Utilising the human dimensions of wildlife management approach to initiate an understanding of the ways in which New Zealanders value wildlife in Aotearoa, New Zealand.

By

Sarah Cowie
BSocSc (Hons)

Department of Geography

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Declaration

I certify that the thesis entitled: **Utilising the human dimensions of wildlife management approach to initiate an understanding of the ways in which New Zealanders value wildlife in Aotearoa, New Zealand.**

Submitted for the degree of: **Masters of Social Sciences**

is the result of my own research, except where otherwise acknowledged, and that this thesis, either in whole or in part, has not been submitted for an award or higher degree to any other university or institution.

Sarah Cowie

Date:

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Abstract

This study was instigated by the lack of human dimensions research undertaken in New Zealand, and seeks to investigate the knowledge and values New Zealanders hold about New Zealand wildlife within three distinct groups of the New Zealand public. These groups were the Royal Forest and Bird Society of New Zealand Inc, the New Zealand Ecological Society (Inc.), and the New Zealand Deerstalkers Association. A questionnaire administered via Association list-serv's was utilised and a total of 52 questionnaires were completed by members of the three stakeholder groups. These were then analysed to investigate the values and knowledge New Zealanders hold toward wildlife in New Zealand.

The findings of this study suggest that New Zealander's hold strong utilitarian and negativistic values toward wildlife while the humanistic, moralistic, and naturalistic values were expressed by the majority of respondents. This result could be due to the high level of respondents who were from the New Zealand Deerstalkers Association. Conversely, whiled the data suggests that New Zealander's hold the ecologistic/scientific value only weakly, overall they have a high level of factual knowledge about wildlife. Because of this, it may be suggested that wildlife managers should generate education programmes that specifically address the negativistic value by making them imaginative and interesting.

Demographic factors were found to be influential in the ways in which New Zealander's value wildlife and the knowledge they hold although these were not as significant as indicated by studies undertaken in other countries. The lowest levels of knowledge were shown by respondents who were over 60 years of age; and higher income levels corresponded with the negativistic value being held more highly.

Several areas of this study showed transgressions from other studies undertaken overseas. Unlike other studies, which suggested that females hold the naturalistic value more strongly than males, this study showed that both males and females held the naturalistic value only weakly. This indicates that findings from studies conducted overseas may not be transferable to the New Zealand situation and therefore, for New Zealand managers to effectively incorporate human dimensions information in decision-making processes, human dimensions research must be undertaken in the New Zealand context. Furthermore, wildlife managers should not make assumptions based on other studies and communities as these can lead to ineffective communication and implementation of wildlife management policies and education programmes.

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Chapter 1

Introduction

1.1 Human Dimensions of Wildlife Management

Since the early twentieth century wildlife managers have recognised the importance and influence of human values and behaviours in regard to wildlife, yet the field of human dimensions of wildlife management is relatively new. Thus, in the United States of America (United States), where the modern study of human dimensions originated and is most widely adopted, human dimensions of wildlife management was not applied to wildlife and wildlife habitat management until the late 1960's, while recognition of this approach by wildlife managers and wildlife agencies was even more recent (Conover, 2002; Decker, Brown & Siemer, 2001a; Enck & Decker, 1997; Manfredo, Vaske, & Sikorowski, 1996; Manfredo, Vaske & Teal, 2003). Human dimensions of wildlife management in the United States emerged from growing public concern over the way human populations transformed former wilderness areas and wildlife habitats into farmland, encroached on native habitats through increased accessibility and recreational opportunities, and facilitated the fragmentation of wildlife habitats making them too small to support viable wildlife populations. These transformations and encroachments led to increased human/wildlife interactions (Conover 2002; Decker, Brown & Siemer, 2001a; Koval & Mertig, 2004).

While many of the same problems of farmland conversion and habitat fragmentation as experienced in the United States exist in New Zealand, very little human dimensions research has been carried out in New Zealand. Research into greater understanding of stakeholders' values and attitudes would be of benefit to New Zealand wildlife managers wanting to provide management plans that

adequately consider the diverse range of stakeholders with an interest in New Zealand's wildlife and natural environment. The high profile of conservation groups in New Zealand, such as New Zealand Forest and Bird (New Zealand Forest and Bird Protection Society, 2004), and the political initiatives of the Green Party of Aoteoroa New Zealand (Green Party of Aoteoroa New Zealand, 2005), suggest that human dimensions of wildlife management has the potential to make a valuable contribution toward existing wildlife management strategies in New Zealand.

1.2 Study Aims and Objectives

The aim of this research is to initiate an understanding of the applicability of human dimensions of wildlife management to the management of introduced and native animal species in New Zealand. In working toward this understanding this research will consider human values, particularly the ways in which New Zealanders value wildlife, and how such values may inform human dimensions-based wildlife management. In working towards forming an understanding of the values New Zealanders hold toward wildlife in New Zealand and how this understanding can be used to inform the human dimensions approach, this research will consider the ways in which New Zealanders, since European influence, have historically behaved toward wildlife and wildlife habitats. This historical perspective provides a foundation for consideration of current behaviour and attitudes, understanding of connections between knowledge of wildlife and values associated with wildlife, and evidence of linkages between demographics and wildlife values.

> Understanding the philosophical and experiential foundations of society's interest in wildlife can help one appreciate how human-wildlife interactions and human values have shaped wildlife management. Historical insight may be essential to interpreting current situations where segments of society hold different values and the interplay between them create challenges for wildlife managers (Decker, Brown & Siemer, 2001a, p.4).

1.3 Thesis Approach

The first chapter of the thesis introduces the reader to the research and a context is provided within which the research was undertaken. Chapter two offers a brief history of New Zealand wildlife and wildlife management. An understanding of New Zealand's historical background both in regard to wildlife management and in regard to New Zealand's colonial history is important when trying to understand contemporary attitudes and values held by New Zealanders in regard to wildlife and its habitat. New Zealand's isolation geographically from other countries, and its relative youth in terms of human settlement, means human-environment and human wildlife interactions have not developed over a long period of time as with countries such as those in Britain and Europe. This understanding allows us to form a fairly accurate picture of the ecological changes that have occurred since settlement, and the accompanying values and attitudes that have influenced the ways in which New Zealand has been developed and exploited (Fraser, 2001; Wodzicki, 1950). Through this understanding it is possible to trace the various influences that have underpinned wildlife valuations. These influences include colonialism, and accompanying utilitarianism and dominionistic values, as well as symbolism, preservationist values, aesthetic, and scientific values.

Chapter three outlines the human dimensions of wildlife management approach, the different theories upon which it draws, and its relevance to New Zealand. The foundations of human dimensions encompasses ideas drawn from several behavioural science disciplines, including economics, psychology, and geography (Manfredo, Vaske & Sikorowski, 1996). Within these disciplines human dimensions of wildlife management draws most significantly on cognitive and motivational theories, as developed by psychologists, and economic value theory.

In chapter four the research focus is outlined and the methodology of the research is discussed and explained. Chapter five offers an analysis of the research and specifically addresses the study aims and objectives. The values and knowledge of wildlife held by New Zealanders is discussed including the way demographic

factors influence the way New Zealanders value wildlife and the knowledge they have. Demographic influences include gender, geographic location, age, education, and income. Chapter six considers the conclusions of the study and the implications these present for wildlife management and potential directions for future research.

Chapter 2

Context

2.1 Introduction

This chapter gives a brief overview of the history of wildlife management in New Zealand, from the coming of the Maori to New Zealand, early European settlement and subsequent colonisation, through to present day. By presenting this information it is possible to get an understanding of the historic influences that underpin values and attitudes currently held by New Zealanders.

2.2 Early Wildlife and Wildlife Management in New Zealand

Wildlife management can be considered to have started very early in the settlement history of New Zealand if purposeful introductions of species for the provision of food are taken into account. Floral and faunal introductions of species into New Zealand started as early as the first occupations by the Maori and included the Polynesian rat (*Rattus exulans)* and dog (King, 1990; King, 2003; McDowall[1], 1994). First introductions of pig (*Sus scrofa*), goat (*Capra hircus*) and sheep (*Ovis aries*), made with the intention of providing a meat source for subsequent voyages, are attributed to Captain Cook in 1773 and 1777. There is however, some suggestion that Jean de Surville, a French explorer, may have left pigs here in 1769 (Daniel & Baker, 1986). Captain Cook is also considered by historians to be responsible for the introduction of the Ship rat (*Rattus rattus*) in the 1770's, although the later arrival of whalers and sealers would have boosted numbers

[1] Two authors, R.M. McDowall (1994), and R. Galbreath (1993), are drawn on extensively throughout this chapter, being two of the few writers in regard to wildlife management in New Zealand.

significantly, with such rat-infested ships supplementing numbers of Ship rats with the Norway rat (*Rattus norvegicus*) and the mouse (*Mus musculus*) (Daniel & Baker, 1986; Wodzicki, 1950).

Introductions into New Zealand sped up immensely with the coming of British colonials. Colonial New Zealand was seen as a potential "Britain of the South" (Galbreath, 1993, p.1), or "neo-Europe" (King, 2003, p.195), a country to be bent and moulded to the desires of those who settled here and the interests of those who ruled from afar. It was regarded by settlers as a country with inferior native species, desperately in need of game animals and 'homeland' plants, a "desolate waste, waiting to be turned into prosperous farms" that would overflow with introduced species (Galbreath, 1993, p.1). In addition to identifying necessary advantages of introducing familiar species to assuage the pangs of homesickness and for sentimental reasons, European settlers also promoted the suitability of New Zealand for game species (Wodzicki, 1950). For example, in 1857 the English settler Charles Hursthouse commented that "New Zealand should swarm with game" (McDowell, 1994, p.6) and suggested that introductions of red and fallow deer, magpies (*Gymnorhina tibicen* sp.), rabbits (*Oryctolagus cuniculus)*, and other animals should be undertaken as soon as possible. Similarly, H.W Nesfield, an explorer of the time, believed New Zealand rivers and streams were designed by nature for salmon and trout, while Richard Henry, a bird conservationist, suggested that Mount Te Anau would look more beautiful if ibex, chamois or big-horns were visible (McDowall, 1994). In populating New Zealand with game species, Hursthouse and Nesfield were drawing on the widely held belief that New Zealand was a rural arcadia that had the potential to provide for an egalitarian styled society where 'common' settlers would have opportunities and advantages similar to those of the upper classes in Britain. Being able to hunt for game without fear of reprisal was seen by settlers as a way of unifying the colonials without the class barriers that existed in Britain (Galbreath, 1993; McDowall, 1994; Waitangi Tribunal, 2006; Young, 2004).

Initially many introductions and importations were made by either individuals or small groups who had sufficient funds. Introductions tended to be haphazard, given little forethought (McDowall, 1994). As there were no statutory constraints or requirements it was perhaps fortunate that in the 1840s and 1850s some introduced species were either one of a species or several of the same sex. Calls for introductions to become "organised and carefully considered" (McDowall, 1994, p.16) led to the institution of laws and regulations, including various animal protection acts, which gave "statutory protection to a list of European game species which had been, or might yet be introduced" (Galbreath, 1993, 2). For example, the Public Domain Act 1860 gave some protection to imported birds by prohibiting shooting or trapping of any bird or animal on a public domain, while the first Protection of Certain Animals Act 1861 "decreed that no Deer of any kind, Hare, Swan, Partridge, English Plover, Rook, Starling, Thrush or Blackbird could be shot for the rest of the decade" (Ministry for the Environment, 2006). The purpose of this legislation was to "encourage the importation of these animals and birds, not native to New Zealand which could contribute to the pleasure and profit of the inhabitants, when they became acclimatized and spread over the country in sufficient numbers" (Wodzicki, 1950, p.6). Later examples of these 'protective' Acts were the Bird Protection Act of 1865 and the Salmon and Trout Act of 1867. The Bird Protection Act 1865 prohibited the importation of animals that were considered to be potentially problematic, but also offered limited protection, for the sole purpose of retaining game stocks, to kereru (*Hemiphaga novaeseelandiae*) and the seven species of duck native to New Zealand (McDowall, 1994). This Act also encouraged the introduction of various passerine bird species which "would contribute greatly to the pleasure of the settlers of New Zealand and help to keep up those associations with the Old Country which it was desirable should be maintained" (Wodzicki, 1950, p.6). The Salmon and Trout Act 1867 protected the salmon and trout species which were about to be introduced, and regulated sporting fish and freshwater fishing (Galbreath, 1993).

Beginning in the 1860s, the introduction of new species into New Zealand was also influenced by acclimatisation societies. Acclimatisation societies were established to promote and organise the introduction of desirable plants and animals with a view to augment the limited species already available, and to introduce, acclimatise, and domesticate familiar species from home and 'desirable' species from other countries. These 'public' organisations were influenced by the establishment of acclimatisation societies in London and Paris. In following the example of the European societies, the New Zealand acclimatisation society aimed to introduce and establish new species in New Zealand. The New Zealand societies were semi-private bodies of "high social importance in the colony" largely formed by "[a]ctual or potential Premiers, Cabinet Ministers, members of Parliament and of the Legislative Council, Superintendents of Provincial Councils, and eminent scientists" (McDowall, 1994, p.18). While initially patronized by people primarily "interested in the importation and acclimatisation of animals and plants" (McDowall, 1994, p.75), these public organisations soon consisted largely of hunters and anglers[2].

While the societies lacked statutory foundations or power they did provide more orderly organisation to the arrival of new species being brought into the country. The Protection of Animals Act 1867 provided encouragement to acclimatisation societies by giving them statutory recognition (Harris, 2002), with the Colonial Secretary overseeing their activities [3] (Galbreath, 1993; McDowall, 1994). 'Overseeing' largely involved clerical administration such as registering acclimatisation societies, gazetting hunting season notices and other matters relating to the Protection of Animals Act 1867. Legal statutes controlling imports of 'alien

[2] The positions and interests of those involved in acclimatisation societies in New Zealand ensured there were few, if any, female members, until the mid 1980s when the societies were close to being wound up (McDowall, 1994). This is important because it suggests that while colonials were eager to shrug off the notions of the British class system, they were, as yet, not prepared to allow women to enter male dominated hunting and fishing arenas.

[3] Until they disbanded in the 1990's, acclimatisation societies remained within the auspices of the Colonial Secretary's Office and, later, its successor, the Department of Internal Affairs. In 1987 their functions were assumed by the Department of Conservation.

species' were not introduced until the Protection of Animals Amendment Act 1895; until this time acclimatisation societies were able to import any species they so desired. When provincial governments were abolished in 1876 and a central government was formed in its place, the Agent-General in London became an active importer of species for distribution to acclimatisation societies. Records of these societies were often lost or poorly kept, which means details of early introductions and animal releases are missing.

It is suggested by McDowall (1994) that despite the fact that the supposed intention of the acclimatisation societies was to introduce useful and practical species there was a definite bias toward species suitable for hunting and fishing. The avowed goal for the acclimatisation societies was to offer "easy opportunities for all people to pursue these prized quarries with little or no constraint either as regards opportunity for access to hunting and fishing or the cost for doing so" (McDowall, 1994, p.26). As such, acclimatisation societies quickly narrowed their focus to mammals, birds and fish for recreational hunting and fishing (McDowall, 1994). This included diverse deer species, pheasants (*Phasianus colchicus*), Canada geese (*Branta canadensis)*, brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), and Atlantic (*Salmo salar*) and quinnat salmon (*Salmo* sp.), and further stocks of possum (*Trichosurus vulpecula*) from Australia (McDowall, 1994). The impact many of these introduced animals and plants were to have on New Zealand were rarely considered. While acclimatisation societies were responsible for the introduction and establishment of large numbers of exotic species they were not wholly responsible for many species that eventually became problematic.

Predator control was introduced in 1866 as a means of protecting newly established introduced species populations. Such control began via a nation-wide bounty placed on harrier hawks (*Circus approximans*) and kingfishers (*Halcyon sancta*). Also encouraged was the destruction of eels, both longfinned (*Anguilla dieffenbachia)* and shortfinned (*Anguilla* australis), shags (*Phalacrocorax* sp.), wekas (*Gallirallus australis*), moreporks (*Ninox novaeseelandiae*) and, at times, seagulls (*Larus* sp.)

and herons (*Egretta* sp.*)* (McDowall, 1994). Soon after 1866 it was recognised by acclimatisation societies that other carnivorous species were also causing problems, and largely introduced species such as feral cats (*Felis catus*), rats, hedgehogs (*Erinaceus europaeus*), and magpies were added to the control manifests. Canada geese and hares (*Lepus europaeus)* were also included in the 'vermin' list due to the threat they posed in regard to the loss of game-bird habitat.

The Protection of Animals Act 1867 distinguished between the categories of 'game' and 'native game', with imported game being allocated property rights. This 'property' was then vested in acclimatisation societies to allow them to legally charge for hunting licences as a way of recouping the high costs of the importation of 'game' species. In regulating game hunting and game animals the Protection of Animals Act 1867 gave law-enforcers the power to prohibit destruction of indigenous birds. This provision was, however, rarely if ever used; early attempts at protection of native birds were largely utilitarian and aimed at conserving native game birds such as the kereru and godwit (*Limosa lapponica*), or encouraging insect eating birds to help control garden and orchard pests (Galbreath, 1993). Furthermore, as these birds were considered native 'game' they came under the sections of the Act in relation to hunting regulations. From 1886 the Act was revised and iconic native birds such as the tui (*Prosthemadera novaeseelandiae*), kiwi (*Apteryx* sp.) and the huia (*Heteralocha acutirostris*) became the first species to be given full legislative protection. Despite the idealist egalitarian vision proposed by early immigrants for New Zealand, hunting and angling were still considered sports for gentry and later amendments to the Protection of Animals Act 1867 created a system of game law that largely excluded working people from the hunting of acclimatised game; hunters were required to pay a licence fee of £5, and were not allowed to hunt on a Sunday (the workers only day off) (Harris, 2002).

2.3 Growing Awareness of Impacts to Native Biota

By the 1870s, there was increasing public awareness of the impact introduced species were having on native biota. Many settlers saw this as inevitable and, in regard to continued introductions, those responsible still "had little regard for what they were doing" (McDowall, 1994, p.25).

> Such facts as the steady disappearance of the native forest and the constantly dwindling number of native species led even intelligent people to believe that the destruction of the original New Zealand flora and fauna was *inevitable* and that it must be replaced by one resembling Europe. People strongly believed that native birds *must* become extinct and that their habitat, the native bush *must* disappear and be replaced by European cultural vegetation (Wodzicki, 1950, p.6, emphasis in original).

Despite the continued push for acclimatization, some passerine species such as sparrows (*Prunella modularis*), whose prolific growth was addressed by poisoning under the provisions of the Small Birds Nuisance Act 1882, and rabbits, were beginning to be seen as potentially problematic for farmers (Ministry for the Environment, 2006). The Rabbit Nuisance Act 1876 allowed for the introduction of ferrets (*Mustela putorius*), stoats (*Mustela ermiea*) and weasels (*Mustela nivalis*) as a means of controlling these rabbit pests but this would prove to have "a profound effect on the animal life of the Dominion" (Wodzicki, 1950, p.7). Given the expressed 'inevitable' impact of introduced species it is somewhat surprising that by 1888 some acclimatisation society members were expressing concern over introductions of vermin and noxious animals. This concern was the catalyst for the early 1890s movement of acclimatisation societies away from the role of introducing new fish and game species toward the role of management and administration of those species that had already been introduced and established. The acclimatisation of new species continued under the auspices of government agencies.

Where once native species were considered inferior to European species, during the 1890s settlers "were beginning to develop an attachment to those of their new country" (Galbreath, 1994, p.3) and there was increased "interest in the native bush, which had previously been regarded as little more than an impediment to progress which should have been cleared away as quickly as possible" (Galbreath, 1994, p.4). Thus, in 1892 the Reverand P.Walsh wrote of his concern over the impact browsing animals were having on native flora (Galbreath, 1993; Harris, 2002; McDowall, 1994).

Reverand Walsh believed that New Zealand bush species, being only found in New Zealand, were not adapted to withstand introduced grazing and browsing species such as deer. With over 40 percent of the population of New Zealand living in urban areas at this time, Walsh expressed an increasingly popular urban sentiment when he wrote that deer may well cause the destruction of "the glory of his country and the birthright of the community at large" (quoted in Galbreath, 1994, p.4). Despite the growing urban population, rural ideologies remained dominant and Walsh's comments, particularly in regard to the threat of deer, were largely ignored.

> Although national sentiment about preserving native birds and native bush was growing, the colonialist's imperative to clear the land and acclimatise the things of the old homeland had not lost its force. In 1913 a Royal Commission enunciated the 'broad principle that no forest land . . . which is suitable for farm land, shall be permitted to remain under forest'. Some exceptions were allowed for scenic reserves, but this general view, expressed more colloquially as 'one blade of grass is worth two trees', was long to remain dominant in new Zealand policy and practice (Galbreath, 1993, p.5).

Even early twentieth century commentators such as Dugald Popplewell, Richard Henry and Henry von Haast, who were critical of continued introductions and were worried about the impact on native birds of such animals as the introduced ferret, stoat and weasel, expressed very little concern about the affect of introduced browsing animals on native flora. In fact, many people believed that introduced browsing species were merely replacing the, by then extinct, moa in terms of native flora destruction (Galbreath, 1993).

2.4 The Emergence of Conservation Pressure Groups

Interest in preserving native birds and bush increased in the second decade of the twentieth century with the emergence of conservation pressure groups. The original Forest and Bird Protection Society, which existed for only six years, was formed in 1914. In 1921-22 the Native Bird Protection Society, a conservationist lobby group advocating a "more effective and efficient administration of protection and control of our bird and animal life" (Galbreath, 1993, p.31) and "unity of control of all wild life" (Galbreath, 1993, p.32) was established by Sir Thomas Mackenzie and G.M. Thomson, both of whom were influential politicians and conservationists. They had tried, through Parliament, to transfer some traditional 'game' species such as paradise duck (*Tadorna vaiegata*) and pukeko (*Porphyrio porphyrio*), to the Act's schedule of 'protected' species but had failed and therefore looked outside Parliament for assistance (Galbreath, 1993). In 1921, as a result of lobbying by this group, the Animals Protection Act was revised and renamed the Animals Protection and Game Act 1921-22. This Act extended the 'animals absolutely protected' category to include almost every native bird except pests such as kea (*Nestor notabilis*) and hawks, and 'native game' species. 'Native game' species became licensed and controlled in the same way as the hunting of acclimatised game species.

