reserves Act.

Fishing of any kind

Taking or disturbing any marine life, including shellfish and seaweeds.

Taking of any part of the sea floor including rocks and shells.

Feeding the fish as this disturbs their natural behaviour.

Exceeding five knots in a boat or on a jet ski within 200m of the mainland or Goat Island or a dive flag, or within 50m of a boat or person in the water, is an offence under the Maritime Transport Act.

Please place your rubbish in the bins provided near the toilet block.

Help protect penguins and other birds by leaving your dog at home.

Do not light fires anywhere in the reserve.

To obtain a map of the marine reserve with boundary coordinates visit the DOC website.

For more information or to report any offences contact:

Warkworth Area Office
28 Baxter St, Warkworth.
Ph 09-425 7812 (office hours)

DOC Visitors Centre

Ph 09-379 6476 fax 09-379 3609
email: aucklandvc@doc.govt.nz
website: www.doc.govt.nz

DOC HOTline
0800 362 468

Report any safety hazards or conservation emergencies
For fire and search and rescue call 111

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Danyil Torckler

Cape Rodney- Okakari Point (Goat Island) Marine Reserve

Hauraki Gulf Marine Park



Department of Conservation
Te Papa Atawhai

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EXPLORE

Cape Rodney - Okakari Point Marine Reserve (Goat Island Marine Reserve)

Article in Auckland

12 likes 0 comments



Cape Rodney rocks
By Peter Zurek on Flickr

Images

NEW ZEALAND 100% PURE

Article by
nowzeland.com

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So much more than a picnic at the beach, a day at Goat Island Marine Reserve is unforgettable.




Goat Island, the local name for Cape Rodney/Okakari Point Marine Reserve, was New Zealand's first marine reserve. It was established in 1975 and in less than 10 years it became a rich ecological area, teeming with fish and other sea life. Previously the area had been overfished, so this transformation illustrated the value of conservation.

Beneath the waves habitats range from rocky shores and sandflats to deep reefs, underwater cliffs and canyons. Each habitat has its own community of sea creatures.

The best way to experience the reserve and its inhabitants is to get into the water. With a mask and snorkel you can explore the sand and rocks close to shore while scuba divers can visit deeper areas further out. Divers need to be careful not to break off small fragile animals such as gorgonian fans, lace corals and sponges - some of these are hundreds of years old.

In shallow areas of the reserve, particularly off the main beach, you will see many varieties of fish and shellfish. At low tide you can explore the rocky shore, taking care not to disturb rock pool creatures.

Two coastal walkways leading from Goat Island Bay through coastal forest offer spectacular coastal views and quiet picnic spots. One walkway leads from the western end of the car park, the other from the driveway to the marine laboratory.






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Goat Island Dive & Snorkel - Leigh

Welcome to Goat Island Dive & Snorkel, Auckland's 5-Star PADI Dive resort offering everything from snorkel hire to try dive experiences to dive trips. We are situated just out of Leigh on the road to NZ's first fully protected marine reserve, Goat Island. Dive in with us!


SNORKEL and DIVE HIRE




We offer a range of good quality, well priced snorkel hire equipment for all ages, shapes and sizes. Dive in and pick up your snorkel hire equipment. We have everything you need to explore Goat Island and the Outer Gulf Islands in comfort. All equipment is regularly serviced and checked. Remember your certification card or log book.

GUIDED SNORKEL EXPERIENCE


For the first timers or those who prefer a guide to show you the hotspots in the marine reserve, book a Snorkel Experience led by our qualified PADI Divemasters.



[Click here to read more about snorkeling with Goat Island Dive & Snorkel.](#)



TRY DIVE EXPERIENCE



For those wanting to try scuba diving join a qualified PADI instructor on a Try Dive Experience. Choose from our 1/2 day beach dive or full day boat dive options.

WHAT'S UP

GOAT ISLAND CONDITIONS: Big swell, rolling in - conditions BAD for the rest of this week!