In 1934 the Native Bird Protection Society took over the New Zealand Forest and Bird Society name; this renaming was not formalised until 1948. The founding of the Native Bird Protection Society brought the American term 'wildlife' into widespread use in New Zealand; it was used to describe all mammals and birds

"living in a wild state, protected or game, native or introduced" (Galbreath, 1993, p.14). The National Bird Protection Society was actively involved in conservation measures, being vocal in its criticism of programmes undertaken by the Department of Internal Affairs[4]. For example, in 1927 it was highly critical of efforts to transfer native birds to island reserves, arguing that not only were South Island species being transferred to North Island reserves but that no consideration was being made in regard to possible hybridisation of species. These complaints led to transfers being halted and all significant conservation work being deferred until 1936 when a pig eradication programme, established to help protect the rare Buller's shearwater (*Puffinus bulleri*), was undertaken on Aorangi Island. The Royal Albatross (*Diomedea epomophora*) protection programme that was being carried out on Taiaroa Head, and all other conservation work was brought to a halt in 1939, the year New Zealand entered World War II.

The call for control of deer species by conservationists in the 1920's was a reflection of changing attitudes in New Zealand toward native bush and birds. Attitudes toward deer, however, were considered to be "complex and contradictory" (Galbreath, 1993, p.16) with the New Zealand Tourist Department promoting New Zealand as a 'sports-man's' paradise while others argued that acclimatised wildlife was out of place (Galbreath, 1993; McDowall, 1994).

> Against the acclimatisation societies' view of deer as noble beasts and a national asset providing sport second to none, farmers and conservation groups painted a grim picture of hordes of introduced pests causing ruined crops, devastated forest and disastrous erosion, thus threatening not only the native bush and bird-life but the whole economy of the country (Galbreath, 1993, p.16).

[4] In November 1907, when New Zealand was declared a dominion rather than a colony, the Colonial Secretaries office became the Department of Internal Affairs. In relation to wildlife, the Department of Internal Affairs were responsible for the continued administration of the Protection of Animals Act 1867.

Support for deer control measures came from an unexpected quarter – the acclimatisation societies. Their interest was, however, largely in response to the realisation that the increased numbers had caused the condition of the animals to deteriorate and trophy heads had become less available (Galbreath, 1993). In 1923, in response to increased pressure from the public to do something about increased deer numbers, the Department of Internal Affairs hosted a conference on the 'deer menace'. After the conference the Department of Internal Affairs resolved to become being more involved in deer control (McDowall, 1994), a decision which took the form of paying hunters one shilling per deer that was culled. This initiative did little to significantly reduce deer numbers, so acclimatisation societies took it on themselves to become involved in culling programmes (McDowall, 1994).

A second conference on the 'Deer Menace' was in May 1930. Attended by representatives of the Department of Internal Affairs, the Forest Service, and various other interested Government departments, as well as 34 delegates representing outside groups, the conference sessions ignored wider issues of wildlife management in favour of considering what steps were required in relation to control of the burgeoning deer population (Galbreath, 1993; Harris, 2002). As a direct outcome of the conference, deer destruction began through both the Forest Service (October 1930) and the Department of Internal Affairs (November 1930). In April 1931, after Governmental consideration of economic conditions, the Department of Internal Affairs was given sole responsibility for culling operations and the Forest Service scheme was halted. Deer destruction, or 'deer operations', continued under the Animals and Protection Game branch of the Department of Internal Affairs for the next 20 years. While this quieted public arguments relating to the place of deer in New Zealand and how it should be managed, inter-departmental arguments continued.

Arguments were also developing regarding the administration and management of forests, birds, and wildlife, and a call by societies and government departments for 'unity of control' was made. At this time wildlife management was spread amongst

thirty two acclimatisation societies and nine governmental departments. These departments included the Department of Inland Revenue, the Department of Lands and Survey, which was responsible for wildlife habitat and national parks and reserves, the Forest Service, which was responsible for other native forest areas, the Marine Department, the Department of Customs, and the Department of Tourist and Health Resorts (Galbreath, 1993; Muir, 1930). In 1920 the New Zealand Forest Service recommended the transfer of administration and management of all forests in parks, reserves and Maori Land, and also of fish and game, from the Department of Internal Affairs to the Forest Service as a way of unifying administration in these areas. The Forest Service used the 'Department of Conservation', recently set up in several American states, as an example of forest, fish and game being placed under a single administration (Galbreath, 1993). A further New Zealand Forest Service bid was made in 1925, recommending the changeover of responsibilities be carried out by 1930. The Department of Internal Affairs rejected both bids and a political and media 'war' on the issue continued until 1930.

The Native Bird Protection Society also made recommendations, proposing a board be set up to control the protection of native birds and all other wild life matters in much the same way as utilised in some American states. This proposal was initially rejected by both the Department of Internal Affairs and acclimatisation societies. A Wildlife Council was, however, established in 1930 when a group including delegates from the national executive of the acclimatisation societies, delegates from the Native Bird Protection Society, the New Zealand Forestry League[5], and scientists from the New Zealand Institute[6], met to discuss wildlife management. The Council aimed to "promote an effective system of control of wild life in New Zealand" (Galbreath, 1993, p.32) and while it had no official status or power it gave more "impetus to the movement for reform of wildlife administration" (Galbreath, 1993, p.32). Due to its lack of statutory power the Wildlife Council achieved little, but in 1934 a Standing Committee on Wildlife Control was established by the Royal

[5] A league set up in 1916 to promote forestry and bush preservation.
[6] A minor Government department which became the Royal Society of New Zealand in 1933.

Society of New Zealand. This Committee recommended that a Flora and Fauna Board, largely comprising of representatives of non-government organisations, be established to act as advisors to government and to co-ordinate wildlife administration. Furthermore, in 1936, it recommended that "control of sanctuaries, national parks and other matters pertaining to wildlife should be brought under a separate Department of Wildlife Control" (Galbreath, 1993, p.32). This idea was dismissed by the then Under-Secretary for the Department of Internal Affairs, J.W.A Heenan, who felt having a single board of this composition controlling all aspects of wildlife was dangerous and impractical, and that it might act in opposition to the governments' policies and objectives. In 1938 W.E Parry, the Minister of Internal Affairs, began to 'encourage' acclimatisation societies to consider amalgamation and the possibility of a governmentally directed national wildlife policy. In 1939 the creation of a department to control fresh-water fish, game, and bird-life, with a separate biological section for investigation and research, was proposed by the Minister. As this would have meant the removal of control of game from the acclimatisation societies this was not supported by them. They counteracted the idea with one of their own which included a unified departmental administration but one that still allowed local democratic control by individual acclimatisation societies (Galbreath, 1993). Calls for unity of control continued through 1945 when there was increased pressure by The Forest and Bird Protection Society and the Royal Society of New Zealand to act on pre-war reorganisation proposals.

While debates continued as to the nature of control over wildlife management, the possum and its burgeoning population had emerged as a new problem. The Australian brush-tailed possum had been introduced as a basis for a new fur industry by individuals, the Acclimatisation Society, and the Tourist Department. Possums had been protected since 1911 under the Animals Protection Act although from 1921 onwards trapping was allowed under licence and in a restricted season. There had been complaints over many years by farmers regarding the depredation of orchards by possums, and concerns expressed by Forest and Bird and other

conservationists in relation to the possums potential damage to forests. Despite such concern, two of New Zealand's foremost scientists of the time, botanist L. Cockayne and conservationist H.B. Kirk, concluded that possums were "harmless and potentially of considerable economic value" (Galbreath, 1993, p.40). In 1944 and 1945 meetings were held to consider options for reducing possum numbers.

2.5 The Wildlife Division

In August 1945, G.F. Yerex, the 'Director of Deer Operations' who had been in charge of deer culling operations since their inception in 1930, was given the general responsibility for various wildlife functions previously outside his jurisdiction (Harris, 2002). In formalising this responsibility, Yerex sought to establish a 'Wildlife Division' within the Department of Internal Affairs. Initially just a new name for the Animals Protection and Game branch, the Wildlife Division soon became a distinct internal branch of the Department of Internal Affairs. Through the Wildlife Division the Department of Internal Affairs retained control of wildlife rather than relinquishing it to the 'Wild Life Control Council', the organisation sponsored by the Royal Society and acclimatisation societies. The Department of Internal Affairs' Wildlife Division was formally created in August 1945 and remained in place until its disestablishment in 1987. The Wildlife Division was dominated by administrative staff, few of whom had any specialist or technical expertise in wildlife management. In addition, expert advice was rarely used in the running of the division and research undertaken by other departments was never supported (Galbreath, 1993).

Soon after its formal creation, the Wildlife Division established a field division for carrying out basic investigations utilising skilled field officers. Scientific investigation was expected to be undertaken by staff at the Department of Scientific and Industrial Research (DSIR), an organisation whose focus was the research of technologies and processes of economic benefit to the country. Due to other priorities the DSIR did not, however, undertake wildlife research for the Wildlife

Division until 1946, around the same time the Department of Internal Affairs began 'scientific' investigations of possum behaviour and activity (Galbreath, 1993).

An initial DSIR wildlife survey, intended as a basis for future research and control programmes, was undertaken by K.A Wodzicki in 1946 with a survey of possums, a project soon extended to encompass all introduced feral species (Galbreath, 1993; Wodzicki, 1950). In the concluding comments to his survey, Wodzicki (1950, p.242) acknowledged the human dimension of possum management in New Zealand.

> The relation of wild animals to Man [sic.] is a complex one. At one extreme is the animal definitely harmful to Man's [sic.] interests, e.g., the rat, where economic control is a problem; at the other extreme is the animal useful to Man [sic.] and his desire to maintain or increase its numbers. The vast majority of wild animals, however, fall between these two extremes and have both harmful and beneficial relationships, usually not precisely determined. The problem is accentuated by the fact that both aspects, and more particularly the benefits, are often obscured by the more obvious relationships. A further difficulty lies in sectional interests and popular misconceptions.

In February 1948 a meeting with interested Government departments, the Royal Society, and acclimatisation societies was held to discuss the findings of this initial research. This became a forum for discussion about wildlife research. The Department of Internal Affairs wanted to retain control of any research carried out and offered a proposal that the Department would offer to pay half of all costs for any research undertaken by the DSIR on behalf of them. The DSIR, however, wanted to undertake the research independently and without funding from any other entity. In response, the Department of Internal Affairs set up its own wildlife research unit.

In 1945 the Wildlife Branch's[7] role in conservation of native species came under scrutiny. Through necessity, during the war years, the Department of Internal Affairs had maintained a laissez-faire approach to conservation, but even after the war little was done in this area.

> Work on deer or possums was justified in terms of the erosion and other problems they caused, and that on game birds and trout fisheries as being in the interests of sport and the tourist industry, but the protection and conservation of native birds had no such economic justification (Galbreath, 1993, p.83).

Due to conservation being of rising public concern, native bird (fauna) conservation *was* given a high priority when plans were made for future activities to be undertaken by the Wildlife Branch. However, despite plans for extensive conservation programmes, and the establishment of a goat eradication programme on Great Island in 1946, few programmes moved beyond the planning stage.

In 1947 the New Zealand Deerstalkers Association (NZDA), which was established in 1938 but went into recess over the war years, began to become more prominent in wildlife management debates. Hunting had once again become popular, with local and visiting private hunters viewing deer as being part of New Zealand's heritage and "a sporting asset to the country" (Galbreath, 1993, p.66). Extermination of deer was regarded as both unrealistic and short-sighted. Two influential American sportsmen of the time, John K.Howard, and H. Wendell Endicott, were vocal in regard to this, with the latter writing of his "shock at the indiscriminate culling of deer" in a country he considered "could be a paradise of game" (Galbreath, 1993, p.67). A report based on a study carried out by Howard into the wapiti and their continued survival in Fiordland recommended that they could be managed as a wildlife resource rather than exterminated. Howard believed

[7] After a decline in management and research activities, and a subsequent loss of funding, the Wildlife Division was relegated back to Wildlife 'Branch'.

a moderate population would not pose a serious threat to the indigenous forest (Galbreath, 1993).

In 1951 the Wildlife Branch undertook research to ascertain the effectiveness of the deer control measures of the previous 20 years. This research cast considerable doubt as to whether the deer destruction campaigns, or the tactics used, were effective. The findings also questioned why areas identified by the Wildlife Branch as having high deer density did not coincide with areas identified by the Forest Service and the Soil Conservation and Rivers Control Council as having serious forest damage or erosion. After extensive research within the South Island, the Wildlife Branch concluded that much of the destruction attributed to deer could have been caused by other introduced 'pest' species such as goats, rabbits and pigs. Moreover, the Wildlife Branch recognised the role of non-pest species such as sheep in environmental damage, arguing that habitat destruction was largely a 'human problem' closely related to issues of land use (Galbreath, 1994; Young, 2000). Furthermore, research findings suggested that extermination of 'pest' species was unrealistic and should be abandoned in favour of control. A 'critical areas' analysis was put forward in 1952, "demonstrating that the old Deer Control Section strategy of concentrating on areas of highest deer numbers was neglecting many areas more critical from the point of view of forest damage or erosion" (Galbreath, 1993, p.77). It was not until 1957 that the Forest Service acted upon these conclusions although the policy of extermination rather than control remained.

In 1948 the rediscovery of the takahe (*Notornis mantelli*) led to increased discussions on the best ways of managing native species (Galbreath, 1993; Young, 2004). Two differing philosophies of conservation were apparent. Advocates of a hands-on, protective interventionist stance argued that intervention could be employed to "tip the balance in favour of the survival and nesting success of individual birds" (Galbreath, 1993, p.82), and could include the transferring of species to a 'safe' habitat. Proponents of a hands-off, idealistic approach as advocated by the Forest and Bird Protection Society, believed that foreign

introductions should be removed and habitats be set aside and preserved so species could be left to flourish naturally (Galbreath, 1993).

In the early 1950's, as government departments continued to debate how wildlife management should be carried out, the Department of Internal Affairs was re-organised so that its 22 separate branches merged into eight divisions (Galbreath, 1993). Acclimatisation societies were also under scrutiny during this time with moves by the Department of Internal Affairs to take them over while, once again, the Forest Service was pushing for sole responsibility of all wildlife functions. In 1956 the goal of the Forest Service was partially achieved when the function of control of pests was transferred from the Wildlife Branch to the Forest Service (Galbreath, 1993).

2.6 The Rise of Conservation

"From the 1950's the fauna conservation work of the Wildlife Branch gradually began to expand. The change reflected a growing public interest in the protection and conservation of New Zealand native scenery, bush and birds, and corresponding shifts in policy as the government addressed these issues" (Galbreath, 1993, p.90). The National Parks Act 1952 gave several reserve areas formal national protected status and stipulated that all introduced animals should be "as far as possible exterminated from National Parks" (Galbreath, 1993, p.78). Over the next few years Fiordland (1952), Mount Cook (1953), Urewera (1954) and Nelson Lakes (1956) became national parks. In 1953 the protection of native animals was recognized in the Wildlife Act 1953, largely a consolidation of legislative amendments since the Animals Protection and Game Act 1921-22. This Act "conferred protection on most native vertebrates (with some exceptions for sport hunting and pest control)" (Ministry for the Environment, 2006) and covered all mammals, birds, reptiles and amphibians, but not insects.

During the late 1950's and early 1960's the Wildlife Branch developed education programmes under the belief that conservation goals required public and private understanding, and that greater public participation in wildlife protection was needed. Such education contributed to, and was a reflection of, a growing interest in native birds and their conservation by the public, possibly linked to the growth of national pride and a sentimental desire by native born New Zealanders to retain remnant animal and bird populations remaining from pre-European days (Galbreath, 1993). Questions were raised in the media as to the economic viability and relevance of the education programmes, a negative appraisal that was evident in 1964 when the Wildlife Branch initiated a bird transfer programme.

The significance of bird transfer agendas was highlighted when, in 1964, rats were discovered in plague proportions on Big South Cape Island. This Southern island was the home of the last surviving South Island saddleback (*Philesturnus carunculatus curunculatus*), and also home to the Stead's bush wren (*Xenicus longipes variabilis*) and the Stewart Island sub-species of the New Zealand snipe (*Coenocorypha aucklandica iredalei*). There were three possible options: do nothing, favoured by scientists from the Dominion Museum; reduce rat numbers by poisoning them, favoured by the Forest and Bird Protection Society; or, transfer some of the birds to rat-free islands, favoured by the Wildlife Branch. Following debate over these different conservation philosophies the Wildlife Branch decided to transfer as many birds as possible off the Island. Despite all efforts only the saddleback survived with both the bush wren and the snipe becoming extinct along with the greater short-tailed bat (*Mystacina robusta*) and local populations of several other bird species (Roberts, 1994). Inter-departmental and media-driven debates as to whether this intervention programme was warranted or not continued for many years as did arguments over whether scientific study should be undertaken before conservation intervention was allowed to proceed (Galbreath, 1993).

In 1968 the State Services Commission appointed a committee to conduct an inquiry into the organisation of wildlife management and research. After several months of data collection this 'Hunn Commission' advocated the setting up of a 'department of conservation' which would bring all wildlife administration together within one department. However, in view of the fact that the Government at the time wanted to amalgamate departments rather than create new ones, it was recognised that "a unified wildlife administration would be as much as could be achieved" (Galbreath, 1993, p.140). As such, the government agreed a 'compromise' 'National Wildlife Service' be established within an existing department. In detailing how the National Wildlife Service was to be implemented, the Hunn Commission "cut across so many traditional practices and entrenched positions that strong opposition to the scheme became inevitable" (Galbreath, 1993, p.140). One of the main points of contention was the suggestion that acclimatisation societies be "restricted to a liaison function and should relinquish many of their traditional powers" (Galbreath, 1993, p.141). Negative reaction and polaristaion worked against acceptance of recommendations and eventually none of the Hunn Report recommendations were implemented.

With the rejection of Hunn Commission recommendations, wildlife management remained under the auspices of the Wildlife Branch. Wildlife habitat, however, was administered by other agencies, such as the Department of Lands and Survey. This meant that some habitats, such as 'insignificant' wetlands, were disappearing under traditional schemes for turning 'wastelands' into farmland or other 'useful' forms of development. "Even those designated as wildlife refuges were not safe, for the Wildlife Branch had no statutory power to prevent development schemes affecting them" (Galbreth, 1993, p.148). To remedy this, the Wildlife Branch sought to modify development plans and policies allowing for both conservation and development. By undertaking research and putting forward recommendations the Wildlife Branch was able to have some influence in the future of these habitats. In

1974, in recognition of the increasing importance the conservation of wildlife had in New Zealand, the Wildlife Branch became the Wildlife Service (Galbreath, 1993).

Galbreath (1993, p.145) comments that debates evident during the 1972 election campaign "demonstrated the growing strength of public feeling in New Zealand for 'our outdoor heritage'". Furthermore, and besides local and national matters such as "patriotic attachment to the native birds and bush scenery characteristic of New Zealand", there was the "more general influence of a new international concern" (Galbreath, 1993, p.145). The 1960's and 1970's saw international environmentalism flourish with an increase of concern for the environments in which humans live and the importance of environmental conservation (Dryzek & Schlosberg, 1998; Guha, 2000; McNeill, 2000). In New Zealand the term 'conservation' had long been used by foresters to describe both the management and 'wise use' of forests and natural resources, while more recently the Wildlife Branch held that "conservation should mean proper use for the greatest good for the longest period of time" (Galbreath, 1993, p.145). The new movement in environmentalism covered everything from the 'protection' and preservation of wild nature through conservation and concern for physical surroundings to the impacts of industrialised society. Many things influenced this sudden increase in environmental interest, including post-war affluence, the impact of several "oil spills and other environmental disasters, advances in ecology and environmental sciences" and not least, mass media and the increase in television coverage of issues (Galbreath, 1993, p.146).

The role of media in increasing awareness of environmental issues was highlighted by coverage of the plight of the near-extinct Black Robin. The dramatic rescue of these birds and their subsequent survival became a matter of national and international interest while evoking strong "feelings of attachment to and identification with native species particularly associated with New Zealand (Galbreath, 1993, p.206). Furthermore, Galbreath (1993, p.207) argues that "the

importance given to nature conservation in New Zealand was associated with the development from a colonial to a national identity". As one commentator suggested, diminishing links with Britain meant few of the younger generations felt a cultural identity with Britain and the unique flora and fauna was important "in providing visible symbols of the New Zealand identity" (Garratt quoted in Galbreath, 1993, p.207). However, increasing awareness also brought questions from the media relating to why so much money was being spent on a small population that might not survive anyway; why management was reactive rather than proactive; and, the nature of the relationship between wildlife management and wildlife research. As a result of these questions the Government established a Wildlife Research Working Party in 1976 to explore research issues and the management of wildlife in general. Once again the issue of fragmented wildlife management came under scrutiny with the recommendation that management be transferred to either the Department of Lands and Survey or the Forest Service. Nothing was done other than some reorganisation within the Wildlife Service.

In March 1977, the Queen Elizabeth II Trust, a heritage trust created from the Department of Lands and Survey, was established to encourage farmers to preserve native forest remnants on their land. It was aimed at farmers who wished to covenant forest remnants on their land in perpetuity so that if the land was sold at a later date, these remnants would remain. It was hoped that this would not only help to preserve these areas but would also encourage native flora and fauna populations to increase (Young, 2004). Simultaneously, however, farmers were still being encouraged with government incentives to clear land, with open country development advancing by a further million hectares by 1982 (Young, 2004).

In 1980 the Organisation for Economic Co-operation and Development (OECD) made suggestions in regard to administrative reorganisation in New Zealand, and in response to the publication in 1981 of the United Nations' *World Conservation Strategy* the Nature Conservation Council, a Government advisory board

established in the 1960's, prepared a 'New Zealand Conservation Strategy.' This strategy included suggestions for integrating more closely conservation and development through 'sustainable development'. Amalgamation of the main agencies concerned with wildlife and its management was once again brought to the fore.

2.7 New Directions

From 1976 to 1980 proposals were put forward in regard to the direction wildlife, wildlife management, and conservation should take. A proposal was put forward by the then Director of Wildlife, Ralph Adams, that a Conservancy Council model be established with 'fish and game councils' as advisors to the Wildlife Service. The acclimatisation societies did not wish to relinquish their powers of local control and the proposal was withdrawn. To minimise further opposition to reform, the acclimatisation societies were allowed to retain an independent statutory role. This role was held throughout the policy development process that preceded the establishment of a Department of Conservation (DoC), a government department, which was to supersede the highly regarded Wildlife Service. The formation of the DoC stemmed; in part, from economic reforms to improve efficiency of Government departments by separating commercial and non-commercial functions and objectives; and, in part, in response to the continued call for unity of wildlife and conservation functions. Despite the announcement in September 1985 that a Department of Conservation was to be established, it was not until December 1986 that the newly created Minister of Conservation, C.R. Marshall, introduced the Conservation Act 1987 into Parliament formalising the establishment of the department. In 1987, DoC came in to being with its main functions being to conserve New Zealand's natural and historic heritage (Department of Conservation, 2006) and administer nearly 30 percent of New Zealand's land area, of which nearly half was formally protected as reserves or National Parks (Galbreath, 1993; Memon, 1993). See Figure 2.1.

Between 1987 and 1991 DoC was reorganised three times. This was partially as a result of difficulties in developing a unified structure and philosophy due to the wide variety of conservation activities, experiences, and values of the staff. Staff members were drawn from pre-existing departments such as the Department of Lands and Survey, the Wildlife Service, and the Forestry Service, all of which were proponents of differing natural resource management ethics. Budgetary constraints also created conflict as did pressure from Treasury to be self-funding (Memon, 1993).

Reform processes also continued with the reorganisation of quangos involved in different areas of conservation including the acclimatisation societies. A Conservation Law Reform Act passed in 1990 regrouped the societies and renamed them regional 'Fish and Game Councils', organisations responsible to a national parent body. These councils were elected by local licence-holding anglers and hunters, and retained control and management of fish and game traditionally undertaken by acclimatisation societies, and the Wildlife Service (Galbreath, 1993; Memon, 1993).

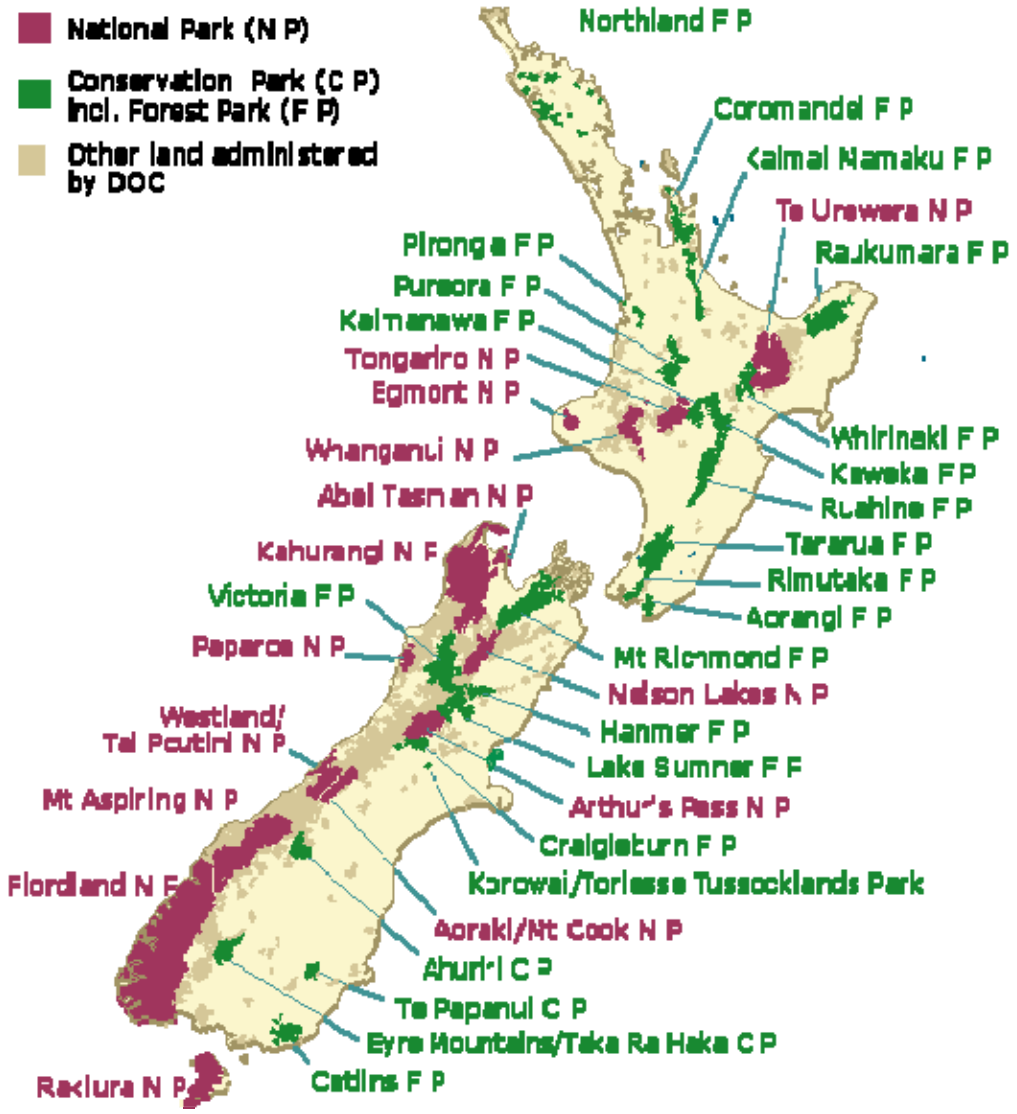

Figure 2.1 Land administered by DoC. Source: Department of Conservation (2005)

The Department of Conservation still administers 30 percent of New Zealand's land area and manages protected native species under the Wildlife Act 1953 regardless of whether they are found on private or DoC administered land. The Department of Conservation administers 25 Acts of parliament and also has functions under several other Acts including the Fisheries Act 1983, and the Wild Animal Control Act 1977 (Chisholm & Patrick, 1994; Memon, 1993). DoC is currently involved in species recovery and relocation, predator control programmes, habitat protection and re-vegetation programmes, and research aimed at greater understanding of

species and habitats. Some of the most recent initiatives carried out by DoC have been the creation of 'mainland islands' where endemic species are introduced or re-introduced to their native habitat and then encouraged to thrive. Pest species in these areas come under intensive management programmes and in some cases, such as at Maungatautari in the Waikato, pest-proof fences have been installed to ensure protected species remain safe.

2.8 Conclusion

This chapter discussed the historic aspects of wildlife management in New Zealand. Much of the history of wildlife management in New Zealand has been dogged by conflict between a range of governing bodies, each with delegated interests in regard to wildlife management. While early conflicts arose over continued introductions of species from other countries, more recently these conflicts have been wide ranging. They include: differing views toward extermination and control methods used in regard to 'pest' species; arguments over the best way of protecting and saving endangered species; and, calls from conservationists and wildlife management groups for acclimatisation societies and government departments responsible for wildlife management to be brought together to create a unified wildlife administration. While the former two conflicts remain controversial, unity of management was realised in 1987 when changes in political agenda's and policies led to the creation of the DoC.

Prevailing values toward wildlife at different times in New Zealand's history offer invaluable insights with regard to this study. In the nineteenth century, wildlife management was largely dominionistic with often haphazard introductions of species from other countries. The utilitarian view was also significant, as evidenced in the focus on the economic value of farming land over and above the conservation of forests. In the twentieth century, with recognition that many New Zealand native species were not only unique but in decline, scientific investigation became important. In the first half of the twentieth century such investigation largely

involved the collection of specimens; little regard was given to the preservation of species. In the second half of the century, scientific interest took the form of categorising and investigating species and habitats. In the late twentieth century urbanisation, in association with widespread increase in leisure time and discretionary spending amongst New Zealand citizens, contributed to an increase in appreciation of the aesthetics of wildlife. Some farmers, for example, used the Queen Elizabeth II Trust to ensure their land, or segments of it, would be conserved as wildlife oases. Despite such efforts, in early twenty-first-century New Zealand, conservation largely remains an urban phenomenon, with utilitarian values remaining dominant amongst residents (Young, 2004).

Chapter 3

Theory

3.1 Introduction

Human dimensions of wildlife management is an approach to the way in which human-wildlife interactions are managed, particularly in regard to faunal wildlife. The approach seeks to explain "how people value wildlife, how they want wildlife to be managed, and how they affect or are affected by wildlife and wildlife management decisions" (Decker, Brown & Siemer, 2001a, p.3). Furthermore, by understanding what influences attitudes and behaviour it is possible to "understand the causes behind them and improve the responsiveness of wildlife management" (Pierce, Manfredo & Vaske, 2001, p.52).

Emerging as an organised field of study in North America in the 1970's, human dimensions of wildlife management has only recently been recognised as a substantive component of international wildlife management (Decker, Brown & Siemer, 2001b; Decker & Chase, 2003; Enck & Decker, 1997). Human dimensions of wildlife management is interdisciplinary, drawing from the "theory and methods of all the social science disciplines" (Pierce, Manfredo, & Vaske, 2001, p.39). The key catalyst for the development of human dimensions of wildlife management outside North America has been the gradual shift of many nations from a utilitarian to a protectionist position in regard to natural resource management (Langenau, 1987; Champ, 2002). This perspective shift has been underpinned by, and is expressive of, concern from wildlife professionals and the general public over the way in which an expansion in human populations has led to diminishing wildlife habitats and the increased potential for interaction between humans and wildlife. For example, there is increasing awareness of the way in which human movement

to remote wildlife areas, both to live and recreate, are encroaching on traditional wildlife habitats, often forcing wildlife to move to suburban and peri-urban fringe[8] areas for survival (Conover, 2001). The impacts of increasingly mobile human populations have been instrumental in facilitating a change in goals of wildlife management; from one of trying to increase and maximise wildlife populations to one of maximising wildlife values for society (Conover, 2001). Thus balancing "concerns for wildlife with other interests of humans, balancing the multiple wildlife interests among factions of society and dealing with society's changing interest in wildlife" has become paramount to wildlife managers aims and goals (Manfredo, Decker & Duda, 1998, p.279).

In seeking to balance wildlife and other concerns, proponents of human dimensions of wildlife management have sought to challenge existing assumptions many wildlife managers have held about stakeholders[9] and their interests in wildlife. Traditionally, many wildlife managers based their decisions on species-related biological information and assumptions about the expectations of wildlife user groups.

> [M]ost scholars have viewed planning as a process of applying biological knowledge to achieve desired biological results. They have presumed that one need only bring the objective biological facts together for the 'right' answers to emerge. Further, they have assumed that everyone would support the decision (Peterson & Manfredo (1993) quoted in Vaske, Fulton & Manfredo, 2001, p.91).

Reliance on biological 'facts', and ignorance of the dynamic nature of community and stakeholder groups, has been identified as being crucial in the implementation of inappropriate or unsuccessful wildlife management programmes (Decker, Brown, & Siemer, 2001a; Fraser, 2001; Miller, 2000; Miller & McGee, 2001). In

[8] Peri-urban fringe dwellers are those who live on the fringe between the rural and suburban sectors.
[9] "A stakeholder is any person who will be affected by, or will affect, wildlife management" (Decker et al., 2001, 110).

making assumptions about needs and wants of concerned groups, wildlife managers ignore the ways in which information gathering and experience change stakeholders' beliefs and expectations. Thus, as Enck and Decker (1997, quoted in Decker & Chase, 2001, p.134) note, one "must be careful of assumptions about stakeholder beliefs and attitudes, they are not static". The dynamism of stakeholders' attitudes led Miller and McGee (2001, p.206) to argue that only wildlife managers who work closely with communities and stakeholders will have "a good understanding of their perspectives relating to wildlife".

Advocates of human dimensions of wildlife management argue that the decision-making processes of humans are equally as important as biological 'facts' in the management of wildlife. Indeed, understanding the values people place on both wildlife and wilderness places are essential to creating and implementing successful wildlife management programmes. According to the principles of the human dimensions of wildlife management, by working with stakeholders wildlife values can be translated into goals, constraints and opportunity statements, facets of which provide the basis for the formulation of successful wildlife management plans.

Developed and applied in the United States of America, the human dimensions of wildlife management has been applied to introduced and native species, as well as non-protected species such as deer (*Cervus sp.*), quail (*Lophortyx sp.*) and turkey (*Meleagris gallopavo sp.*), and protected native species, including the Grey Wolf (*Canis lupis*), the Red Wolf (*Canis rufus*), the Brown Bear (*Ursus arctos*), the Grizzly Bear (*U.a.horribilis),* and the Black Bear (*Ursus americanus*). The application of human dimensions of wildlife management to protect native species in the United States of America has helped advance debates relating to the management of wolves and bears. Human dimensions of wildlife management has contributed to increased awareness of the ways in which human conceptions of wolves and bears as 'dangerous' and 'unpredictable' have contributed to the persecution of native species. Indeed, despite being provided with protection under the Endangered Species Act 1973, wolves and bears continue to suffer through

forest fragmentation, increased human encroachment on wilderness areas, and legal and illegal hunting (Canid Specialist Group, 2005; National Wildlife Federation, 2005; North American Bear Centre, 2005; United States Fish and Wildlife Service, 2005; Wisconsin Department of Natural Resources, 2005).

In New Zealand, despite the fact that there is provision for public consultation under the terms of such current environmental legislation such as the Resource Management Act 1991 and the Biosecurity Act 1993, very little research has been carried out on public perceptions and attitudes in relation to wildlife, or wildlife management, in New Zealand (Fraser, 2001). As mentioned, in the United States of America, the human dimensions field of study is rapidly developing. As New Zealand society has evolved and moved away from its British origins, it has been forced to "recognise that it must look to the lands colonised by Europeans since the seventeenth century - such as Canada or the United States - for conservation guidance" (Young, 2004, p.12) as these countries have a similar, although not the same, European history of settlement. Therefore, while the human dimensions of wildlife management is only a fledgling field of study in New Zealand, if we look to the United States of America for guidance, there is a high likelihood that its significance and contribution to wildlife management in New Zealand will be recognised.

Current wildlife management policies in New Zealand, which are guided by the Wildlife Act 1953, the Wild Animal Control Act 1977, and the Conservation Act 1987, aim to manage and protect native fauna species while controlling and managing populations of introduced game species (Department of Conservation, 2005). In addition, such legislation as the Reserves Act 1977 and the National Parks Act 1980 regulate conditions for the eradication of all introduced species, both floral and faunal, which may exist proximate to large human populations (New Zealand Parliamentary Council Office, 2005). Under the legislative structures, since the late twentieth century much of New Zealand's native fauna has been protected. Such protection has not, however, always been in place. Indeed, as is discussed in

Chapter 2, early legislation favoured the protection of introduced game species over native species and the destruction of native species when 'necessary' to advance agricultural and economic practices. For example the Wildlife Act 1953 enables the Director-General of Conservation, on "being satisfied that injury or damage to any person or to land or to any stock or crops or to any chattel or to other wildlife has arisen", to allow the destruction of "[any animals] (whether absolutely protected or not), and whether or not the land is a wildlife refuge or a closed game area" (New Zealand Government, 2006).

3.2 The History of the Human Dimensions of Wildlife Management Approach

Human values are now being widely recognised as being crucial in the construction and implementation of wildlife management plans. During the bulk of the twentieth century, however, biological characteristics of targeted species were at the core of wildlife management philosophy (Bailey, 1984; Caughley & Sinclair, 1994; Conover, 2001; Decker, Brown & Siemer, 2001a; Manfredo, Vaske & Teel, 2003). Wildlife management texts, for example, have until recently focused on biological and ecological issues to the exclusion of consideration of human values. Thus, in their manual for wildlife managers, Caughley and Sinclair (1994, p.1), argue that a focus on biological issues reflects an emphasis on "the core". Similarly, Bailey (1984) explains that effective wildlife managers are those who avoided 'social science material' and have become skilled in such 'applied sciences' as chemistry, forestry and agriculture. Those authors that have acknowledged the importance of people in wildlife management, such as Giles (1978, p.210) who noted that the management of people is "a subsystem of wildlife management", have tended to do so in order to identify the importance of decision-making that supports the values of interested individuals and communities (Decker, Brown & Siemer 2001a).

The importance of 'values' to understandings of wildlife management is exemplified by the focus of debates surrounding the Protected Areas Legislation

Review conducted in New Zealand in 2000. This review questioned whether legislation should emphasise the maintenance and enhancement of the distinctive indigenous qualities of New Zealand flora, fauna and landscape, or be directed toward accepting the impacts of change and human use. Debates around protected areas and the 'future of New Zealand's wild animals' provided a focus for a one-day seminar that brought together representatives from Government departments and entities such as the Royal Forest and Bird Protection Society, the Hunting Guides Association, New Zealand Deerstalkers Association, and the Rare Breeds Conservation Society. The proceedings of this seminar show that discussions centred around biological aspects of wildlife management (New Zealand Deerstalkers, 1988). The ecological focus of debates limited attention given to human values, a concern expressed via tentative statements in regard to differences between what were perceived as the two stakeholder groups - conservationists and hunters. By not recognising the existence of more than two stakeholder groups, or the presence of ideals beyond strict opposites of conservation and 'hunting', discussants displayed a simplistic understanding of the notion of 'value'.

The biological bias of these New Zealand wildlife debates contrast with the content of recent wildlife management texts, publications which contain more detailed consideration of the importance of values to the formulation and implementation of wildlife management plans. For example, in a comprehensive text designed for wildlife managers and students, Decker, Brown & Siemer (2001b) inform the reader of the importance and applicability of human dimensions in wildlife management and its complimentary role in regard to other management factors. Similarly, Conover (2002) suggests that wildlife be seen as a resource for humans, explaining that as resources are valuable and cause effects they may have a negative or positive value for humans. For example, people affected by Canadian Geese roosting on a public beach range from swimmers and sunbathers who have to avoid faecal matter to tax payers who fund beach cleaning programmes. If the geese are culled or relocated, affected people range from those who like to feed geese, those who like seeing them on the beach, hunters who have been looking forward to shooting them

in the shooting season, and any person who is concerned about the pain and suffering of animals.

This wide application of human dimensions of wildlife, where all situations and stakeholders are considered, is a relatively new phenomenon; until recently the bulk of human dimensions research focused on hunting. Wildlife management institutions understood that first and foremost hunting was 'valuable' as it provided the most funding for research in the form of levies and taxes (Brown & Decker, 2001; Glass & More, 1992; Glass, More & DiStefano, 1992; Glass, More & Zwick, 1995; Pierce, Manfredo & Vaske 2001, Zwick, Glass & More, 1993). Hunting also had a significant public profile, a result of conflict arising from the large "increase in the number of groups challenging specific uses and harvesting techniques" (Glass, More, & Zwick, 1995 p.77). In recent years, wildlife researchers and managers have increasingly acknowledged the potential for human dimensions applications in regard to such aspects as wildlife viewing, habitat and non-game programmes, and public reaction to management techniques and plans. In recognising that wildlife is valued in many different ways, wildlife researchers and managers have moved away from a focus on hunting and have begun to seek an understanding of the ways in which humans value wildlife (Decker & Brown, 2001a).

3.3 Values and Values Theory

Given that human dimensions of wildlife management seeks to understand how people value wildlife and how they want wildlife to be managed, understandings of human values are essential to the approach (Decker, Brown & Siemer, 2001d). In seeking to ascertain how people think, feel, and act about wildlife and wildlife management plans, human dimensions of wildlife management draws extensively from the cognitive and motivational approaches employed in social psychology. The cognitive approach suggests that the values a person holds determines their attitude and that, in turn, their attitude determines and affects their behaviour. The motivational approach suggests that cognitive forces drive people to achieve

particular end states and therefore focuses on identifying the motivations behind certain behaviours (Pierce, Manfredo & Vaske, 2001).

Social psychology's cognitive and motivational approaches provide a way of exploring the wide range of human values that affect wildlife management decisions. In validating human values tied to emotional and intellectual benefits, including aesthetics and symbolism, the cognitive and motivational approaches move beyond valuations based on economic considerations (Bishop, 1987; Brown & Manfredo, 1987; Kellert, 1996; Verburg, Charbonneau, Mangun, & Llewellyn, 1987). While economic value is important in wildlife management, it tends to be biased toward utilitarian values and measurable benefits (Aschenbrenner, 1971; Bormann & Kellert, 1991; Fishburn, 1964; Handy, 1969; Hayek, 1978). For example, Bishop (1987) suggests that in the area of development, despite a resource development being harmful to wildlife, it may provide income, jobs and economic growth which carries strong political force. Bishop (1987, p. 31) carries on to say that "wildlife goals must compete with many other social goals in meagre public budgets in which most costs and many benefits are already measured in monetary terms. In the policy arena, those things without a market value are often assumed to have little or no economic value".

There are a range of differing opinions on the exact relationship between values, attitudes and beliefs (see, for example, Ajzen & Fishbein, 1980; Decker & Goff, 1987; Fishbein & Ajzen, 1975; Rescher, 1969; Rokeach, 1973; Rokeach, 1979; Thomas, 1994), yet all these opinions draw on widely accepted understandings of the way in which values underpin beliefs and actions.

3.3.1 Values

Drawing on concepts solidified within psychology texts, adherents to human dimensions of wildlife management agree that values are "general mental constructs that reflect our most basic desires and goals and define what's important to us" (Pierce, Manfredo & Vaske, 2001, p.40). As such, values provide personal or

interpersonal standards that guide ongoing activities, serving as "standards or criteria to guide not only action but also judgement, choice, attitude, evaluation, argument, exhortation, rationalization, and, one might add, attribution of causality" (Rokeach, 1979, p.2). It is the underlying core of values that a person has that contributes to their belief system, their ideas, and their opinions (Decker & Chase, 2001; Rokeach, 1973; Rokeach, 1979). Values are inherently dynamic but repeated reinforcement will produce stability and salience in values (Kellert, 1996). Repetition or adherence to the way in which a value is applied, guarantees the continuity of values.

Basic values are greatly influenced by learning, culture, and experience, all of which influence the content, direction and intensity of a value.

> Values are the resultants of societal demands and psychological needs, [and] are learned and determined by culture, society, society's institutions, and personal experience. [Values] are determinants in turn of attitudes, judgements, choices, attributions, and actions, [and] are capable of undergoing change as a result of changes in society, situation, self-conception, and self-awareness. [F]inally, changes in values represent central rather than peripheral changes, thus having important consequences for other cognitions and social behaviour (Rokeach, 1979, p.2).

While some values are societal, shared between participants within a culture or community, the values an individual holds may not be entirely in agreement with those of their culture. A person may hold several categories of values simultaneously. When making a decision a values hierarchy, or system, is brought into play whereby "each value is ordered in priority or importance relative to other values" and a decision made based on this hierarchy (Rokeach, 1973, p.6). A value system may be personal, where it is upheld by an individual, or societal, where it is upheld by a community or society. An individual can hold both personal and societal values systems at the same time, with these systems considered to be similar to general plans used to make decisions or resolve conflicts (Rokeach, 1973).

Two people may hold the same value yet they may apply them differently and therefore form different basic beliefs.

> There are certain fundamental (if seemingly self-evident) value judgements, underpinning . . . the value of life, the well-being that attaches to a certain degree of material comfort or to living in a healthy environment, etc . . . [A]lthough values about these matters may sometimes be well-nigh universally shared, we should be wary of assuming they always are. For different people who subscribe to (say) different religious beliefs, or who inhabit or who have been socialized into different cultures, can subscribe to quite different normative conceptions of what constitutes a good life for a person to lead, and this in turn can generate correspondingly different values and views about what is beneficial and harmful in life (Taylor, 1994, p.91).

Values are brought together to form a value orientation. This is a small core of values that underpin a range of beliefs. As shown in Figure 3.1, value orientations are given meaning and expression through ‘basic beliefs’, the ‘truths’ that a person accepts to exist. Basic beliefs reflect the thoughts a person has about specific issues or objects. While beliefs may not be ‘true’, in the sense that they cannot be proven empirically, this does not diminish the confidence a person places in their chosen beliefs. A value orientation is indicated by patterns of direction and intensity of basic beliefs, with these beliefs determining the positive or negative attitude a person may have toward something.