Find us on Facebook

Goat Island Dive & Snorkel

Goat Island Dive & Snorkel

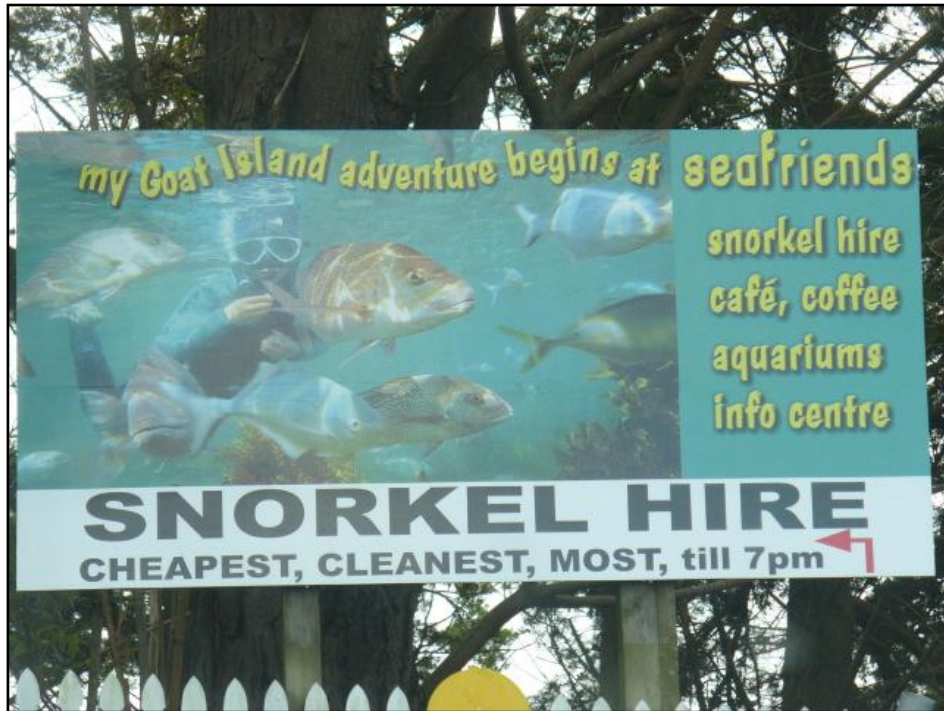
Summer tip #1 Journey down under the sea! Can you imagine swimming with the marine life as the summer warmth lures the water's surface? You can by booking any PADI Snorkel experience to win an \$80 mask snorkel set!

Find us on Facebook

Outer Gulf Charters


Outer Gulf Charters

Summer tip #1 Get an outer summer experience! Sunset sites are dropping.



GLASS BOTTOM BOAT

Goat Island Marine Reserve, Leigh, NZ



About Us

Trips & Prices

Marine Life

Links

Contact/Enquiries

Map

Visitor feedback

About Us

The Glass Bottom Boat, 'Aquador', runs trips at Goat Island Marine Reserve, world renowned for its abundant marine life. Goat Island Marine Reserve was the first marine reserve in New Zealand and has been protected for more than 35 years, situated just outside Leigh, a small coastal village, 80kms north of Auckland.


The Glass Bottom Boat, run by Christina and Ivan Blackwell has been operating safely for over 14 years and is fully surveyed to carry 49 passengers. Our purpose-designed and built 11-metre Glass Bottom Boat gives you the best possible view of the marine life both above and below the water. The two 5-metre long glass panels with seating all around have been specially designed to ensure a good view from all seats. The boat is boarded via an easy access ramp and allows safe and dry embarking and disembarking from the beach at Goat Island Marine Reserve, where you also get your ticket.

Parking is available in the Department of Conservation (DOC)'s car parks above the main beach, where there are toilets available. Tickets for the Glass Bottom Boat are purchased on the beach before departure or from the boat, depending on the day. On our popular trip **Around the Island** we show you fish, marine life, reef and caves. The commentary is educational and informative on all marine creatures seen during your tour in the marine reserve and surrounding area. Each trip is different and unique; you never know what marine life you will see.


Goat Island Marine Reserve or its proper name: 'Cape Rodney to Okakari Point Marine Reserve' was the first marine reserve established in New Zealand in 1975. It protects 547 hectares of sea and shore, spanning from Cape Rodney to Okakari Point, including the waters around Goat Island and 800m from shore. Goat Island Marine Reserve is run by DOC. Marine reserves are designated areas of sea and coastline, and are 'no-take' areas. *All marine life is protected and it is prohibited to take, kill or collect anything from the beach or water.* Take only photos, rubbish and memories. Leave only footprints. Now the marine life has been left to recover and flourish and fish life is back to what it used to be like before the area was fished-out and many varieties can be seen.

Leigh Marine Laboratory at Goat Island Marine Reserve is part of The University of Auckland. Scientists from all around the world attend Leigh Marine Laboratory to study Goat

Trips are subject to sea conditions – always ring us to confirm that the boat is operating! (09) 422 6334



Looking through the boat's glass



A snapper

Discover Goat Island



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Cape Rodney to Okakari Marine Reserve

New Zealand's first marine reserve, better known as Goat Island, was created in 1975 and officially opened in 1977. It covers 515 hectares of coastal sea between Cape Rodney and Okakari Point.