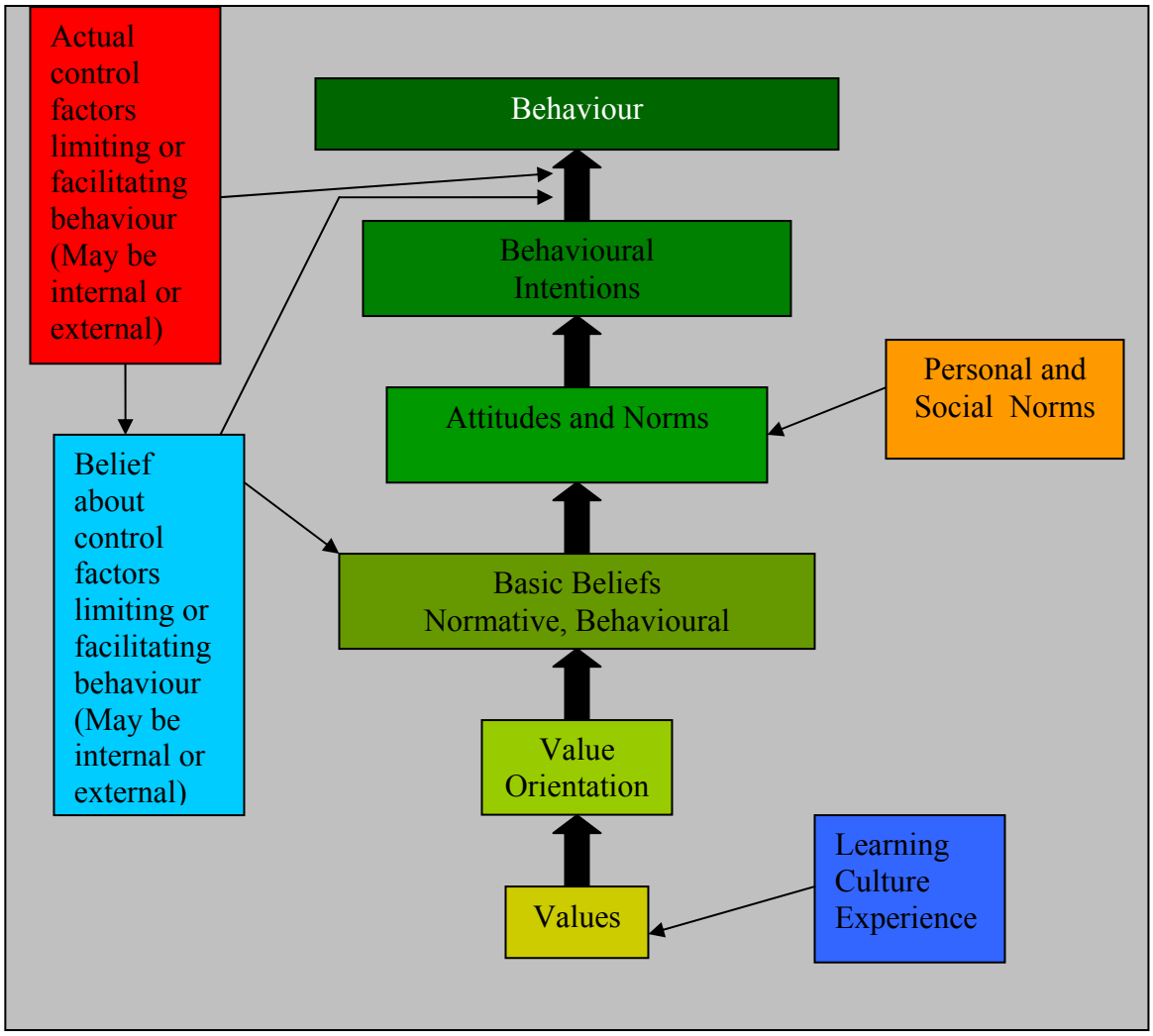

Figure 3.1: A cognitive hierarchy showing the transition of an individual from values to behaviour. Adapted from Pierce, Manfredo & Vaske, (2001, p.46).

3.3.2 Attitudes

An attitude is the way in which a person evaluates someone or something and "refers to an organization of several beliefs around a specific object or situation" (Rokeach, 1973, p.18). The formation of 'an attitude' consists of an evaluative component, which involves allocating a positive or negative value, and a cognitive component, which draws on the beliefs associated with the object or situation under scrutiny. Attitude determination is often used to predict and influence behaviour. As a person may well have a different attitude in a different situation, however, behaviour can only be predicted by exploring context-specific attitudes. This means

that there is a need to consider attitudes not only about the object itself but also in regard to the specific area of interest.

3.3.3 Norms, Behaviour, and Control Factors

As indicated in Figure 3.1, a person's behavioural intentions are determined by their attitude, in conjunction with social norms, personal norms, and their belief in the influential 'strength' of 'control factors' that may limit or facilitate that behaviour. Social norms may be understood as socially enforced rules; accepted behaviours and values that are sanctioned by society. Social norms may initially have been put in place by society for common-sense purposes, but through changes in society, may have lost their original context. For instance, actions originally performed because they were necessary for survival may become a social norm, despite the circumstances making it necessary for survival no longer being applicable (Ajzen, 2006; Rokeach, 1973). For example, in many societies today meat is readily available in shops such as supermarkets and butchers, and therefore, in most cases hunting for meat is no longer a necessity. Despite this, in many societies including New Zealand, hunting is considered a socially acceptable method of meat gathering by many people, and clubs and associations such as the New Zealand Deerstalkers have formed around this premise. Social norms become stable or established through the socialisation process to follow that norm, and because of social pressure and personal norms. Personal norms are self-based standards which originate from one's internalised values. While these may be influenced by societal norms they are essentially individual to each person and contribute to their behaviour. The influential 'strength' of a control factor is how strongly the person believes a factor will limit or facilitate their behaviour. For example, a person may want to touch a Kakapo but has a strongly held belief that DoC staff, who look after the birds, are unhelpful. They believe DoC staff would never allow him/her to touch a Kakapo. Based on this strongly held 'influencing control factor' they do not carry their desire any further and never *do* touch a Kakapo. On the other hand, if they were to overcome their negative belief about DoC staff – overcome the 'influencing control factor' - they may have more of a chance of touching a Kakapo.

The final influences in regard to behaviour are ‘actual control factors’. These are factors that, in reality, do limit or facilitate the behaviour. They may be internal, such as the real fear a person feels toward or about something, or external, for instance where something physically restricts the person from doing something. An example of this is where a person wishes to climb a mountain but requires a wheelchair for mobility, therefore making it physically impossible for them to do so.

3.4 Typologies and their Development

In seeking to facilitate better wildlife management, wildlife professionals believed that while being able to classify people based on their behaviours was important, it would be especially advantageous to be able to recognise and categorise the underlying values and attitudes that influenced behavioural intentions and behaviours. As a result of this recognition, wildlife professionals began attempting to develop a typology of wildlife values and attitudes that would help them identify stakeholder groups by their value. Brown & Decker (2001, p.33) explain that “[e]stablishing the connection between a set of common kinds of beliefs and attitudes provides the wildlife manager with a general conceptual framework for assessing the underlying values basis for stakeholders’ expressed interests, concerns, and positions on various wildlife management issues”.

Since the early 1940’s wildlife professionals have made several attempts at developing a comprehensive values typology in relation to the ways in which people value wildlife. Thus, as Decker, Brown & Siemer, (2001a, p.13) note, from the middle of the twentieth century some “[w]ildlife professionals realized that wildlife were valued in many ways, as both current and future resources, and they tried to categorize those values”. During the last half century various wildlife typologies have been developed to explain wildlife values, yet they tended to “reflect attitudes or more specific cognitions called basic beliefs” (Pierce, Manfredo & Vaske, 2001, p.41). This focus on beliefs, not values, was initially recognised by Kellert in 1980 when he developed a typology he termed a ‘typology of attitudes’.

In formulating his 'typology of attitudes' Kellert drew on King's 1947 and 1966 categorisations. As an initial statement on values typologies, King's conceptualisations are regarded as being of historic significance to proponents of human dimensions of wildlife management. Given the limitations of King's work – his typologies tend to overlap while being grounded in economic value – they have been superseded by more nuanced typologies. Thus, Decker, Brown & Siemer, (2001a, p.12) report that "Kellert's (1980) typology of 10 general orientations Americans have toward animals aided managers greatly when it was first introduced and remains a useful conceptual tool to this day".

Table 3.1 shows the typologies which have been built-up in relation to the ways in which people are perceived to value wildlife. This table demonstrates how some values and attitudes have been retained by consecutive researchers since King (1966), while others have been deleted or developed further. As with the following synopses of various typologies, the order in which the values are placed within this table do not indicate the order of their importance.

Table 3.1 Values typologies and their development by consecutive researchers.

Categories	Researcher/s:			
	King (1966)	Giles (1978)	Kellert (1996)	Miller and McGee (2001)
	Aesthetic		Aesthetic	Aesthetic
	Biological*	Contribution to Ecosystem		
	Commercial*	*Physical Utility	Utilitarian	Utilitarian/Habitat
	Commercial-Negative			
	Recreational	Recreational		
	Scientific/ Philosophical/ * Educational		*Ecologistic/ Scientific*	*Curiosity/Learning/ Interacting
	Socio-cultural			
		Environmental Quality Monitoring		
		Gene Pool Potential		
		Metaphysical		
		*Monetary		
		Preservation		
			Dominionistic	Dominionistic/ Wildlife consumption
			Humanistic	Humanistic
			Moralistic	
			Naturalistic*	
			Negativistic/Neutralistic	Negativistic
			Symbolic	

(*) denotes where two values recognised by one researcher are similar to a single value recognised by another researcher. For example, Giles' Physical Utility and Monetary Values are similar to King's Scientific/Philosophical/Educational value.

3.4.1 King's Wildlife Typologies

King's (1947) wildlife values typology initially consisted of six categories: aesthetic, biological, commercial, recreational, scientific/philosophical/ educational, and socio-cultural. In 1966 he extended this to include a further category, commercial negative (Bailey, 1984). According to Bailey (1984), King considered

wildlife to be valued aesthetically when it was seen as an object of beauty, or had historical or symbolic significance. Aesthetics is an emotive value and is often the initial value that attracts people to conserve species. Of the categories presented by King (1966), the 'aesthetic' value is the most personal and diverse of the wildlife values, increasing with understanding, knowledge and personal experience. For example, the aesthetic value of the 'music' of whales is increased if the person has seen the whales. King's 'biological' value recognised the value of the contribution of wildlife to productive ecosystems. The 'commercial' value considered the economic aspects of wildlife harvesting, focusing on income derived from selling or trading animals and their products, or from business based on wildlife. Correspondingly, the 'commercial negative' value related to the costs of wildlife to society through damage and/or predation. The 'recreational' value represented the benefits a person derives from interacting with wildlife, through pleasure, adventure, and enhanced physical and mental health. The 'scientific/philosophical/educational' value recognised the value of wildlife as objects of scientific study. The 'socio-cultural value' referred to the multiplier effects of wildlife, including commercial and recreational benefits, where society benefits through other values. For example, economic benefits lead to a happier community, while recreational benefits lead to healthier community (Bailey 1984; Decker, Brown & Siemer, 2001a).

3.4.2 Giles' Benefits

Giles (1978) described wildlife values as wildlife 'benefits'. While initially appearing to base his 'benefits' on King's (1966) typology, he moved away from the economics of wildlife values toward biological aspects. In a further move from King, Giles included intangible values such as the 'metaphysical' benefit, an indeterminate benefit whereby wildlife is valued for no particular reason, and the 'preservation' benefit, where benefit is gained from the pleasure of knowing an animal species exists and is being preserved regardless of the quantity of the species. Benefits employed by Giles that closely resemble King's (1966) typology include the 'recreation' benefit where all aspects of recreation are considered beneficial including preparation and anticipation, escape from daily routine and emotional

satisfactions and recollections; the 'monetary' benefit, similar to Kings's (1966) 'commercial' value, where economic benefits are considered; and, the 'contribution to the ecosystem' benefit, which recognises wildlife as being vital to ecosystems and an essential part of all life. Furthermore, Giles' 'physical utility' benefit is similar to King's 'commercial' value. However, where King based this value on economics Giles based his benefit on the provision of food and goods, a process of 'delivery' that is not related to monetary gain. Giles also showed a marked deviation in regard to King (1966) with his inclusion of conservation and environmentally based benefits - the 'gene pool potential' benefit, where wildlife loss has the potential for loss of heritable characteristics that may be vital for species survival, and the 'environmental quality monitoring' benefit, where wildlife can be used as an indicator of how the environment is coping with change, both natural and human-created.

3.4.3 Kellert's Typology of Attitudes and Typology of Basic Values

Kellert's (1980) 'Typology of Attitudes' examined the ways in which people "differed in their attitudes toward wildlife" (Conover, 2001, p.349). Based on a study undertaken for the United States Fish and Wildlife Service in the late 1970's, and incorporating three of King's (1966) categories (aesthetic, utilitarian, and scientific), Kellert's (1980) typology consisted of 10 categories – aesthetic, utilitarian, ecologistic/scientific, naturalistic, symbolic, dominionistic, humanistic, moralistic, negativistic, and neutralistic. Kellert's typology of attitudes toward animals provided a theoretical framework for identifying "certain attitude types and the likely behavioural characteristics of people of each type" (Brown & Decker, 2001, p.33). Kellert continued developing his typology and in 1996 presented a 'Typology of Basic Values', which consisted of 9 categories, having amalgamated his original (1980) negativistic and neutralistic categories.

Kellerts' 'aesthetic' value is very similar to King's (1966) value of the same name, being characterised by strong emotions, largely focused on mammals, birds, and landscapes. Kellert (1996) explains that an aesthetically salient animal or plant is

often required to ‘centrally organize’ the landscape; without such a salient being the landscape remains incomplete. Often the aesthetic value will reflect an idealised model of the ‘perfect’ example, for instance a brilliant butterfly, a magnificent stag, or a landscape with open vistas and calm water, and is often associated with deeper meaning such as integrity, harmony or balance, and striving for perfection (Rolston, 1987; Kellert, 1996).

As with King’s (1966) ‘commercial’ value, Kellert’s ‘utilitarian’ value is based around the exploiting of nature to satisfy human needs and desires. In a similar way to Giles’ (1978) ‘physical utility’ benefit, Kellerts’s utilitarian value moves away from a focus on economic aspects to embrace all material benefit from the diversity of life. Individuals who express a ‘utilitarian’ value “believe that animals should serve some human purpose,” and tend to “have a high opinion of game species and a low opinion of animals that cause wildlife damage” (Conover, 2001, p.350). In his research, Kellert (1996) found that utilitarian attitudes in the United States have declined in the last few decades. He believed that this was linked to the markedly diminishing necessity for humans to use wildlife for food and fibre in the latter half of the twentieth century (Brown and Decker, 2001).

Kellert’s ‘ecologistic-scientific’ value emphasises interdependence among species and natural habitats but also stresses structures and processes such as morphology, physiology, and cellular/molecular biology. Kellert (1996) suggests that an ‘ecologistic’ value is rarely displayed in the ‘average person’ and is an ‘intuitive’ value that considers an integrative approach to nature. In contrast, the ‘scientific’ value is more often found in someone who is divorced from direct personal contact with the living environment and is more focused on the constituent elements rather than the ‘whole’.

Kellert’s ‘naturalistic’ value is characterised by the satisfaction a person gains from direct experience with wildlife and nature. People within this group enjoy outdoor recreation, participating in formally organised recreation, such as fishing, wildlife

tours, bird watching and zoo visits, or visiting specific habitats of interest, such as forests, beaches and wetlands.

The ‘symbolic’ value is powerfully reflected in the development of human language and understanding. Natural symbols, particularly animals, offer a means for confronting fundamental issues and “reflects the human tendency to use nature for communication and thought” (Kellert, 1996, p.17). Stories, myths, and fairy tales are often focused on both the natural world and animals and have helped people to resolve dilemmas both personally and socially. Anthropomorphism is often used to help young people confront aspects of conflict, selfhood, authority, and parental and societal relationships. Examples of this are Maori myths and legends such as the legends of Maui, and Hatupatu and the Bird Woman (Reed, 1999).

In displaying a ‘dominionistic’ value a person will often seek challenges in nature, both physical and mental, that give them opportunities to test and refine their capacities for endurance and ‘mastery’ of survival. Contact with the living environment gives the opportunity for an adversarial relationship, sharpening mental and physical competence while allowing the person to attempt to subdue and control nature. Rock climbing and hunting are examples of this with the participant ‘pitted against nature’.

As a contrast, the ‘humanistic’ value is characterised through the expression and development of emotional capacities such as attachment, bonding, intimacy, and companionship. Feelings of love and intimacy are often shown through attachment to a single species or individual as in the case with domestic animals, for instance a dog or dogs. Kellert (1996) has suggested that this may be as a result of the continued break-down of the traditional extended family, meaning the relationships between humans and animals have become more important.

A ‘moralistic’ value is characterised by the desire to minimise harm to other creatures that are viewed as being fundamentally like ourselves. A person holding

this value is often considered to have a spiritual connectedness to nature with a strong concern for the ethical treatment of animals and nature, and right and wrong conduct toward other animals and the non-human world. They are "opposed to human exploitation of or cruelty toward animals" and "[m]any of them oppose hunting, trapping, or fishing" (Conover, 2001, p.350).

Kellert's 'negativistic/neutralistic' value can invoke strong negative emotions toward animals and nature. People with this value tend to "dislike animals and either actively avoid them due to fear (negativistic attitude), or passively avoid them due to indifference (neutralistic attitude)" (Conover, 2001, p.349). In some cases this value can be held so strongly that the person has a desire to eradicate some species and will often act irrationally and cruelly toward nature and/or animals.

In creating a typology of values, Kellert sought to explore the human need "to affiliate with nature and living diversity not just to ensure . . . material and physical wellbeing, but also to satisfy emotional, intellectual, and spiritual needs", and to translate those needs into values (Kellert and Wilson, 1993, p.27). Kellert (1996) suggests the terms used for his typology are merely 'labels of convenience' which should not be considered 'terminological straitjackets' and, furthermore, it should be recognised that a person may hold more than one value at any given time, giving a 'blurred edge' between value types. While other typologies have sought to categorise largely utilitarian values, Kellert's typology was more diverse and sought to categorize emotive values as well. In so doing, Kellert created a typology that is relevant to studies today, while forming a solid base upon which to develop a typology specific to the New Zealand situation.

3.4.4 Miller and McGee's Values Framework

Having utilised Kellert's typology to explore wildlife values in Australia, a study that employed a 12-page questionnaire, similar to the one used by Kellert in his 1970's study in the United States, Miller and McGee (2001) modified the typology to a values framework consisting of only six values. The 'aesthetic' value, as with

Kellert's (1996) value by the same title, is described as a person having an "[i]nterest in the physical appeal and beauty of wildlife and nature" (Miller and McGee, 2001, p.210). The 'utilitarian-habitat' value noted by Miller and McGee is characterised by an interest in the practical value of land, a direct extension of Kellert's (1996) 'utilitarian' value. The 'curiosity/learning/interacting' value is a combination of Kellert's (1996) ecologistic, scientific, and naturalistic values, and is characterised by an "[i]nterest in exploring, experiencing and learning about wildlife and nature" (Miller & McGee, 2001, p.210). The 'dominionistic/wildlife-consumption' value has characteristics including an "[i]nterest in controlling aspects of nature through consumptive activities" (Miller & McGee, 2001, p.210), and is thus directly connected to Kellert's (1996) 'dominionistic' value. An emotional attachment and love for aspects of nature (Miller & McGee, 2001, p.210) describes both Kellert's, and Miller and McGee's, 'humanistic' value, while the 'negativistic' value of Miller and McGee parallels the 'negativistic/neutralistic' value of Kellert by defining a "[f]ear and aversion of wildlife" (Miller & McGee, 2001, p.210). Missing from Miller and McGee's (2001) framework are Kellert's symbolic and moralistic values. The symbolic value may be important to the New Zealand situation given that early introductions of game species were a 'symbol' of a previously elitist sport that was made available to 'all' in the new, egalitarian society aspired to by early settlers.

3.5 New Zealand Studies

There has been little human dimensions research carried out in regard to the way New Zealander's value wildlife. In 2001, Fraser carried out research in regard to general public views on introduced wildlife in New Zealand, however, the title *Introduced wildlife in New Zealand: A survey of general public* views, was somewhat of a misnomer. In his study, Fraser considered only protectionist and utilitarian values, with answers to questions forcing respondents into one category or the other. This meant that the study suggested that New Zealanders were polarised between protectionist and utilitarian values with no consideration for other values that they may hold.

3.6 Conclusion

This chapter has briefly outlined the development of the field of study known as the human dimensions of wildlife and, in particular, the development of wildlife values typologies and frameworks. In chapter four this information is utilised to form the basis for the research focus and the methods by which the researcher seeks to inform the research.

Chapter 4

Methodology

4.1 Introduction

In the previous chapter a synopsis of the field of study known as the human dimensions of wildlife management was given and an overview of the main components; values, attitudes, behaviours, and typologies were presented. This information will be utilised to investigate the knowledge and values New Zealanders hold about wildlife in New Zealand. This chapter discusses the selected samples, and details the chosen research methods.

4.2 Quantitative Research

For most of the history of wildlife management wildlife managers have relied on 'scientific' information from biologists and ecologists to inform their planning (Bailey, 1984; Caughley & Sinclair, 1994; Conover, 2002; Decker, Brown & Siemer, 2001a). In providing this information scholars have considered planning as a process whereby desired biological results or solutions are only achieved through the application of biological knowledge. In addition to biological 'facts', in trying to understand the ways in which people behave toward, and feel about, wildlife and wildlife management, managers have largely relied on intuition and anecdotal evidence (Siemer, Connelly, Brown, & Decker, 2001; Vaske, Fulton, & Manfredo, 2001).

An increased interest in understanding the 'human element' of wildlife management has been matched by growth in the application of scientific methods to acquiring knowledge of human values and expectations. Indeed, Vaske, Fulton and Manfredo

(2001), and Duda and Yoda (2003), argue that scientific methods of inquiry must be utilised in values research if it is to be confidently used by wildlife managers in complementing biological data. Decker and Brown (2001c) explain that human values approaches mirror biological studies in that the focus of research questions is to illicit responses that yield insights required for decision making. Vaske, Fulton and Manfredo (2001, p.92) clarify the 'scientific' or empirical underpinnings of values research by noting that "the quality and credibility of a human dimensions study" should be judged by how well it addresses "the most prominent characteristics of scientific inquiry". These characteristics - reliability, validity, representativeness, and generalisability – are most commonly associated with quantitative approaches. Thus, Bryman (2001, p.20) notes that quantitative research has "incorporated the practices and norms of the natural scientific model", procedures which incorporate reliability, validity and findings which can be generalised (Bryman, 2001, pp.61-81). Despite overt claims for the importance of quantitative approaches in values research from some authors, other writers make it clear that a mixed-method approach is most effective in ascertaining human value clarification. Thus, Siemer, Connelly, Brown and Decker (2001) argue for the usefulness of employing qualitative approaches in human dimensions research. By enabling dependability, credibility, inclusiveness and transferability, qualitative approaches ground the research in the reality of the situation as experienced by stakeholders rather than in an hypothesised conceptualisation assumed or suggested by the researcher. Furthermore, qualitative methods facilitate improvement of research design and implementation during a study as more information is gained, while also being accepting of the inclusion of different perspectives and positions (Hay, 2000).

Quantitative methods are directed inquiries that "have specific objectives identified ahead of time and [that are] perhaps even articulated as hypotheses to be tested" (Siemer, Connelly, Brown, & Decker, 2001, p.385). Data is often expressed as percentages, numbers or rates (Bouma, 1996). Quantitative approaches are suitable for research studies involving large numbers of respondents, with the researcher

being knowledgeable about the issue and stakeholders (Siemer, Connelly, Brown, & Decker, 2001). In contrast to the 'objective' attachment of quantitative approaches, qualitative methods are an excellent tool for allowing all perspectives to "be discovered and illuminated" (Siemer, Connelly, Brown, & Decker, 2001, p.378) as they tend to focus on "the language of images, feelings, and impression" (Bouma, 1996, p.18). Researchers employing qualitative approaches are often directly involved with research subjects through such methods as focus groups, participant observation, with inclusiveness being a key element (Cook, 1997).

Given the strengths and weaknesses of qualitative and quantitative approaches, in working towards forming an understanding of the values New Zealanders hold toward wildlife, this research utilised a quantitative methodology. Through this methodology, and the administration of a structured questionnaire, it was possible to establish current value orientations and suggest ways in which this information could be utilised by wildlife professionals for future wildlife management decisions. The contextual history discussed in Chapter 1 provides a framework for understanding value orientations of New Zealand settlers and the ways in which wildlife has been managed historically in New Zealand, offering a comparison to current value orientations identified in this research.

Quantitative methods, in the form of a structured questionnaire, were employed for the research as these methods are considered to be the most suited to gathering attitude data which informs human dimensions values research (Ellis, 1998; Punch, 1998; Stangor, 1998). Attitude "can be referred to as some measure of an individual's underlying state of mind on a particular aspect of the world" (Flowerdew & Martin, 1997, p.90). Attitude data are of interest to the researcher because of "their potential to predict how people might behave in the future" (Flowerdew & Martin, 1997, p.90). By utilising a range of statements focusing on a specific aspect of a value, and then numerically measuring the person's attitude through their responses, an estimate can be gained of how strongly that value is held and the potential behaviours that person might display (Miller & McGee, 2001).

Questionnaires are one of the most widely used methods of data collection, providing a 'snapshot' of opinions, attitudes, or behaviours of a given group (Flowerdew & Martin, 1997; Robson, 2002; Stangor, 1998) and are an "indispensable tool when primary data are required about people, their behaviour, attitudes, and opinions and their awareness of specific issues" (Parfitt, 1997). Data can be classified into three main types: 'classification', 'behavioural', and 'attitudes, opinions and beliefs'. Classification data classifies people through demographic information such as income, gender, and age of respondent. Behavioural data relates to the behaviour of the respondent in given situations, for instance, in their behaviour toward seals on a beach. A problem with this type of data is that behavioural intentions can differ from actual behaviour, as discussed in Chapter 2. The third main data type is in relation to attitudes, opinions and beliefs. This data may be difficult to collect due to "patterned responses and insincerity (particularly the tendency of respondents to want to please)" (Parfitt, 1997).

4.3 Value Orientations Research

The structured questionnaire (see Appendix 1) employed for this research was based on the survey employed by Miller and McGee (2001) in their Australian values research, and followed the ethical regulations and guidelines for research at the University of Waikato and for which ethical approval for this research was granted (see Appendix 2). Miller and McGee's (2001) questionnaire was based on Kellert's 1970's research instrument, a survey which produced results upon which Kellert's (1996) 'Typology of Basic Values' was based. By drawing directly on the research instruments employed by Kellert, and Miller and McGee, it was expected a more accurate comparison could be made between New Zealanders' value orientations and the typologies developed by these American and Australian researchers. The questionnaire employed in this research would help establish the underlying factors which influence the value orientation, and consequent behaviour, of New Zealanders toward wildlife and wildlife habitats. In initiating this value orientation analysis it will be possible to establish a preliminary categorisation of

New Zealanders values toward wildlife. Once this value typology has been identified, comparisons may be made with results from Australia and the United States of America.

Permission from Kelly Miller, Tara McGee, and Stephen Kellert was obtained with regards to the use of their questionnaires, typology, and framework, for the basis of this research.

4.4 The Questionnaire

To gather data necessary to inform this research a four section questionnaire was utilised (see Appendix 1). The questionnaire employed was based on the survey employed by Miller and McGee (2001) in their human dimensions research in Victoria, Australia. Miller & McGee (2001, p.207) describe their questionnaire as being:

> similar to the one used by Stephen Kellert in his 1970's study . . . [being] designed to explore public attitudes and values of wildlife, knowledge of wildlife, behaviours relating to wildlife, and demographic characteristics of respondents.

In addition to questionnaire amendments made to reflect issues specific to New Zealand (see Appendix 3), this research differed from that of Miller and McGee in the way data was used. Thus, Miller and McGee (2001) compared the values held by stakeholders with wildlife manager's beliefs about these groups. While the values of New Zealand stakeholders are investigated, it does not seek a comparison with wildlife manager's beliefs. As such it is intended that research findings will inform the development of a values typology or framework specifically categorizing New Zealanders values.

The twelve page questionnaire consisted of four sections with each section investigating a separate component of individual attitudes and values. Section One

of the questionnaire employed seven questions to ascertain the involvement and interest of participants in relation to wildlife and wildlife-related activities. This is classified as behavioural information by Miller and McGee (2001), and helps to define the difference between behaviour and behavioural intentions. As discussed previously, behaviour is not always the same as the behavioural intention due to internal and/or external influencing factors.

The second section of the questionnaire explored the attitudes and values participants held toward wildlife in New Zealand. Opinion items were employed in this section. Such items suggest a favourable or unfavourable attitude toward wildlife with responses to questions being recorded on a five point Likert scale. A sum of the item scores gives the preliminary score in regard to the attitude a person has toward a particular concept or thing (Ellis, 1998; Punch, 1998; Robson, 2002; Rokeach, 1973; Stangor, 1998).

In the third section participants' knowledge of New Zealand wildlife was explored via 20 questions. The questions in this section were based on the understanding that the more knowledge a person has about a particular object the more strongly they will hold a value in regard to that object (Galbreath, 1993; Nielson & Knuth, 2001). Given this link between knowledge and value, the results from Section Three should be reflected in value strength shown in Section Two.

Section Four was designed to gather demographic data from participants. Demographic information is significant as "[c]onsiderable diversity in wildlife and environmental values can be found among various demographic groups", with urban/peri-urban fringe/rural, gender, and ethnic differences having important management implications (Kellert, 1996, p.63).

4.5 Survey Administration Methods

The structured questionnaire employed in this research utilised directed questions that provided measurable answers. Until recently the most common methods of

administering structured questionnaires were face-to-face interviews, where the interviewer carries out the administration of the questionnaire in person, and telephone interviews, where the interviewer asks the respondent questions over the telephone (Parfitt, 1997). Given cost and sample size limitations, self-completion, or self-report, techniques have emerged as an acceptable method for administering structured questionnaires. Self-completion questionnaires are administered by mail, e-mail, or the internet, and require the respondent to complete the questionnaire with little or no contact with the surveyor. Dillman (2000) explains that improved technology, faster response rates, and lower administration costs have enabled the effective employment of self-completion surveys. Bourque (1995, p.9) clarifies the potential lower cost of self-report surveys, noting that given the "same-length questionnaire and [the] same objective, a completed questionnaire administered by mail costs approximately 50% less than one administered by telephone and 75% less than one administered by a personal interview". Furthermore, according to de Vaus (2002), a well-administered self-completion questionnaire can be expected to yield equal response rates to face-to-face interviews. In addition, by completing a self-completion questionnaire the respondent is offered the opportunity of anonymity and the free expression of beliefs (Robson, 1998; Stangor, 1998).

Given financial limitations and data-base constraints, self-completion questionnaires provided the most effective form of data collection for this research. The research sample encompassed groups from all parts of New Zealand. This spatial dispersion, in concert with the sample size, made the option of undertaking face-to-face interviews prohibitive; to speak to all potential respondents in person would have required significant amounts of money and time. Furthermore, access to membership contact details of potential survey groups was restricted by confidentiality clauses within the groups. These confidentiality clauses ensured the contact details of group members were retained by group administrators but such private details were not able to be publicised without the express permission of the member concerned. Given the inaccessibility of contact information, face-to-face or telephone interviews were not a viable option.

Being perceived to be quicker and less costly than face-to-face or telephone delivery, mail, e-mail, and internet self-completion questionnaires offered the best administration options for this research. Mail questionnaires are delivered via the postal system, e-mail questionnaires are delivered as either an attachment or within an e-mail via web-mail, and internet questionnaires are delivered via an e-mail with a hyperlink guiding the respondent to a website where the questionnaire is located (Smee & Brennan, 2000). Internet and e-mail methods are considered to be in relative infancy with regards questionnaire administration, with little research having being carried out as to their effectiveness (Brennan, Rae, & Parackal, 1999). Despite this, it is generally agreed that these types of survey have a place within research and will increasingly do so in the future (Brennan, Rae & Parackal, 1999; de Vaus, 2002; Dillman, 2000; Schaefer & Dillman, 1998; Smee & Brennan, 2000). Thus, May (2001) argues that internet and e-mail surveys should be regarded as developments of telephone and face-to-face interviews and an extension of self-completion questionnaires. Furthermore, de Vaus (2002, p.79) comments that the "fact that internet samples are unlikely, at the present stage, to be representative of the general population does not mean that they have no value or future."

Internet-based questionnaire administration may be divided into three Web-based forms; "a single, continuous page, Web-based questionnaire, a multiple page Web-based questionnaire with adaptive branching, but no verification, or a multiple page Web-based questionnaire with adaptive branching and data verification" (Smee & Brennan, 2000). These range from administering the questionnaire on a single web page using standard HTML (HyperText Markup Language) fields, a multiple page questionnaire whereby each question is on a separate web page, and a multiple page questionnaire with adaptive branching and verification where a verification programme runs through the questions to check whether they are all answered and valid. (Smee & Brennan, 2000). Internet administration was discounted due to the researcher having limited knowledge in the area of web page development.

The two administration options remaining were mail and e-mail. While many of the same principles apply to the development of both methods (Shannon, Johnson, Searcy, & Lott, 2002), e-mail questionnaires are quicker, cheaper, and have a faster response rate than mail questionnaires (Schaefer & Dillman, 1998; Smee and Brennan, 2000). Although access was restricted by confidentiality clauses, the administrators of each of the two initial groups of potential respondents had e-mail address lists (a list-serv) and postal contact details for members. As such, both e-mail and postal methods were viable options. Members from each group could be contacted via the secretaries of each group, a process which ensured the researcher did not contact respondents directly and thus breach confidentiality clauses. As the secretaries are volunteers, it was appropriate to consider the time required for the secretary to administer each method of the questionnaire delivery. When utilising mail administration, questionnaires and information sheets needed to be sent in unaddressed prepaid envelopes so the secretary could address these and then send them on via mail. In the case of e-mail questionnaires, the questionnaire and information sheet are sent either within the main body of an e-mail, or as attachments. The secretary forwards the e-mail to all members via the list-serv, by clicking the forward button and then placing the list-serv details in the 'address' domain of the e-mail programme.

Postal questionnaires are self-administered questionnaires administered by post. Parfitt (1997) considers postal questionnaires to be a relatively low-cost method of research when compared with face-to-face or telephone interviews, which have high travel and telephone costs. Postal questionnaire costs, however, are still high when compared to questionnaires carried out over the internet. Furthermore, postal questionnaires require a longer time-frame for completion and return of the questionnaire. Postal methods tend to be the slowest method for implementation of questionnaires therefore adequate time needs to be allotted for this method (de Vaus, 2002).

After consideration of the advantages and disadvantages of using the two types of method, I contacted the secretaries of the two chosen sample groups to find out whether they had a preference for postal or e-mail survey administration. This needed to be discussed as these people were, in effect, delivering the questionnaire for me and it was appropriate to give consideration to their time and effort. As mail questionnaires would have generated a significant work-load, the secretaries preferred e-mail delivery. Given my reliance on these secretaries for address information, and despite e-mail surveys being regarded as a relatively new method of survey delivery, I decided to proceed with electronic survey distribution.

There are many benefits in using e-mail questionnaires. One advantage over postal and face-to-face or telephone methods is the lower administration costs – e-mail questionnaires do not generate the financial costs involved with printing copies of surveys, acquiring envelopes, and providing postage for initial surveys, replies, and follow-up letters. E-mail questionnaires are also less labour intensive for the researcher; rather than having to address envelopes, fold paper, and co-ordinate delivery, the questionnaire is simply sent a s a 'bulk' message transfer. Finally, in comparison with postal surveys, e-mail methods provide a faster response and return rate (Smee & Brennan, 2000). While e-mail administration does rely on relatively recent technology, the questionnaire requires very little technological skill to develop – the questionnaire is displayed in a standard text format as provided by any standard word-processing programme, making it both cost effective and user/researcher friendly (Brennan, Rae, & Parackal, 1999; Schaefer & Dillman, 1998; Shannon, Johnson, Searcy, & Lott, 2002; Smee & Brennan, 2000). E-mail questionnaires also allow relatively easy access to samples that may be widely geographically dispersed or may be of specific interest to the research (May, 2001). The immediate notification to the sender of undeliverable e-mails due to incorrect addresses allows the sender to correct simple errors such as spelling mistakes and resend the e-mail to the correct e-mail address (Lowcay, 2004).

Disadvantages of e-mail questionnaires include the possibility that sample access will be limited "by out-of-date email lists, difficulties obtaining email addresses and infrequent checking of mail" (de Vaus, 2002, p.129). Furthermore, the quality and usefulness of a sample population "will depend on the quality of the email list, the response rate, and the population to which you want to generalise" (de Vaus, 2002, p.77). In addition, access is limited to those respondents who have computers with internet access and e-mail addresses, and to those who feel competent in computer use (May, 2001; Nardi, 2003). Thus, as de Vaus (2002, p.126) explains, the "advantages of computer-administered questionnaires must be balanced against the requirement that respondents must have access to a suitable computer and feel sufficiently comfortable with computers". Such technology-related factors are significant considerations when questionnaire design is taking place - if the researcher fails to take these factors into account they may lose potential respondents who feel they are not technologically equipped to undertake internet surveys or feel they are not competent enough in computer usage to respond (de Vaus, 2002; Dillman, 2000). In New Zealand in 2003, 41.1% of New Zealanders had access to a computer, with 52.6% of these people subscribed to the internet (Statistics New Zealand, 2006)[10]. Connection to the internet was dependent on household income, qualifications of the householders, pressure of children in the household, and ages of householders. Geographic distribution was a further issue with North Islanders being more likely to be connected to the internet than South Islanders, while individuals in urban households, especially in the Auckland and Wellington regions, were more likely to be connected to the internet than people in rural households (Statistics New Zealand, 2004).

In addition to technology-related limitations, evidence suggests that, when compared to postal questionnaires, if a respondent experiences a problem completing an e-mail questionnaire they are more likely to abandon the survey (Brennan, Rae & Parackal, 1999). For example, Dillman (2000) reports that if a respondent opens an e-mail and finds the first two lines of little interest, there is a

[10] While the 2006 Census has been completed the results are not yet available.

high probability that the e-mail, and attached survey, will be deleted. For most respondents, if they complete an e-mail questionnaire and return it, their e-mail address will be communicated to the researcher. Most e-mail software includes the address of the sender in messages to the recipient, a function which raises ethical issues relating to anonymity and confidentiality not present in self-addressed postal survey replies (Lowcay, 2004; Schaefer & Dillman, 1998). This may be overcome by ensuring, where possible, the respondents' completed questionnaire is separated from their e-mail address as soon as possible after receipt.

Problems common to both e-mail and postal methods of administration relate to targeted respondents. It is difficult to determine who completes the questionnaire, especially where postal surveys are not addressed to a specific individual and "the researcher has little control over the completion of the survey" (May, 2001, p.97). To limit the potential for respondent error the researcher can address the questionnaire to a specific individual. Furthermore, self-selection may occur amongst respondents. That is, due to personal factors or issues unknown to the researcher, potential respondents from certain groups may be less likely to respond than those from other groups. According to Smee & Brennan (2000), failure of potential respondents to complete the questionnaire may affect the sample by creating a bias in non-responses or a non-response error. This is significant where the "survey population contributing to the completed interviews is significantly different in key characteristics from the sub-population of non-responders" (Parfitt, 1997, p.84). For example, where a group of potential respondents who are perceived to hold naturalistic and/or humanistic values fail to respond to the questionnaire and potentially bias the research toward other values such as utilitarian or dominionistic values. Encouragement to complete the questionnaire via the use of follow up letters or e-mails from the researcher improves the rate of return (May, 2001).

Perhaps the most significant and common problem with self-completion surveys when compared with direct-contact interviews is low response rates (Parfitt, 1997;

Schaefer & Dillman, 1998; Smee & Brennan, 2000). Where direct-contact questionnaires are undertaken, such as face-to-face or telephone interviews, the surveyor is able to encourage the respondent to participate, clarify points, and ensure the respondent completes the questionnaire. In the case of self-completion questionnaires this does not happen.

4.6 Participants

Initially two associations involved with wildlife were chosen as a starting point for information and data gathering. These two associations, the Royal Forest and Bird Protection Society, and the New Zealand Ecological Society (Inc.), were chosen because of the interest of their members in New Zealand flora and fauna and because they appeared to offer alternative viewpoints in regard to wildlife issues - one expressing a conservationist position, the other characterising a scientific point of view. Members of these two groups were widely dispersed throughout New Zealand and came from both rural and urban geographic locations.

The first association, the Royal Forest and Bird Protection Society of New Zealand Inc. (Forest and Bird) is, by its own definition, "New Zealand's largest national conservation organization" having a membership of approximately 40 000 people (Royal Forest and Bird Protection Society of New Zealand, 2004). Given its objective of seeking "to preserve and protect the indigenous flora and fauna and natural features and landscapes of New Zealand for their intrinsic worth and for the benefit of all people" (Forest and Bird, 2005, p.1), Forest and Bird was perceived by the researcher as having members being representative of Kellerts' (1996) 'humanistic' and 'naturalistic' values.

The second association chosen, the ecologically-orientated New Zealand Ecological Society (Inc.) (ECOLSOC) with a membership of 535 people, included members I

perceived to represent Kellerts' (1996) 'ecologistic' and 'scientific' values (as per the previous chapter). This group defines itself as one that promotes: "the study of ecology and the application of ecological knowledge in all its aspects" (New Zealand Ecological Society, 2004).

In June 2004 e-mails were sent to the secretaries of Forest and Bird and ECOLSOC, informing them of my intended research and enquiring as to whether their members might be interested in participating. A reply was immediately received from the secretary of ECOLSOC expressing interest in the research. In the case of Forest and Bird, contact was made several times with the secretary and other administrators before a response could be elicited in the affirmative.

A further group which became involved in the research was the New Zealand Deerstalkers' Association (NZDA), a national organization having a membership of 5800. The involvement of the NZDA emerged after I was contacted by the Secretary of the NZDA, who was also a member of ECOLSOC, asking if interested members of the Association could be involved in the research. The central aim of the NZDA is "to ensure that the organization and management of recreational hunting in New Zealand is carried out by hunters", while seeking "to retain, enhance and create opportunities for the enjoyment of legitimate recreational hunting and the sport of shooting, for the members of the Association" (New Zealand Deerstalkers Association, 2004). This group was perceived by the researcher to represent Kellerts' (1996) 'utilitarian' and 'dominionistic' values. This perception stemmed from personal experience; having been a member of the NZDA for several years, I have observed that many of the members of this Association feel that animals, particularly game animals, are on earth to serve human purposes, and they enjoy the challenge of 'pitting themselves against nature'.

4.7 Questionnaire Distribution

After the initial contact made in June 2004, I sent the secretary of each group a copy of my questionnaire, a cover letter providing information on the research (see Appendix 4), and a consent form (see Appendix 5). Upon receiving this material the questionnaires were to be distributed in two ways. In the case of ECOLSOC, it was requested that the questionnaire be sent in e-mail format as plain text inserted within an e-mail message. This mode of delivery was necessary as the secretary had previously found that attachments could not be successfully forwarded to members. By sending the questionnaire as plain text, formatting was often lost, a circumstance stemming from differing computer capacities and technology (Schaefer & Dillman, 1998) and related management of long text-based e-mail massages (Smee & Brennan, 2000). This delivery error is likely to have discouraged some potential participants from completing the survey. Where no transmission or formatting errors have occurred, respondents are able to edit the message within the e-mail thereby indicating their responses (de Vaus 2002). Forest and Bird, on the other hand, requested that a formatted questionnaire be sent as an email attachment utilising HTML. The most effective method for sending the questionnaire was in e-mail format, however, respondents receiving the questionnaire as an attachment tended to print the survey and then return it by post rather than by a forwarded or return e-mail. Using attachments may not be effective as not everyone bothers to open attachments, recipients may perceive the survey as 'junk mail' and delete it before opening it, and not all attachments can be opened due to restrictions placed upon them by computer programmes. Furthermore, where more than one person uses the same e-mail address, completion of the survey by a person other than a member from the targeted group, and therefore a failure for the targeted respondent to complete the survey, may occur (Brennan, Rae & Parackal, 1999; de Vaus, 2002; Dillman, 2000; Shannon, Johnson, Searcy & Lott, 2002).

ECOLSOC confirmed receipt of the questionnaire and advised that the information had been posted on their list-serv as requested. In contrast to the rapid response

provided by ECOLSOC, I had to contact Forest and Bird administrators several times before a reply was received indicating that the administrators of Forest and Bird were no longer prepared to utilise their list-serv for the research. Instead, the administrators offered the equivalent of one paragraph in either the August 2004 Forest and Bird newsletters, sent out by the 54 regional branches, or in the November issue of the tri-yearly Forest and Bird Journal, the national magazine sent out by head-office. This paragraph would provide details of the research and would ask that interested readers contact me directly regarding participation. Because the timing of the Journal would have extended the research into the latter stages of the time-frame allowed, it was decided that a paragraph in the local newsletters was the best option. I sent a letter outlining my research and contact details (see Appendix 6). Despite the information being sent to Forest and Bird as requested, informal comments to me by Forest and Bird members and personal friends in various regions of New Zealand suggest that very few, if any local newsletters, contained my research information and contact details. If such anecdotal evidence is representative, it would provide an explanation for the lack of responses from Forest and Bird members.