The best time to visit is when there is less than one metre swell on the east coast and no wind or offshore wind from the southwest. Visibility underwater is best during late summer when water is also warmest. After heavy rain, easterly swells and onshore winds visibility is usually reduced.

Facilities near the beach include toilets, changing rooms, cold shower, information kiosk and 5-minute loading zone. Shops, restaurants and accommodation in the area include several camping grounds. For further information see www.leighbythesea.co.nz

The Leigh coast has long been inhabited by Maori. The bay was known as Whakatuwhenua and the island as Motu Harewa. The coast was a prolific fish, shellfish and crayfish gathering area for local Maori.

In the 1940s large snapper were caught from the beach, and crayfish collected from rock pools by locals. They also removed large amounts of kelp that washed onto the beach after storms to use for fertilisers. By the 1950s and 1960s the marine life had been reduced due to fishing and collecting.

A marine laboratory was established by the University of Auckland to the east of the beach in 1964. Staff at the university had the idea of creating a protected piece of coast so that their studies of marine life would not be affected.

The marine reserve is ideal for children to experience snorkelling and see marine life in numbers not seen anywhere else on the coast.

For more information on New Zealand's marine reserves see the [Department of Conservation website](#).



Snapper



Goat Island beach



Red crab and prawn

Map

Goat Island Marine Reserve (officially Cape Rodney to Okakari Point Marine Reserve) is found at the far end of Goat Island Road, which is 5 minutes past the town centre of Leigh on the way to Paikoi.

Leigh is approximately 50kms north of Auckland, off State Highway 1 at Warkworth.

Find this location using [Google maps](#)






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Welcome to Leigh by the sea

To find out more about Goat Island watch this short video on the [Department of Conservation's website](#). Also check out [Steve Hathaways website](#) - which features some NZ underwater footage with some from the Goat Island Marine Reserve.

To get to Leigh, turn off State Highway One at Warkworth and follow the signs to the **Goat Island Marine Reserve**, passing through the Matakana Valley and its vineyards and Saturday morning markets. The road winds its way to Whangateau Harbour, climbs over a hill with magnificent views of Little Barrier Island and into the village of Leigh.

Snorkel or scuba dive off the beach or just watch the fish from the rocky shore or from the **Glass Bottom Boat** at Goat Island. Having been protected for over 35 years, this marine reserve has snapper, blue maomao and a dozen other species of fish close to shore. Dive and snorkelling gear can be hired locally.

Also near Goat Island is the University of Auckland's Leigh Marine Laboratory. Their new **MARINE DISCOVERY CENTRE- Edith Winstone Blackwell Interpretive Centre** is open to visitors (Check their website for opening days and hours). Marine science displays, videos and touch tanks.

Famous for Goat Island





Leigh Wharf

Pretty Leigh Harbour, home to a fleet of commercial fishing boats, is the access to other **diving and fishing** spots around the islands of the Hauraki Gulf and has a wharf and concrete boat ramp. In addition there is good diving at Leigh Reef, Matheson Bay, Ti Point and Tawharanui.

During an easterly swell with an offshore wind **surfers** head to Daniel's Reef, Tawharanui, Goat Island, Omaha or Pakiri. Walkways extend east and west along the coast above the marine reserve. Leigh Harbour Walkway passes the boat ramp and historic Jolly Fisherman's Lodge. A Clifftop Walkway meanders around the coast giving fantastic views and finishing at Matheson Bay where a bush walk follows the stream to Leigh Road. At Ti Point the track follows the coastline under the shade of large pohutukawa trees. Within easy driving are the beaches of Pakiri, Matheson Bay, Omaha and Tawharanui and the regional parks at Pakiri, Tawharanui, Mahurangi and Soandrett.

Bird life includes kaka – a native parrot, bellbirds, tui and kereru. There are even a few kookaburras. Little blue penguins feed around the coast during the day and come ashore at night. Australasian gannets, pied shags and oyster catchers are common. Bottlenose dolphins and orca are often seen close to shore while common dolphins and Bryde's whales are usually further out.



Whangateau Harbour



Snapper at Goat Island

Stay a little longer in one of the **accommodations** in the area with something to suit all budgets. There are camping grounds at Pakiri, Goat Island and Whangateau, a variety of bed and breakfast establishments, and self-contained accommodations including the Leigh Motel. The **Sawmill Café's** food and gigs are legendary. Other restaurants in town are the Portside Cafe and Seafriends Cafe or enjoy takeaway fish and chips.