The secretary of the NZDA sent the questionnaire to participants utilising the initial e-mail that had been received from the secretary from ECOLSOC regarding the research. This was received in e-mail format as plain text inserted within an e-mail message. This was then posted to members on the NZDA list-serv in the same format.

Administration of the survey involved contacting as many of the members of the three groups as possible. The intention of this was to obtain a non-probability sample known as purposive sampling. Under a purposive sample, respondents are not selected randomly but are picked because they are considered to be typical of cases that are of interest to the researcher (de Vaus, 2002). As such, a key benefit of purposive sampling is that a "sample is built up which enables the researcher to satisfy her [sic.] specific needs in a project" (Robson, 2002, p.265).

4.8 Response Rates

From a pool of approximately 40 750 participants consisting of 40 000 Forest and Bird members, 400 NZDA members contactable through the NZDA list-serv, and 350 ECOLSOC members accessible through the ECOLSOC list-serv, 52 responses were received in total. Of the three groups, the highest response rate came from the NZDA at 10.7% (43 of 400), while the lowest response rate was from members of Forest and Bird at .0075% (3 of 40 000). A total of six out of 350 ECOLSOC members responded, 1.7%. A further respondent from ECOLSOC contacted me saying he was not interested in participating in my research on the grounds of the research being 'unscientific' as it was not 'ecologistically' based.

4.9 Reliability of Data

Through formal pilot testing, Miller (2000) was able to determine the reliability of the data gathered from the questionnaire. This was particularly important for Section Two as, unlike demographic factors or wildlife-related behaviours, values are unable to be measured directly. Miller utilised Cronbach's Alpha, a commonly used reliability coefficient, to determine reliability. In all cases, except the aesthetic value[11], the reliability coefficient was greater than 0.5 indicating attitude items measuring the same thing were, in fact, doing so. A Factor Analysis was also undertaken which suggested that there were high correlations between attitude items previously thought to be investigating different values as presented within Kellert's typology. Sufficient correlation between similar attitude items indicated that the questionnaire was reliable as a research tool.

The high correlations found between some value types by Miller (2000) were similar to relationships between value types as outlined by Kellert (1976) (cited in Miller (2000, p.67) and shown in Table 4.1. As a result of this, Miller (2000), and

[11] Kellert (1980) was not able to find an adequate empirical measure for the aesthetic value . . . The reliability coefficient for the aesthetic value scale in the pilot test . . . was above 0.3" (Miller, 2000, p.65).

Miller and McGee (2001), formed a framework consisting of six value types for exploring wildlife values held by Victorians in Australia, as discussed in Chapter 3. From my own data I was able to determine that New Zealander's also demonstrate a high correlation between value types as suggested by Kellert (1976) and Miller (2000), however, the sample size was limited and failed to offer a representative sample of the intended participants.

Table 4.1 Typical correlations between value types

Value	Highly correlated with	Most antagonistic toward
Naturalistic	Ecologistic	Negativistic
	Humanistic	
Ecologistic	Naturalistic	Negativistic
	Scientific	
Humanistic	Moralistic	Negativistic
Moralistic	Humanistic	Utilitarian
		Dominionistic
		Scientific
		Aesthetic
		Negativistic
Scientific	Ecologistic	None
Aesthetic		Negativistic
Utilitarian		Moralistic
Dominionistic	Utilitarian	Moralistic
	Negativistic	
Negativistic	Dominionistic	Moralistic
	Utilitarian	Humanistic
		Naturalistic

Source: Kellert (1976, p.537) cited in Miller (2000, p.68)

4.10 Conclusion

This chapter has outlined the research focus and the methods used to address this. A quantitative methodology was employed through the utilisation of a 12-page questionnaire based on one developed by Miller (2000) for research undertaken in

Victoria, Australia. The questionnaire was distributed to the secretaries of three main participant groups, ECOLSOC, Forest and Bird, and NZDA, with the intention that these be further distributed to members by way of group list-serv's or newsletters.

The analysis and discussion for the research is found in Chapter 5. An analysis is made of the ways in which New Zealanders value wildlife based on the responses from the participants and includes discussion on the influence of demographic factors and colonial history. The development of a values framework is initiated and a comparison made of the way New Zealanders value wildlife with the framework presented by Miller and McGee (2001) showing the ways in which people from Victoria, Australia, value wildlife. Response rates are also discussed as is the effectiveness of the administration method.

Chapter 5

Analysis and Discussion

5.1 Introduction

Because of a lack of human dimensions research in New Zealand, wildlife managers have relied on their perceptions of the values stakeholders hold in regard to wildlife and wildlife management to inform their decision making. While some managers have a good understanding of their community and stakeholder perspectives through actively being involved with these groups and working closely with them, other managers' perceptions may be inconsistent with how community or stakeholder groups value wildlife and the knowledge they hold about wildlife. Such inconsistency can lead to unsuccessful or inappropriate wildlife management programmes (Decker, 2001; Fraser 2001; Miller 2000; Miller & McGee, 2001).

In this chapter an analysis will be made of data collected from a purposive questionnaire completed by New Zealand wildlife stakeholders. Comparisons of value attributes and wildlife knowledge will be made via such demographic information as gender, geographic location, income, and education. This information will then be used to inform the development of a values typology or framework categorising New Zealander's values toward New Zealand wildlife.

5.2 Outline for Chapter 5

Population density, nature of education, place of residence, income level, age, human-wildlife conflicts, knowledge about wildlife, and participation in wildlife related activities are some of the factors that have been identified as being important in determining the economic and social importance of wildlife to residents of the United States (Duda, 1998). These factors are not, however, important to citizens of

other regions; a feature noted by Miller (2000) and found in her study of respondents in the state of Victoria, Australia.

In the United States and other countries where demographic factors *are* highly correlated to wildlife values, it is important that *actual* relations between individuals and wildlife are understood and taken into account by managers when developing management strategies. Different subsets of the population require targeting in different ways and a lack of understanding in regard to this may result in an incorrect group being consulted (Decker & Brown, 2001b; Miller, 2000). Information on 'actual' wildlife values may be gained via the administration of purposive surveys, such as the questionnaire employed in this research. Derived from the survey successfully employed by Miller (2000) in her study of Australian wildlife values, the questionnaire for this research consisted of three sections, each of which addressed different information components (see Appendix 1).

Consisting of seven questions, Section One of the questionnaire focused on New Zealanders' behaviours and interests relating to wildlife. It explored the wildlife-related activities in which respondents had been involved including places they had visited, television programs they had watched, and literature they had read. The information obtained in this section is relevant as it offers an indication of the interest a person has in wildlife through their participation in wildlife-related activities. Section One also indicated the ways in which people gather information and the preferred medium for exposure, such as books, television, visiting museums, or newspapers. Furthermore, this data offers insight into the ways in which people with different income levels spend money on wildlife-related activities.

Section Two of the questionnaire consisted of sixty statements requiring the respondent to indicate, on a five-point scale (1= strongly agree, 2= agree, 3= undecided, 4= disagree, 5= strongly disagree), whether they agree or disagree with each statement. The questions in this section seek to gain insight into the ways in which respondents value wildlife, with their valuation being derived from the value

types described in Kellert's (1996) typology. As it is widely accepted that it is not possible to determine a persons' attitude by their response to a single statement (see, for example, Robson 2000), a range of attitude statements were utilised. By employing a range of statements it was possible to "build a more accurate picture of what the participant really feels about a certain issue" (Miller, 2000, p.59).

Section Three of the questionnaire was designed to measure the participants' knowledge of New Zealand wildlife. Consisting of 20 questions, Section Three included questions relating to various species including native and introduced wildlife as well as wildlife management. To present data from this section, the respondents have been categorised according to their 'score' in answering questions in this section. Respondents' scores were based on their ability to correctly answer the questions in Section Three (see Appendix X); for each question answered correctly a respondent received one mark. Respondents were categorised into three groups according to their marks – respondents who scored 18 or more marks (answered 18 or more questions correctly), respondents who scored 16 or 17, and respondents who scored 15 or less. That the majority of respondents scored 15 or greater suggests that New Zealanders in general have a high level of knowledge in regard to wildlife in New Zealand.

For the public to be actively involved in the decision-making process they need to have sufficient knowledge about issues under consideration (Peyton & Decker, 1987). Understanding the knowledge people have about wildlife is vital in wildlife management as it provides insight into where programmes, and what types of programmes, are required. Miller (2000) suggests that, regardless of 'reality', wildlife managers perceive groups holding differing values to have different levels and types of knowledge relating to wildlife. Differences between perceived and 'actual' values and knowledge underpins the necessity of finding out how much people know about specific issues; reliance on incorrect or misjudged perceptions could lead to the formulation and application of inappropriate and ineffective information programmes.

Data is presented in separate sections under each of the demographic factors considered relevant to this research: geographic location, gender, age, education, and income. In each of these sections the demographic factor is discussed and data is presented under two headings: 'Values of Wildlife', and 'Knowledge of Wildlife'. Given the nature of the research sample of this research, caution is necessary in extrapolating findings to a wider population. The population sample (52 respondents) represents a very small cohort of the total number of New Zealanders who are members of Forest and Bird, ECOSOLC, and NZDA. Furthermore, the research sample is not representative of the wider New Zealand population, with only 11.5% of respondents being female, 7.7% of respondents being in the 18 years to 24 years age group, and equal numbers of respondents living in the North and South Islands.

5.3 Demographic Influences

5.3.1 Geographic location

Managers' perceptions of public attitudes and values are an important factor in the decision-making process. These perceptions can relate to a range of factors, including the role of geographic location in determining wildlife values. Thus, Miller (2000) explains that managers often consider that people who live in urban or rural locations have certain perspectives, with individuals' wildlife valuations differing according to type and size of property owned. Kellert (1996) and Langenau (1987) suggest that, traditionally, rural or resource-dependent populations consistently display utilitarian and dominionistic values which over-rule any affection these people may have for the natural world. While rural-dwellers may have a great affinity with land and animals, these 'resources' are viewed in regard to their practical usefulness. Because of these perceptions, managers and conservation groups may consider these people as disinterested in education programmes or conservation activities (Miller, 2000). Urban dwellers, on the other

hand, are perceived to hold aesthetic, naturalistic, and moralistic viewpoints with a romantic appreciation of nature leading them to consider the rural dependence on "mastering wild living resources" as irrelevant and contemptible (Kellert, 1996 p.59).

According to Swaffield and Fairweather (1998 p.1), in New Zealand the movement of people "away from urban areas to surrounding rural areas" has impacted on the social structure of communities by bringing urban attitudes and values to previously agricultural communities. For instance, rural dwellers on small properties deriving most of their income from urban employment may be regarded as liking to be near nature and, as such, will display strong naturalistic and aesthetic values. In contrast, those who are on considerably larger, more traditional properties will likely have utilitarian and dominionistic values. Furthermore, Swaffield and Fairweather (1998, p.10) suggest that in the case of small land holders "social networks are typically structured by occupation, recreational interest and previous contact, rather than being focused upon the communities into which migrants move." As such, and in light of ongoing urban to rural migration, recent rural residents may not hold values 'typically' associated with (long-term) rural residents. Despite these observations, Swaffield and Fairweather (1998) argue that there has been less polarisation of the values and attitudes held by New Zealand urban and rural dwellers than is shown in other countries.

In this study geographic location was divided into two main groups - North Island, and South Island – with each of these further being divided into three subsets: urban dwellers, peri-urban fringe dwellers, and rural dwellers. The allocation of these subsets is derived from questions 11 and 13 in Section Four of the research questionnaire (see Appendix 1). Question 11 asked respondents to write the name of the suburb or town or city in which they live. Question 13 asked respondents to indicate what features adjoined their current property. In addition to an open-ended 'other' option, respondents could indicate they lived next to market gardens, parks/reserves, houses, roads, factories, farms and shops. From responses to these

questions it was possible to ascertain whether respondents lived in an urban setting, resided on a peri-urban fringe, or were located in a rural area.

5.3.1.1 Values of Wildlife

Geographic location did not appear to have a significant influence in regard to most values in New Zealand. This was in relation to the island on which the respondents lived, and whether they lived in an urban, peri-urban fringe, or rural dwelling. The aesthetic value, for example, was held strongly by 30.8% and weakly by 38.5% of all respondents, with these values being distributed evenly between urban and rural respondents from both the North and South Islands. Similarly, the humanistic and moralistic values showed little difference between geographic locations; the humanistic value was held strongly by 7.7% of the total respondents and weakly by 80.8% of respondents. These figures were spread relatively evenly between the North Island (45.2%) and the South Island (54.8%). Virtually identical figures were evident for the moralistic value. In the case of the naturalistic value, this was not expressed strongly by any group or subset; for all subsets except the urban dwelling South Islanders (85.7%) the naturalistic value was the weakest held of all the values (98.1%).

The utilitarian value was most strongly held overall with 59.6% of all respondents holding this value. This value was held more strongly in the North Island (58.1%) than in the South Island (42%), and in both cases was expressed by fringe dwellers most strongly. The lowest number of strongly held utilitarian values was expressed by rural dwellers. This was an unexpected result given that in American and Australian research the majority of rural dwellers have held utilitarian values (Kellert, 1996; Miller, 2000).

While 34.6% of total respondents held the dominionistic value, of the 50% making up the total of North Island respondents, 83.3% strongly expressed this value compared to 16.7% of the South Islanders. When considering the subset groups, this phenomenon of dominionistic values being held more strongly in the North Island

was seen within two of the three subsets, these being the urban and rural dwellers. Surprisingly, the peri-urban fringe-dwelling South Islanders held the dominionistic value most strongly of all the subsets at 100%. This, again, is a surprising result given rural dwellers have been found to be dominionistic due to the necessity for them to 'control' or 'dominate' nature as a means of earning a living from the land (Kellert, 1996).

The negativistic value was expressed by 55.8% of the total respondents with this value being held equally by both North and South Islanders. Peri-urban fringe dwelling North Islanders (75%) were most negativistic toward wildlife while rural South Islanders (66.7%) also displayed a high negativistic value. Two groups displayed the least negativistic value. These were rural dwelling North Islanders (40%), and peri-urban fringe dwelling South Islanders (40%).

The total percentage of respondents holding the ecologistic/scientific value was 15.4% with a slightly lower percentage in the North Island (37.5%), than the South Island (62.5%). Urban dwellers (62.4%) held a stronger value than rural dwellers (25%).

5.3.1.2 Knowledge of Wildlife

In regard to knowledge, analysis of the data suggests that location may well be influential. In the group with the highest knowledge levels (30.8% of the respondents), 68.6% came from the North Island and the same percentage were urban-dwellers. The 'high knowledge' demonstrated by North Island residents contrasted with the 'low knowledge' level of South Island respondents (57.9%). In contrast to the 'urban dominance' of knowledgeable North Islanders, the 'low knowledge' South Islanders were split evenly between urban and rural dwellers. Consideration of correlation between education, geographic location, and location of Universities (four in the North Island, three in the South Island), showed these factors had no discernable influence on knowledge of wildlife.

5.3.2 Gender

Up until the late twentieth century much social science research assumed that the physical differences that exist between males and females would be reflected in attitudes, interests, and behaviours' (Lefrançois, 2000). This gender-based belief was reflected in wildlife management research, with Kellert (1970) suggesting that gender is one of the most significant demographic factors influencing values and knowledge of wildlife. More recently, researchers have recognised that gender differences are nuanced and do not adhere to traditional models. For example, recent research has identified a reduction in discernable gender differences in adolescents, with scholars identifying the similarity of the life experiences of males and females from equivalent socio-economic backgrounds (Lefrançois, 2000).

Understanding differences in knowledge and values between males and females can influence the structure and implementation of wildlife management education programmes. Furthermore, where gender-based differences in knowledge and values are significant within specific groups such as between rural and urban cohorts, such differences can offer insight into communication within these groups. Thus, wildlife managers can usefully consider the different values and attitudes of different groups and can change the focus and objectives of wildlife management programmes according to the interests of different groups (Miller, 2000).

Managers can also usefully take into consideration the ways in which family needs and roles may curtail active involvement in the wildlife arena. For example, while women may hold strong values on an issue these values may not be expressed; family responsibilities may limit the ability of women to attend meetings, collect information, and have an active role in activities outside the home (Miller, 2000). Human dimensions research can assist managers in identifying 'gaps' in the participation opportunities of community members, thus providing for engagement with all relevant and interested parties.

5.3.2.1 Values of Wildlife

Drawing on understandings of the socialisation of women to be caregivers and family nurturers (Lefrançois, 2000), traditional stereotypes have positioned women as being more "nurturing and therefore more closely linked with Mother Earth than men" (Valentine, 2001, P.18). This stereotypical understanding has underpinned the perception that women hold the humanistic value very strongly. The flip-side of women's 'nurturing nature' is a lack of interaction with wildlife and the outdoors, a position which is expressed via women holding a strong negativistic value towards wildlife (Miller, 2000). In light of this valuation, it is often assumed that women are less interested in wildlife and wildlife issues than men. In contrast to women, men are understood to have been socialised as economic providers. This position is expressed via strong association with utilitarian and dominionistic values, a position equated with significant concern for wildlife management issues (Miller, 2000).

Results from this research suggest that women in New Zealand may not fit traditional stereotypes; six female respondents completed the research questionnaire and they all held the humanistic value only weakly. A large number of the female respondents (66.7%) held a strong negative value toward wildlife, a result that supports the findings of Kellert (1975) and Miller (2000). These scores were combined with the aesthetic value in two (33.3%) cases, and the utilitarian value in three cases (50%). Only two (33.3%) female respondents held the ecologistic/scientific value, with one of these also holding the aesthetic value.

While the female respondents adhered to expectations by expressing strong negativistic values, the male respondents also held the negativistic value strongly (54.4%). Of the 46 male respondents, the most strongly held value was the utilitarian (60.9%) value. The dominionistic (39.1%) and aesthetic (28.3%) values were also held strongly. These findings were consistent with Millers' (2000) finding that males living in Victoria held these values strongly. Strong male association with dominionistic and aesthetic values are consistent with the role of respondents as hunters; as hunters, these men not only hunt for meat and trophies but also have a

strong appreciation of the ‘perfect’ game animal, and often admit they see some ‘awesome’ landscapes when they are hunting.

5.3.2.2 Knowledge of Wildlife

Contrary to Miller’s (2000) study, where males have a slightly better factual understanding of wildlife than women, this study suggested that New Zealand women are as knowledgeable about wildlife in New Zealand as men. Miller (2000) suggested that the reason for her findings related to males having a higher level of participation in wildlife-related activities than women and the high negativistic value displayed by female respondents. The contrasting research results found in this study may relate to the female respondents in New Zealand showing a high level of participation in wildlife-related recreational activities, ranging from hunting and bushwalking to nature photography and bird-watching. This participation level was indicated despite strongly holding the negativistic value.

The findings relating to gender and knowledge highlight the fact that human dimensions information regarding the effect of gender on values and knowledge is not necessarily transferable between different communities. As such, human dimensions research undertaken in one community cannot necessarily be assumed to be relevant for other communities and stakeholder groups. A final consideration of the gender-knowledge relation concerns differences between male and female wildlife managers. Miller (2000) explained that in comparison with their female counterparts, male wildlife managers showed a tendency toward traditional methods and techniques of wildlife management such as shooting and trapping, ignoring less utilitarian and dominionistic techniques.

5.3.3 Age

Kellert (1996) suggests that age is influential in the way Americans view wildlife, with younger adults displaying more concern, greater appreciation, and more interest in wildlife than older adults. This trend, Kellert (1990) believed, led to younger people showing higher levels of knowledge than older people in regard to

wildlife. In contrast to the findings of Kellert (1990), Miller's (2000) research showed that in Victoria the highest level of concern is found in middle-aged adults. Furthermore, Miller (2000) found that older Victorians had slightly higher levels of wildlife knowledge than younger residents. The research of both Kellert (1996) and Miller (2000) showed that older people tend to hold utilitarian/dominionistic, negativistic, and aesthetic values. Both authors accounted for this trend by referring to the era in which older respondents were raised, a period when earning a living from the land was important and animals were valued by their economic and 'practical' contribution (Miller, 2000).

The oldest of the 52 respondents in this study was 69 years-of-age. Of the respondents, 17.3% were 34 years-of-age or younger, 73% were between the ages of 35 years and 59 years, and 5.8% of respondents were in the 60 to 69 years-of-age group.

5.3.3.1 Values of Wildlife

The weakest held values for all age groups were the moralistic, humanistic and naturalistic values. In most cases the naturalistic value was weakly held by 100% of the specified age group. Fifty percent of the 18-24 years-old age group held the aesthetic, ecologistic, and negativistic values strongly, while 75% of this age cohort held both the utilitarian and dominionistic values weakly. This is interesting given that in the next chronological age group, those respondents between 25 and 34 years-of-age, all respondents held the negativistic value strongly, 66.7% held the utilitarian value strongly, and one of the weakest values held was the ecologistic value.

In the 35-49 years-old age group the utilitarian (60%) and negativistic (60%) values were held most strongly. The aesthetic and dominionistic values were identified as being held by 40% and 30% of respondents in this age range, respectively. Once again, the ecologistic value was weakly held at 55%. The 50-59 years-old age group strongly held the utilitarian value (66.7%) while acknowledging the importance of

negativistic and dominionistic values (50% each). For all other age groups, the weakest held values were humanistic, moralistic, and naturalistic, with the ecologistic/scientific value being weakly held by 18.9% of respondents. The utilitarian value is also held most strongly by the 60-69 years-old age group (66.7%). These results suggest that values related to age reflect distinctive patterns in the ways New Zealanders as a whole have changed their values toward wildlife, conservation, and the environment in the past 60 years.

5.3.3.2 Knowledge of Wildlife

The data gathered in this study is not sufficient to definitively determine whether any particular age group was more knowledgeable about wildlife than any other age group. For example, the data shows the 25-34 years-old age group as being more knowledgeable than other subsets, with 50% of this group being in the highest scoring category. However, in view of the fact that this subset only represents 9.6% of the total number of respondents, this result must be viewed with caution. Aside from this, as with Millers (2000) study, the middle-aged respondents scored most highly in the knowledge section with 25% of the respondent total being represented in the highest scoring category. Having said this, a high representative number of the same group (26.9%) are found in the lower knowledge category.

Of the 5.8% of total respondents who were categorised in the 60-69 years-old age-group, none were represented in the top scoring category, and 66.7% were represented in the lowest scoring category. Similarly, in the 18-24 years-old age group representing 7.7% of the total respondents, none were represented in the highest scoring category and 75% were represented in the middle scoring category.

5.3.4 Education

Kellert (1996) argues that education is the single most powerful force in forming perceptions about living things. Kellert (1996) explains that better-educated Americans, particularly those with college education, show a high level of knowledge and awareness of environmental and wildlife issues, and a positive

appreciation of nature and wildlife. Better educated public and stakeholder groups are perceived to hold strong ecologistic, scientific and naturalistic values as they are considered to be more aware of environmental issues. Furthermore, they are more likely to be politically and socially active; "their higher environmental concern is an extension of a general concern about all social issues" (Miller, 2000, p.195).

Respondents' levels of education were explored using comparisons of qualifications classified into three categories: not qualified (having no formal education beyond secondary school); having a vocational qualification; and, having a full undergraduate University qualification (diploma/degree) or higher. Of the 52 respondents, 34 (65.4%) had a vocational or a University qualification. Majoring subjects included the sciences (23.5%), agriculture (20.6%), business management (14.7%), health (11.8%), building and construction (11.8%), and miscellaneous qualifications such as Trade Certificates (20.6%).

5.3.4.1 Values of Wildlife

Unlike other studies, such as Kellert's (1996) and Miller's (2000), where respondents grouped according to different levels of education have shown significant differences for the curiosity/learning/interacting, utilitarian, aesthetic and negativistic values, this study indicated very little difference between grouped respondents in these areas. Miller's (2000) study showed that Victorians with higher education levels held a higher curiosity/learning/interest value and lower utilitarian and negativistic values than those who had lower qualifications or no qualification. Miller (2000) suggested this difference could be related to the possibility that these people have a higher interest in learning in general. Despite this, the aesthetic value was held equally strongly for both non-qualified respondents and those with higher qualifications.

In this study, the two values consistently shown as being held most highly, regardless of education levels, were the utilitarian and negativistic values (59.6% and 55.8% respectively). Bearing in mind the majority of the respondents come

from the NZDA, the utilitarian value was expected, although the negativistic value less so. Consistently low levels of ecological/scientific values (15.4%) were surprising given the large proportion of respondents who had a vocational or University qualification. Given that existing research indicates education equates with higher levels of interest in learning about wildlife, this result was unexpected. This finding is even more unusual when the current employment of several of the high knowledge respondents was taken into account – none of the respondents employed as ecologists, scientists, or environmental scientists held the ecologistic/scientific value. The lowest values held among all educational groups were the moralistic (7.6%) and humanistic values (7.6%). These two values are considered by Kellert (1976) to be closely correlated, and to find them grouped in this way is consistent with other research (Miller, 2000).

5.3.4.2 Knowledge of Wildlife

While education has little significance in regard to values of wildlife, it does have influence on knowledge of wildlife; fewer respondents (18.8%) who had a diploma/degree were in the lowest knowledge category compared with the not qualified (47.1%) and vocationally qualified (42.1%) groups. Of the respondents with a diploma or degree, 37.5% scored in the highest knowledge category compared with 26.3% for the vocationally qualified group and 23.5% in the non-qualified group. Forty-three percent of diploma/degree holders, 31.6% of vocationally qualified respondents, and 29.4% of non-qualified respondents were placed in the medium score category.

Knowledge questions in Section Three were divided into two groups: scientific, and general. Across all three educational categories the number of general questions that were incorrectly answered was substantially lower than the scientific questions. In the case of the diploma/degree holders, the number of scientific questions incorrectly answered was significantly lower than with the other two groups. These results suggest that, overall; New Zealanders who hold a higher qualification do

have higher knowledge in regard to New Zealand wildlife than those who do not have a qualification.

5.3.5 Income

Kellert (1996) suggested that people with higher incomes hold higher naturalistic and negativistic values, and lower utilitarian values, than those with lower incomes. Despite this relation, Kellert (1996) acknowledged that the relationship between income and values is much weaker than the relationship between education and values. Income was considered to be significantly influential in regard to knowledge, a trend based on the understanding that people with higher incomes are able to visit wildlife-related places, be involved in wildlife related activities, buy books, and participate in wildlife-related learning experiences (Kellert, 1996; Miller, 2000).

5.3.5.1 Values of Wildlife

The data suggests there is some correlation between higher income and a strongly held negativistic value; 85.7% of respondents with an income of $60001 or more held this value strongly. The utilitarian and dominionistic values were closely correlated with one another. In each case the value was held strongly by an increasing number of respondents as income increased. In the case of the utilitarian values, it was strongly held by 33.3% of the $0-$12000 income group, 100% of the $12001-25000 income group, 50% for the $25001-$40000 income group, 66.7% for the $40001-$60000 income group, and 64.3% for the $60001 and higher income group. The dominionistic value was held strongly by 50% of the $12001-$25000 income group. For the $25001-$40000 group the dominionistic value was held more weakly (37.5%) than strongly (18.8%). Thirty-three percent of respondents in the $40001-$60000 income group held the dominionistic value strongly, a percentage smaller than the 57.1% of respondents in the $60001 or more income group who held the dominionistic value strongly. The aesthetic value was held most strongly by the $0-$12000 income group (33.3%), the $25001-$40000 (31.3%) income group, and the $41001-$60000 (40%) income group.

5.3.5.2 Knowledge of Wildlife

In New Zealand knowledge does not appear to be affected by income. This finding contrasts with the result of overseas studies, research which show levels of knowledge increase with income (Kellert, 1996; Miller, 2000). It may be postulated that the lack of correlation between knowledge and income is related the Colonial ideal of making New Zealand an egalitarian society, where hunting and outdoor recreational opportunities are available to all (see Chapter 2). Thus, it may be argued that it is part of the 'New Zealand psyche' to make the most of recreational and hunting opportunities regardless of income. In addition, outdoor opportunities are plentiful given the proximity of wildlife and wildlife-related activities to all New Zealanders. Being a small country, wildlife-related recreational activities are effectively 'at our doorstep' making accessibility to these activities much cheaper than in other, larger, countries such as the United States of America or Australia, where higher travelling costs need to be taken into account.

5.4 Familial Influences

Miller (2000) did not appear to place a great deal of emphasis on familial influences. Due to the high proportion of respondents who hunt as a recreational pastime within my study, I consider this to be a relevant area of comparison for human dimensions research. Indeed, American studies suggest that, in the case of hunters, most are initiated through family and friends, with hunting being perpetuated through strong and consistent family support. Decker, Brown, & Siemer (2001c, p.296) suggest that "people raised in hunting families and introduced to hunting as youngsters are most likely to become hunters themselves with hunting encompassing family units and social circles that include many non-hunters". Hunting is, therefore, an integral part of a social world in which knowledge of species is assimilated through the handing down of knowledge from one generation to another (Shaw, 1987). As a result of such familial processes, and through other socialisation processes such as

schooling, it is suggested by some authors that contrasting values of life and nature are developed during childhood (Kellert, 1996; Langenau, 1987).

5.5 Implications for Wildlife Management

The findings of this study have shown that a large percentage of New Zealanders hold a negativistic view of wildlife and that utilitarian, aesthetic, and dominionistic values are also held strongly, although not by any particular subset of respondents. These findings are inconsistent with research carried out by Kellert (1996) and Miller (2000). This study also suggested that the ecologistic/scientific value was not held strongly which further suggests, according to Kellert (1996), that New Zealanders have little interest in learning about New Zealand wildlife. Despite this, the findings of this study suggest that the knowledge levels about New Zealand wildlife held by New Zealanders are high overall.

These findings have implications for wildlife-related education and management plans as they highlight the uniqueness of New Zealand, a facet which ensures findings in human dimensions research carried out overseas is not necessarily directly transferable to the New Zealand situation. Furthermore, due to the lack of human dimensions research carried out in New Zealand, there is a high likelihood that managers base decisions on assumptions and perceptions about the way New Zealander's value wildlife and the knowledge they hold, rather than on grounded empirical evidence (Fraser, 2001).

That respondents hold low levels of scientifically based wildlife knowledge suggests that education programs should aim to increase factual knowledge and foster an interest in further learning and wider interaction with wildlife and the environment. In the case of the respondents for this study, participation in wildlife related activities is high; however, they may be aimed at specific species such as game animals. Due to low levels of interest in learning about wildlife, education programmes need to be imaginative and interesting to engage all groups, and especially those who demonstrate a low level of interest in learning about wildlife.

These programmes could be linked with recreational programmes to offer an experience-based learning approach. As Fraser (2001, p.35) states, an "environmentally knowledgeable public and responsible natural resource users are of paramount importance in developing heightened public support for environmental management policies and practices".

5.6 Conclusions

This chapter has explored the wildlife values held by people in New Zealand. Understanding the ways in which New Zealander's value wildlife can prove invaluable in the way wildlife managers set up educational and management programmes, and in gaining and maintaining support for management initiatives.

This study has highlighted the need for further human dimensions research to be carried out in New Zealand. The findings have shown that there may be inconsistencies between the ways New Zealanders value wildlife and the knowledge they hold about New Zealand wildlife and studies of other communities undertaken in other countries. This means that findings from other countries, and subsequent management programmes based on those findings, may not be transferable to the New Zealand context.

Chapter 6

Conclusions and Future Directions

6.1 Introduction

The lack of human dimensions research carried out in New Zealand, and the lack of recognition from many managers of the human dimensions field of study as a legitimate body of knowledge, significantly restricts the successful integration of human dimensions information in wildlife management programmes. Furthermore, those who are interested in utilizing this information are impeded by the lack of studies relevant to the New Zealand situation. This study investigated the values and knowledge held by New Zealanders in regard to wildlife in New Zealand, with the aim of facilitating a better understanding of the applicability of the human dimensions wildlife management approach, in a New Zealand context.

Two groups were approached as potential respondents for the research based on their perceived values toward wildlife. These groups comprised of the Royal New Zealand Forest and Bird Society (Inc), with perceived humanistic and naturalistic values, and the New Zealand Ecological Society (Inc.), with perceived ecologistic and scientific values. A third group, the New Zealand Deerstalkers Association, became involved after I was contacted by the Association secretary and asked if I would be interested in the Associations' participation. This group was perceived to hold the utilitarian and dominionistic values. The three groups combined offered the potential for a total of approximately 46 000 research participants.

A four-section, self-administered questionnaire based on Kellert's (1996) and Miller's (2000) studies, was used for this research. With permission from the

administrators from each group, it was intended that the method of administration be via e-mail sent through membership listserv's. While being a relatively new mode of administration, e-mail administration has many advantages over other methods, for instance, lower administration and financial costs; being less labour intensive for the researcher; allowing the researcher access to samples that may be widely geographically dispersed; and, having a faster response and return rate (Smee & Brennan, 2000). For The combined total for ECOLSOC and NZDA members accessible through group list-serv's was 750. Forest and Bird were uncertain of the number of members available through their list-serv.

While both ECOLSOC and NZDA sent the questionnaire to their members through e-mail as agreed, Forest and Bird decided not to pursue this option. Instead they offered to mention the research and my contact details in the newsletters of their fifty-four branches. I agreed as it would potentially make my research available to a larger sample size, however, from all accounts this was not done. Consequently, the three respondents who were members of Forest and Bird received the questionnaire through other means. In all, a total of fifty-two people participated in this research, forty-three from NZDA, three from Forest and Bird, and six from ECOLSOC.

6.2 Research Limitations

There were several limitations in regard to this research. Inaccessibility to potential respondents was the main limitation resulting in a small sample size. While a poor response rate from Forest and Bird was due to the questionnaire not being distributed, the poor response rate from ECOLSOC could be, in part, a reflection of an attitude expressed by one respondent when he commented that he was not completing the questionnaire on the grounds that it was unscientific research of which he wanted no part. This attitude has been an underlying and ongoing limitation with regard to the general acceptance of human dimensions research as a field of study relevant to wildlife management (Bailey, 1984; Caughley & Sinclair, 1994), as discussed in Chapter 3.

To counteract the distribution problems encountered when dealing with Forest and Bird, future researchers could consider two things. The first would be to arrange a meeting with top administrators of Forest and Bird so as to present the research proposal face-to face rather than dealing with the secretary. By doing this, the researcher could outline the relevance of the research to Forest and Bird, and the ways in which research findings could prove to be of use to them. If groups are encouraged to identify and recognise different motivations, attitudes and values within their own groups they may be better able to cater for their groups' needs. Even in a group where everyone enjoys the same activity there are many diverse reasons for partaking in that activity. This means that while a national organisation may have a governing body or a national committee, unless they are aware of their own internal dynamics, they can never hope to represent honestly the larger proportion of their members.

If the researcher was unable to utilise Forest and Bird membership lists, a second option would be for the researcher to pay for an advertisement in the Forest and Bird Journal. This would outline the research and give the researchers' contact details for members interested in participating in the research. In this way, as a paying advertiser, there would be a higher possibility that the researcher would be able to reach a larger percentage of Forest and Bird members, thus bypassing the need for a membership contact list.

While the small sample size was partly due to the lack of distribution, administration of the questionnaire via e-mail was also a limiting factor. It is possible that, while this method does have a place in future research, and may well prove to be the administration method of choice for future researchers, it is currently limited by its relative 'youth'. This means that problems with formatting may exist; the research may not be presented in a way that is compatible with all computers and all computer programmes; potential respondents may be lost through perceived lack of technological 'expertise'; and, potential participants may not respond due to concerns about lack of anonymity (de Vaus, 2002). Furthermore, not

all desired respondents may have access to a computer as statistics taken from the 1993 census suggest. At that time only 41.1% of New Zealanders had access to a computer (Statistics New Zealand, 2006).

The small sample size limited this research as it meant that respondents did not accurately portray the diverse populations present in New Zealand. Furthermore, given that a substantial proportion of respondents were from the New Zealand Deerstalkers Association, results could well be distorted toward specific values displayed by this group, rather than representative of a sample drawn from the wider community.

6.3 The Values and Knowledge Held by New Zealanders in Regard to New Zealand Wildlife

The findings of this study suggest that New Zealanders are strongly utilitarian toward New Zealand wildlife. New Zealanders also hold the negativistic, dominionistic, and aesthetic values strongly, with only a limited number of respondents expressing the ecologistic/scientific value. This may suggest that current wildlife education programmes are failing to engage some New Zealanders in learning about New Zealand wildlife. The overall level of knowledge New Zealander's displayed about wildlife was high. While the level of general knowledge displayed by New Zealanders was found to be high, scientific knowledge levels were significantly lower. This could prove to be problematic if stakeholders base values on incorrect perceptions and assumptions. Greater amounts of scientific information needs to be made available upon which stakeholders can make informed decisions rather than being influenced by possibly less well informed arguments.

The relationship between demographic factors and the value and knowledge held about wildlife varies widely across New Zealand residents. For example, residents of peri-urban fringes in the South Island held the dominionistic value most strongly

of all respondents; respondents over the age of 50 held the utilitarian value most strongly; respondents over 60 had the lowest levels of knowledge in regard to wildlife; those respondents who had a higher qualification showed a higher level of knowledge toward wildlife than those who did not have a qualification; and, higher income levels corresponded with the negativistic value being held more highly. In addition to expressing national variation, research results were not altogether consistent with findings from existing overseas research. For example, results showing females in New Zealand do not hold a strong humanistic value strongly contrasted with results from both Kellert's (1996) American research and Miller's (2000) Australian findings.

As mentioned in Chapter 3, section 3.1, New Zealand wildlife managers have had to look to lands colonised by Europeans since the seventeenth century for wildlife management guidance (Young, 2004). As proven by Miller's (2000) Australian study, human dimensions research carried out in the United States does not necessarily produce results that are automatically relevant to all countries colonised by Europeans since the seventeenth century. This is also highlighted by this research where some results, as mentioned, deviate markedly from both Kellerts (1996) research, and the more recent Miller (2000) research. Such differences accentuate the fact that results from studies carried out in other countries may not be transferable to the New Zealand situation, and that human dimensions of wildlife research carried out within New Zealand is the only way to provide accurate information for New Zealand wildlife managers to utilise.

The analysis of this study, despite the small sample size, has shown that there is great diversity in New Zealanders attitudes and values toward wildlife, even within groups perceived to hold the same values. In determining this, therefore, the research shows that human dimensions *are* applicable to New Zealand and that this study has initiated a way of understanding values held toward wildlife, and wildlife management, in New Zealand.

6.4 Future Directions

Despite an increase in public awareness of environmental issues, including issues relating to biodiversity and wildlife management in New Zealand, there has been little attempt to describe the values or knowledge New Zealander's hold toward wildlife (Fraser, 2001). Proponents of the human dimensions field of study believe this must change, as many managers currently make decisions based on perceptions and assumptions about stakeholders which may not match actual knowledge and information (Miller, 2000). In carrying out human dimensions studies, managers would be able to create a database upon which they could draw when decision-making, and which can be updated as information changes. Having said this, managers utilising human dimensions research need to take into account the fact that people behave and act differently in different situations and information that may be relevant to one situation may not automatically be relevant to another situation.

This study has brought to light several avenues for future research, the most important of which is the current lack of any detailed human dimensions research. Having human dimensions information would enable managers to make effective and accurate decisions in regard to the publics and stakeholders with which they are working, while also providing both managers and stakeholder groups the opportunity for finding common ground when dealing with wildlife issues. For example, a conservation group may perceive another group to hold utilitarian or dominionistic values with the result that they ignore potential collaborative opportunities.

Non-demographic factors could be researched as possible influencing factors in regard to values and knowledge, for instance, familial influences, childhood experiences, family values, community values, media and environmental education within schools. Familial influences on wildlife values may be influential in determining the values one holds toward wildlife from an early age and may also offer managers an indication of values held by certain familial groups, for instance

hunters or off-road users. Human dimensions information in regard to the way the media influences values could be used to assist with education programmes, and to determine the positive or negative impact media reporting has on the way people value wildlife and their information assimilation.

Research into effective ways of presenting environmental education programmes for different stakeholder groups could also be undertaken. By doing this, managers would be able to ensure that effective education programmes are reaching the targeted groups. For example, education programmes that focus on interesting aspects of a 'non-interesting' or 'unattractive' species could help managers to change public perceptions toward these species, while interactive learning experiences can encourage people to become actively involved in wildlife and wildlife-related activities.

Similar research to that carried out by Miller (2000) could also be carried out in regard to comparisons of public and stakeholder values, and whether perceptions and assumptions by wildlife managers, stakeholders, and the public, are accurate.

6.5 Closing Comments

Despite the limitations discussed earlier in this chapter, and the fact that results from this research cannot be generalised to the wider New Zealand population with any confidence, research findings do show that human dimensions research has relevance in the New Zealand context. Furthermore, this study has provided enough evidence to confirm to the researcher that human dimensions research is able to be used to identify differing values and knowledge levels both within groups, and throughout the wider community of New Zealand.

Understanding the ways in which New Zealanders value wildlife, and the knowledge they hold in regard to wildlife, can only be of benefit to the future of wildlife and conservation management in New Zealand. This study initiates that understanding.

Appendices

Appendix 1

Questionnaire

WILDLIFE QUESTIONNAIRE

This is an anonymous questionnaire. Please do not write your name, or any other comments that will make you identifiable on the following pages. These details are only required on the separate Consent Form which will not be linked with this questionnaire at any time. Please read the covering letter and fill in the enclosed Consent Form before you complete the following questions. **Please answer the questions in this questionnaire on behalf of yourself only (i.e. do not include answers for other family members or other members of your household).**

SECTION 1

The following questions ask you to indicate your involvement in wildlife-related activities and interest in wildlife and nature.

1. Which activities on the following list have you participated in, in the last 12 months?

- ❑ hunting _____ (please specify what types of animals)
- ❑ fishing
- ❑ birdwatching
- ❑ scientific study of wildlife
- ❑ nature photography
- ❑ bushwalking
- ❑ off-road vehicle use
- ❑ canoeing/boating
- ❑ bike riding
- ❑ horse riding
- ❑ snow skiing/water skiing
- ❑ none of the above

2. Which of the following places have you visited, in the last 12 months? (Do not include work-related visits)

- ❑ zoo/sanctuary
- ❑ natural history museum
- ❑ trout farm
- ❑ national park/forest
- ❑ urban park
- ❑ beach
- ❑ none of the above

3. Which of the following programs do you watch regularly on television? (i.e. at least once a month)

- ❑ Burke's Backyard
- ❑ The Great Outdoors
- ❑ Quantum
- ❑ nature documentaries
- ❑ conservation programs
- ❑ none of the above

4. Are you a member of any conservation or wildlife groups?

- ❑ Yes
- ❑ No ➔ *If no, go to question 6*

5. What conservation or wildlife group(s) are you a member of? (Please write full name of groups)

_____

_____

6. Which of the following do you read regularly?

- ❑ The Age
- ❑ The Herald Sun
- ❑ The Australian
- ❑ Your Garden
- ❑ Australian Geographic
- ❑ Habitat
- ❑ Nature Australia
- ❑ Science journals
- ❑ none of the above

7. Please **tick** the **two** types of animals on the following list which interest you the most, and indicate which would be your first and second choice. Only **two** ticks are needed - one in each column.

Type of animal	one tick ↓ **First choice**	one tick ↓ **Second choice**
I am not interested in most animals.		
Attractive animals.		
Useful animals (e.g. cows, sheep, guard dogs).		
Animals that need help because they are being treated badly, are injured, or need hand-raising.		
Scientifically fascinating animals.		
Competitive, sporting or trophy animals.		
Animals in the wild.		
Animals important for particular ecosystems.		
Pet animals.		
No opinion.		

SECTION 2

The following questions ask you your opinion on various wildlife-related issues. There are no right or wrong answers. Please indicate the extent to which you agree or disagree with the following statements by circling the most appropriate number. Please circle **ONE** number only per question.

strongly agree	agree	undecided	disagree	strongly disagree
1	2	3	4	5

1. If given a choice between seeing a beautiful animal or an unattractive animal, I would much prefer to see the beautiful animal.	1	2	3	4	5
2. I believe a person sometimes has to severely punish a horse or dog to get it to obey orders properly.	1	2	3	4	5
3. I am interested in learning about the ecological role of insects or worms in moving nutrients through the environment.	1	2	3	4	5
4. I consider myself a person who loves animals.	1	2	3	4	5
5. I see little wrong with using leg-hold traps to capture wild animals.	1	2	3	4	5
6. If I was to go walking in the forest, I would like to look closely at the mosses and fungi on the forest floor.	1	2	3	4	5
7. I think rats and cockroaches should be eradicated.	1	2	3	4	5
8. I have little interest in learning more about the evolutionary development of Australian wildlife.	1	2	3	4	5
9. I enjoy wildlife activities the most that have some practical value (e.g. hunting for meat).	1	2	3	4	5
10. Animals like the Leadbeater's Possum or Bridled Nailtail Wallaby are part of our vanishing wilderness and should be protected, even if those who make a living off the land have to make some economic sacrifices.	1	2	3	4	5

strongly agree	agree	undecided	disagree	strongly disagree
1	2	3	4	5

11. complete control over wild animals like elephants and tigers.	1	2	3	4	5
12. Love is an emotion that people should feel for other people but not for animals.	1	2	3	4	5
13. I have little desire to walk many miles into the bush at night just to see an animal like the Yellow-bellied Glider.	1	2	3	4	5
14. I am fascinated by the biological and genetic differences of animals.	1	2	3	4	5
15. We should not conserve forest areas if the trees are needed for timber production.	1	2	3	4	5
16. If I was choosing a pet, the animal's physical appearance would be the most important thing to me.	1	2	3	4	5
17. I am interested in learning about how different animal species behave and interact with other species of plant and animal.	1	2	3	4	5
18. I believe animals should have legal rights.	1	2	3	4	5
19. I try to stay away from most wild animals.	1	2	3	4	5
20. I see little wrong with wearing fur coats, because they are warm and durable.	1	2	3	4	5
21. I am interested in learning about the ecological characteristics of Australian wildlife species.	1	2	3	4	5
22. I enjoy walking in the forest and along the beach so that I can be close to nature.	1	2	3	4	5

strongly agree	agree	undecided	disagree	strongly disagree
1	2	3	4	5

23. A dog that is trained for a particular task, such as guarding a house or guiding a blind person, is generally better than one owned only for companionship.	1	2	3	4	5
24. I believe that humans are here to dominate and control nature and wildlife.	1	2	3	4	5
25. Recreational hunting is cruel to animals.	1	2	3	4	5
26. I get a great deal of satisfaction from reading about the biology of animals such as molluscs or amphibians.	1	2	3	4	5
27. If I was to visit a zoo, I would much prefer to spend my time looking at the attractive animals rather than the unattractive animals.	1	2	3	4	5
28. The idea of loving animals seems a strange emotion to me.	1	2	3	4	5
29. I prefer to see wild animals on television or in a zoo rather than running free near me.	1	2	3	4	5
30. If given the choice between conserving a rare species or raising our standard of living, I would choose to raise our standard of living.	1	2	3	4	5
31. The idea of crying at a tree being cut down seems strange to me.	1	2	3	4	5
32. We should not protect wildlife if it is needed for food or clothing.	1	2	3	4	5
33. I would be more excited to see a beautiful parrot when on holiday than a plain looking duck.	1	2	3	4	5
34. We must use pesticides, even if they are harmful to wildlife, if they are needed to maintain the country's food production.	1	2	3	4	5

strongly agree	agree	undecided	disagree	strongly disagree
1	2	3	4	5

35. Keeping animals in cages, even in good zoos, seems cruel to me.	1	2	3	4	5
36. I am fascinated by the different reproductive systems of Australian wildlife.	1	2	3	4	5
37. Creatures like spiders and marsupial moles are generally of little value to nature.	1	2	3	4	5
38. I admire the skill and courage of people who hunt wild animals.	1	2	3	4	5
39. I am afraid of most spiders.	1	2	3	4	5
40. I have little desire to see unusual bats or lizards in places like the rainforests of far-north Queensland.	1	2	3	4	5
41. I think it is nice that we have beautiful animals like deer in Australia, even though they are not native to Australia.	1	2	3	4	5
42. I have known animals as dear to me as another person.	1	2	3	4	5
43. I have little interest in learning about the physiology of Australian wildlife.	1	2	3	4	5
44. I believe a person must demand strict obedience and mastery over domestic animals.	1	2	3	4	5
45. Watching birds as a hobby seems like a waste of time to me.	1	2	3	4	5
46. I do not approve of protecting wild animals if it hurts the economic livelihood of people who make a living off the land.	1	2	3	4	5
47. I have little interest in learning about the ecological role that butterflies and other insects play in nature.	1	2	3	4	5

strongly agree	agree	undecided	disagree	strongly disagree
1	2	3	4	5

48.I have little desire to see a Scorpion or Carpet Python up close.	1	2	3	4	5
49.If I was choosing plants for a garden, my first choice would be the most attractive plants.	1	2	3	4	5
50.Animal experimentation for medical research should continue even if it causes great pain to animals.	1	2	3	4	5
51.I generally like animals the most that have some practical value (e.g. chickens, because I can use the eggs).	1	2	3	4	5
52.I have little interest in learning about the ecological characteristics of inland or tidal wetlands.	1	2	3	4	5
53.I would like to hold a snake.	1	2	3	4	5
54.Capturing a wild animal strikes me as a very exciting and challenging activity.	1	2	3	4	5
55.I see little wrong with harvesting kangaroos for their meat, as long as the species' are not endangered.	1	2	3	4	5
56.I find most insects fascinating.	1	2	3	4	5
57.I generally get bored by scientific discussions of animals.	1	2	3	4	5
58.I see little wrong with the logging of forests if the land can be used to produce more jobs and income.	1	2	3	4	5
59.My love for animals is among my strongest feelings.	1	2	3	4	5
60.If populations of the Common Brushtail Possum are plentiful enough, I see little reason why they should not be trapped for fur or meat.	1	2	3	4	5

SECTION 3

This section consists of a number of statements and questions that deal with your knowledge of wildlife in Australia. Don't worry if the questions seem hard - nobody can answer them all correctly. Please tick only **ONE** response per question.

Please tick true, false or unsure for the following statements.

	True	False	Unsure
1. Spiders have 10 legs:			
2. A kangaroo is a vertebrate:			
3. Raptors are small rodents:			
4. Most insects have backbones:			
5. The Tasmanian Tiger is presumed extinct:			
6. The Sulphur-crested Cockatoo is white and yellow in colour:			
7. An Echidna is a marsupial:			
8. Brushtail possums are nocturnal:			
9. Brown Trout is an introduced fish to Australian waters:			
10.Lepidoptera is an order of insects that includes bees:			
11.Black-headed Pythons are venomous:			

Please tick only **ONE** response to the following questions.

12.Rabbits and possums are:
- ❑ both native to Tasmania
- ❑ both marsupials
- ❑ both mammals
- ❑ both carnivores
- ❑ none of the above
- ❑ unsure

13.Which **one** of the following management bodies is responsible for the management of wildlife in Victoria?
- ❑ The Australian Conservation Foundation (ACF)
- ❑ The Department of Natural Resources and Environment (DNRE)
- ❑ Local Government
- ❑ The Department of Environment, Sport and Territories (DEST)
- ❑ none of the above
- ❑ unsure

14.Tick **one** of the following that describes an 'endangered species':
- ❑ an animal in danger of being killed
- ❑ a species that threatens the survival of humans
- ❑ a species in danger of becoming extinct
- ❑ none of the above
- ❑ unsure

15. Which **one** of the following species is native to Australia:
- ❑ Elephant
- ❑ Rabbit
- ❑ Cane Toad
- ❑ Blackbird
- ❑ none of the above
- ❑ unsure

16. Which **one** of the following describes a monotreme:
- ❑ reptile
- ❑ pouched mammal
- ❑ bony fish
- ❑ egg-laying mammal
- ❑ none of the above
- ❑ unsure

17. The Wedge-tailed Eagle feeds mainly on:
- ❑ fish
- ❑ children
- ❑ rabbits and dead animals
- ❑ eucalyptus leaves
- ❑ none of the above
- ❑ unsure

18. The *Calici* virus was recently released to control which **one** of the following:
- ❑ Rabbit
- ❑ Locust
- ❑ Helmeted Honeyeater
- ❑ Fox
- ❑ none of the above
- ❑ unsure

19. Which **one** of the following places does a Dugong live:
- ❑ desert
- ❑ ocean
- ❑ rainforest
- ❑ bush
- ❑ none of the above
- ❑ unsure

20. An octopus is:
- ❑ omnivorous
- ❑ herbivorous
- ❑ carnivorous
- ❑ none of the above
- ❑ unsure

SECTION 4

This final section deals with very general information. Remember that all of the information that you give remains **strictly confidential**.

1. Please indicate which of the following you have attended or are attending, including courses by correspondence: (please tick one or more boxes)

- ❑ primary school
- ❑ secondary school
- ❑ technical or further educational institution (including TAFE colleges)
- ❑ university or other higher educational institution
- ❑ other educational institution _____(please specify)
- ❑ none of the above ➔ *If none of the above, go to question 7*

2. Have you **completed** any educational qualification since leaving school?

- ❑ Yes
- ❑ No ➔ *If no, go to question 4*

3. What is the **highest** qualification you have **completed** since leaving school? (Please write full name of qualification)

_____

4. Are you still completing a qualification?

- ❑ Yes
- ❑ No ➔ *If no, go to question 6*

5. What qualification are you completing? (Please write full name of qualification)

_____

6. If you have some tertiary education, what were/are your **two** main subject areas?

1. _____ 2. _____

7. Please indicate your age group:

❑ 18-24 ❑ 25-34 ❑ 35-49 ❑ 50-59 ❑ 60-69 ❑ 70-84 ❑ 85 and over

8. Are you? ❑ Male ❑ Female

9. What country were you born in?

_____

10. What country(s) were your parents born in:

Mother: _____ Father: _____

11. What suburb, town or city do you live in?

_____ Postcode: _____

12. How long have you been living in the area? _____

13. Which of the following **adjoin** your property? (Please tick one or more boxes)

- ❑ market gardens
- ❑ parks/reserves
- ❑ houses
- ❑ roads
- ❑ factories
- ❑ farms
- ❑ shops
- ❑ other _____ (please specify)

14. Please indicate your religion: (if any)

_____

15. What is the **gross** income (including pensions and allowances) that you usually receive **each year** from all sources? (i.e. **before** tax)

- ❑ $0 - $12,000
- ❑ $12,001 - $25,000
- ❑ $25,001 - $40,000
- ❑ $40,001 - $60,000
- ❑ over $60,000

16. Are you currently employed full-time?

- ❑ Yes
- ❑ No ➔ *If no, go to question 18*

17. Please indicate your current full-time occupation (including industry of employment). Try to be specific e.g. 'sales - Real Estate' or 'sales - Retail' rather than just 'sales'.

occupation _____ industry _____

18. If you are not employed full-time, which of the following apply to you: (Please tick one or more boxes)

- ❑ retired
- ❑ full-time student
- ❑ part-time / casual employment _____ (please specify)
- ❑ looking for work (please indicate most recent occupation _____)
- ❑ home duties
- ❑ volunteer work _____ (please specify)
- ❑ other _____ (please specify)

19. Do you have any pets?

- ❑ Yes
- ❑ No

20. Have you purchased any photographs/posters, calendars/diaries, prints, paintings, sculptures, or other art objects of **wildlife** or **nature** in the past 2 years? Do **not** include those of domestic animals e.g. poster of cat/dog.

- ❑ Yes
- ❑ No

21. What is the one word that you would use to describe wildlife native to Australia?

_____

22. Please list any wildlife-related activities that you are currently involved in that have not been covered in this questionnaire (e.g. wildlife care, wildlife research etc.).

_____

_____

_____

_____

Now simply place your completed Questionnaire and Consent Form into the reply-paid envelope provided and post!!! No stamp is needed.

THANK YOU VERY MUCH FOR COMPLETING THIS QUESTIONNAIRE.

Appendix 2

Ethical Approval

Faculty of Arts & Social Sciences
Te Kura Kete Aronui
The University of Waikato
Private Bag 3105
Hamilton, New Zealand

Telephone64-7-838 4080
Facsimile 64-7-838 4636
Email wfass@waikato.ac.nz
http://www.waikato.ac.nz/sass/

The University of Waikato
Te Whare Wānanga o Waikato

13 August, 2004

Joanna Cowie
Department of Geography

Dear Joanna,

Re: Your Application for Ethical Approval: Human Values in the Human Dimensions of Wildlife Management Project

Thank you for your research ethics application which has been considered by the FASS Human Research Ethics Committee.

The Committee is pleased to approve your application subject to the following:

a. Clarify the meaning of "email address will be personally nominated".
b. Submit a copy of the amended questionnaire - i.e. with New Zealand fauna and flora substituted for Australian fauna and flora.
c. Clarify whether permission is needed to use the Australian questionnaire.
d. In the Consent Form, clarify at what point can erasure of the recorded discussion take place.
e. In the Information Sheet, the Committee suggests that you do not restrict your output to just the Course Work in the event that you may wish to give a presentation or write a journal article.

We look forward to receiving these amendments.

Kind regards

Jo Barnes
Chair, FASS Ethics Committee

c.c Anne Clark

Appendix 3

Questionnaire Amendments

Questionnaire Amendments

Section 1:

Question 3:

Selection changed from:

□ Burkes Backyard
□The Great Outdoors
□ Quantum
□ nature documentaries
□ conservation programs
□ none of the above

to:

□ Burkes Backyard
□ The Great Outdoors
□ nature documentaries
□ conservation programs
□ none of the above

Question 6:

Selection changed from:

□ The Age
□ The Herald Sun
□ The Australian
□ Your Garden
□ Australian Geographic
□ Habitat
□ Nature Australia
□ Science Journals
□None of the above

to:

□ The Herald
□ The Sunday Star Times
□ Local Newspapers
□ Farming or Lifestyle magazines
□ Hunting and/or Fishing magazines
□ New Zealand Geographic
□ Pet Animal Magazines
□ Forest and Bird
□ Scientific Journals
□ None of the above

Section 2:

Question 8:

From:

I have little interest in learning more about the evolutionary development of Australian wildlife.

To:

I have little interest in learning more about the evolutionary development of New Zealand wildlife.

Question 10:

From:

Animals like the Leadbeater's Possum or Bridled Nailtail Wallaby are part of our vanishing wilderness and should be protected, even if those who make a living off the land have to make some economic sacrifices.

To:

Animals like the Kakapo or Archey's Frog are part of our vanishing wilderness and should be protected, even if those who make a living off the land have to make some economic sacrifices.

Question 13:

From:

I have little desire to walk many miles into the bush at night just to see an animal like the Yellow-tailed Glider.

To:

I have little desire to walk many miles into the bush at night just to see an animal like the Lesser Short-Tailed Bat.

Question 21:

From:

I am interested in learning about the ecological characteristics of Australian wildlife species.

To:

I am interested in learning about the ecological characteristics of New Zealand wildlife species.

Question 36:

From:

I am fascinated by the different reproductive systems of Australian wildlife.

To:

I am fascinated by the different reproductive systems of New Zealand wildlife.

Question 37:

From:

Creatures like spiders and marsupial moles are generally of little value to nature.

To:

Creatures like spiders and mice are generally of little value to nature.

Question 40:

From:

I have little desire to see unusual bats or lizards in places like the rainforests of far-north Queensland.

To:

I have little desire to see unusual bats or lizards in places like Fjordland National Park.

Question 41:

From:

I think it is nice that we have beautiful animals like deer in Australia, even though they are not native to Australia.

To:

I think it is nice that we have beautiful animals like deer in New Zealand, even though they are not native to New Zealand.

Question 43:

From:

I have little interest in learning about the physiology of Australian wildlife.

To:

I have little interest in learning about the physiology of New Zealand wildlife.

Question 55:

From:

I see little wrong with harvesting Kangaroos for their meat, as long as the species' are not endangered.

To:

I see little wrong with harvesting the New Zealand Native Pigeon for meat, as long as the species' are not endangered.

Question 60:

From:

If populations of the Common Brushtail Possum are plentiful enough, I see little reason why they should not be trapped for fur or meat.

To:

If populations of the New Zealand Fur Seal are plentiful enough, I see little reason why they should not be trapped for fur or meat.

Section 3:

Question 2:

From:

A kangaroo is a vertebrate.

To:

A wallaby is a vertebrate.

Question 5:

From:

The Tasmanian Tiger is presumed extinct.

To:

The Takahe is presumed extinct.

Question 6:

From:

The Sulphur-crested Cockatoo is white and yellow in colour.

To:

There are 5 species of Kiwi found in New Zealand.

Question 7:

From:

An Echidna is a marsupial.

To:

Himalayan Tahr are found in the wild in the North Island.

Question 8:

From:

Brushtail possums are nocturnal.

To:

Possums are nocturnal.

Question 9:

From:

Brown Trout is an introduced fish to Australian waters.

To:

Brown Trout is an introduced fish to Australian waters.

Question 11:

From:

Black-headed Pythons are venomous.

To:

Weta are venomous.

Question 12:

From:

Rabbits and possums are:

□ both native to Tasmania

□ both marsupials

□ both mammals

□ both carnivores

□ none of the above

□ unsure

To:

Rabbits and possums are:

□ both native to New Zealand

□ both marsupials

□ both mammals

□ both carnivores

□ none of the above

□ unsure

Question 13:

From:

Which **one** of the following management bodies are responsible for the management of wildlife in Victoria?

□ The Australian Conservation Foundation (ACF)

□ The Department of Natural Resources and Environment (DNRE)

□ Local Government

□ The Department of Environment, Sport and Territories

□ none of these

□ unsure

To:

Which **one** of the following management bodies are responsible for the management of wildlife in the Wellington Region?

□ The Wellington City Council

□ The Department of Conservation

□ Wellington Regional Council

□ The Royal Forest and Bird Protection Society of New Zealand Inc.

□ none of these

□ unsure

Question 15:

From:

Which **one** of the following species is native to Australia

□ Elephant

□ Rabbit

□ Cane Toad

□ Blackbird

□ none of the above

□ unsure

To:

Which **one** of the following species is native to New Zealand

□ Chevron Skink

□ Rabbit

□ Possum

□ Blackbird

□ none of the above

□ unsure

Question 17:

From:

The Wedge-tailed Eagle mainly feeds on:

□ fish

□ children

□ rabbits and dead animals

□ eucalyptus leaves

□none of the above

□ unsure

To:

The New Zealand Falcon mainly feeds on:

□ fish

□ small birds, insects and rodents

□ rabbits and dead animals

□ berries and leaves

□ none of the above

□ unsure

Question 19:

From:

Which one of the following places does a Dugong live:

□ desert

□ ocean

□ rainforest

□ bush

□ none of the above

□ unsure

To:

Which one of the following places does a Koura live:

□ desert

□ ocean

□ freshwater bodies

□ bush

□ none of the above

□ unsure

Section 4:

No Changes

Appendix 4

Information Sheet

Information Sheet

A copy of this information sheet should be retained by each participant.

My name is Sarah Cowie and I am undertaking research into the ways New Zealanders value wildlife as part of my Masters study at the University of Waikato. I can be contacted through:

The Department of Geography, Tourism and Environmental Planning,
Faculty of Arts and Social Sciences
University of Waikato at Tauranga
Private Bag 12-027
Tauranga
e-mail: sjc20@waikato.ac.nz

Wildife Management is recognised as being about the management of animals and wildlife, and is usually associated with our Native Forests and the way it is managed by professional managers. Many people believe that it has a lot to do with ecology and the environment but little to do with human beings. In this study I am aiming to show how important the human aspect of wildlife management is in regard to management decisions, especially in regard to the way humans value wildlife.

I have a questionnaire I would like you to complete so I can use the information in my research. To return the completed questionnaire to me, please either send it back in the reply-paid envelope (if posted) or by sending via reply e-mail. The information gathered will be used as the basis for a report which is a requirement for my Masters of Social Sciences Degree. At this stage there is no intention of publication however if the situation arose participants will be contacted.

All data collected for this research will be held indefinitely by me, Sarah Cowie, in a safe place where it will be kept confidential and away from public scrutiny or access. No names or identifying characteristics of participants will be disclosed in the written reports produced as part of the research unless agreed upon by you, the participant, and only where written approval is obtained prior to such usage.

Declaration to participants:

If you take part in the study, you have the right to:

- Refuse to answer any particular question, and to withdraw from the study at any time.
- Ask any further questions about the study that occur to you during your participation.
- Be given access to a summary of the findings from the study when it is concluded.

Appendix 5

Consent Form

Consent Form

I, willingly and of my own free choice, agree to participate in the research being undertaken by Sarah Cowie as part of the requirements for her Masters Degree being studied within the Department of Geography at the University of Waikato.

The purpose of the project, which is entitled: *Towards an understanding of the role of human values in the Human Dimensions of Wildlife Management Approach,* has been fully explained to me.

I understand that the following issues will apply:

1. Sarah Cowie will conduct a structured interview with me relating to how I value wildlife. This interview will be recorded directly on to paper.
2. I have the right to refuse discussion on any particular issue and have the right to request erasure of any recorded discussion with which I do not feel comfortable.
3. I understand that my name may be used in the report unless I request for it not to be.
4. I acknowledge that during her research, Sarah Cowie will keep all recorded information private and confidential, and that all field notes will be retained as confidential, in a safe place, on completion of this thesis.
5. I understand that the information collected from myself and other participants will be used in the completion of a report that will be made available to the Department of Geography at the University of Waikato.

I consent to my interview being audio-taped (if applicable) YES/NO

I wish to receive a summary of the research findings YES/NO

I wish to have my records returned to me after completion of the study YES/NO
I_____(full name) hereby consent to take part in this study.

_____

Signature of Participant and Date.

_____

Signature of Researcher and Date.

Sarah J. Cowie (Researcher)

Appendix 6

Information Letter for Forest and Bird

Can You Help?

I am a Masters Student at The University of Waikato, undertaking thesis research in the field of Human Dimensions of Wildlife, and specifically, wildlife management. I am currently looking for people who may be interested in voluntarily participating in my research.

To gather the data required for my research, I am utilising a modified version of a questionnaire originally developed in the United States by Dr Stephen Kellert (with his permission). His questionnaire, which discusses wildlife species specific to the United States, was created for the United States Fish and Wildlife Service and is now used as a benchmark for studies in valuing wildlife in the United States. A modified version was also developed by Dr. Kelly Miller for a similar study undertaken in Victoria, Australia. This questionnaire is reasonably short and only takes about 10 minutes to complete.

The 'human dimensions of wildlife management' is an approach to wildlife management based on human values that has developed from increasing concern over the way human populations have increased and expanded leading to diminishing wildlife habitats and increased human/wildlife interactions, including conflicts. 'Human dimensions of wildlife management' recognizes that traditional biological considerations in management are essential but that managing people and the decision making process itself are equally important. Scientific understandings of people are an essential part of the management equation and the values people place on both wildlife and wilderness places' is a central concept. These include economic, aesthetic, moral, spiritual, and rational values.

'Human dimensions of wildlife management' is a relatively new approach to the way in which human/wildlife interactions are managed. It has only become an organised field of study in overseas countries such as America, Canada and Alaska since the 1970's and was only recognised as a substantive part of wildlife management even more recently. It is in its infancy here in New Zealand and its applicability to the New Zealand situation has yet to be evaluated to any great extent. It is my intention that my research will form part of the basis for further studies in this area and will add to academic studies as to the applicability of this approach to the New Zealand situation.

If you are interested in participating in my research please contact me:

Sarah Cowie
c/- The Department of Geography, Tourism and Environmental Planning,
Faculty of Arts and Social Sciences
University of Waikato at Tauranga
Private Bag 12-027
Tauranga

Or e-mail: sjc20@waikato.ac.nz

References

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