

Wild Wolves?

Understanding human-wolf interactions in a coastal Canadian National Park Reserve

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To the wolves of British Columbia:

May this study help to make their island and coastal lives safer and may we learn to value their existence within the remaining wild places they call home.

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## Abstract

In the Broken Group Islands unit (BGI) of Pacific Rim National Park Reserve, there are increasing accounts of human-wolf interactions due to a combination of the recent migration of wolves (*Canis lupus*) into the area and high human use. The wolves have begun exhibiting less wariness of humans and are learning to forage for food in areas frequented by visitors. In this island environment, paddlers (kayakers and canoeists) constitute a significant 95% of total users, a highly influential group worthy of study. These increasing human-wolf interactions have prompted park managers to explore the human dimensions of wolf management with the intention to reduce risks to both people and wolves.

In response to this need, I used a mixed-methods approach (surveys and interviews) to find out what attitudes were prevalent among paddlers in this area and how people perceived and felt about wolves being in the area. During the summer months (July to September) of 2005, I collected 374 usable questionnaires and conducted interviews with 13 volunteers. The surveys illustrated that most paddlers within my sample felt wolves were important to the area for their intrinsic value and their relationship to the environment and other species. The interviews elicited a variety of emotions, ranging from fear to curiosity to awe. Interview participants also discussed how the presence of wolves affected their experience in the BGI which ranged from moderately negative to outright positive.

This research provides insight into the complex dynamics at play in wolf-human interactions within the BGI of Pacific Rim National Park Reserve and, by extension, protected areas worldwide.

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*Whatever attitude to human existence you fashion for yourself, know that it is valid only if it be the shadow of an attitude to Nature. A human life, so often likened to a spectacle upon a stage, is more justly a ritual. The ancient values of dignity, beauty, and poetry which sustain it are of Nature's inspiration; they are born of the mystery and beauty of the world. Do no dishonour to the earth lest you dishonour the [human] spirit.*

(Beston, 1971, p.174)

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## CHAPTER 1

### Introduction

#### *Overview*

It was overcast and drizzling, a typical West Coast day that alternated from rain to drizzle and fog. The winds were calm and the seas glassy when we put in for our day's paddle within the Broken Group Islands unit of Pacific Rim National Park Reserve. As we finished the first small crossing of the day, the fog began to lift, revealing our targeted island. Standing there on the white sandy beach was a wolf, who was at that moment totally unaware of our presence on the water. It shook itself off, trotted down the beach, caught our scent, and disappeared into the forest, leaving us floating in complete silence, totally awed by its presence.

Wolves (*Canis lupus*) began re-establishing themselves onto the Broken Group Islands (BGI) unit of Pacific Rim National Park Reserve in 2000. Prior to that date, the only previous record of a wolf in the BGI was in 1984 when one wolf was seen swimming from Alma Russell Island (outside the park) to Nettle Island. Then 16 years later, in 2000, wolf tracks were seen again on Tricket Island. Since 2000, wolf sign (tracks, scat and kills) and

wolf encounters have increased exponentially. Between 2000 and 2004, there were over 100 recorded observations and encounters in the BGI. The wolves' recent interest in the islands is not yet fully understood. The most probable theory proposes that habitat fragmentation on Vancouver Island, coupled with bear and cougar habitat competition as well as a reduction in deer populations has caused the wolves to disperse to the BGI in search of suitable habitat.

This recent re-establishment of wolves in the BGI, coupled with high rates of visitation to the park (over 12,000 user nights in 2004) between May and October has created the potential for negative interactions between wolves and people. The wolves that inhabit the islands have begun exhibiting less wariness of humans and are learning to forage for food in areas that are highly frequented by people (Dan Vedova, personal communication, October 26, 2004). This type of behaviour not only creates a safety concern for visitors, but also for the wolves. For example, when a wolf exhibits aggression toward a human in response to being fed, the situation will most likely result in the wolf becoming more aggressive and territorial regarding human food sources and end with the destruction of that wolf. In 2002, a food-conditioned wolf was destroyed by park officials after it became aggressive toward people. Legal consequences that are in place, such as fines, are difficult to administer and do not seem to deter people from feeding wildlife.

It is possible that wolves, being social creatures, are coming into contact with people because of their inherent curiosity, exposing them to a higher degree of risk and facilitating a higher frequency of habituation and food-conditioning (Bob Hansen, personal communication, October 22, 2004). Nevertheless, given that by definition, habituation and food-conditioning of animals is *caused* by people, it is important to explore the human dimensions of this situation.

On a global scale, human-wildlife conflicts have become an internationally recognized concern for management agencies and stakeholders of multi-use wilderness areas (Madden, 2004). At the 2004 International Union for the Conservation of Nature (IUCN) World Parks Congress, it was recognized that viable wildlife habitats are increasingly becoming fragmented as a result of human development and industry (Madden, 2004), thus exacerbating the rapid decline in species diversity and ecological integrity (Sanderson, Jaiteh, Levy, Redford, Wannebo, & Woolmer, 2002) and increasing human-wildlife conflicts (Bath, 1998; 2003; Burns, 2003; Forbes, 2004).

As early as the 1940's visionaries such as Aldo Leopold (1945) remarked that the problem of wildlife management should not focus on how to manage the wildlife, but on how to handle people (see also Pimlott, 1967). It has, however, taken almost half a century for managers and academics interested in the human dimensions of wildlife to recognize that "[m]onitoring public concerns and addressing them promptly can help managers better handle the people component of the wildlife management equation" (Bath, 1998, p. 349).

In recent years, there has also been an increased managerial interest in how people influence the environment and what effects they have, both directly and indirectly, on wildlife in Canadian and American parks (Bath, 1998; Bath & Enck, 2003). Humans are acknowledged by academia and management agencies as being capable of modifying ecosystems on local to global scales (Alessa, Bennett, & Kliskey, 2003; Sanderson, et al., 2002) which in turn influences the dynamics and processes within ecosystems (Berkes, Colding, & Folke, 2003; Berkes & Folke, 1998). Environmental modifications, caused by human behaviour, have led both natural resource and tourism researchers as well as managers of parks and protected areas to advocate that reducing human-wildlife conflict involves

managing people (Alessa et al., 2003; Bath & Enck, 2003; Burns & Howard, 2003; Decker, Brown & Siemer, 2001; Forbes, 2004; Madden, 2004; Noble, 2004; Orams, 2002; Roggenbuck, 1992; Slocombe, 2004).

With this argument in mind, the main goal of this thesis was to explore paddlers' attitudes toward wolves and what wolves meant to them while visiting the BGI. Once established, these attitudes and perceptions can contribute more insight into the complex dynamics at play in wolf-human interactions within the BGI of Pacific Rim National Park Reserve.

This study had four phases. Phase I included an extensive literature review on topics including: human dimensions of wildlife; attitudes toward wolves and other carnivores; constrained constructivism and the co-construction of nature; wild carnivore conservation; and carnivore habituation and food conditioning. Phase II consisted of field research that employed two methods of collecting information: questionnaires to collect quantitative data and interviews to collect qualitative data. In Phase III, data were analyzed using descriptive/inferential statistics and thematic coding, as appropriate. A preliminary report was also written for Pacific Rim National Park Reserve. The last phase, Phase IV, involved completing the thesis, a public defence of the research findings and submitting a final thesis to both Lakehead University and Parks Canada. A summary of the report has also been made available to all interested participants and stakeholders.

My lifelong interest in wolves and the recent experience of witnessing a wolf in the BGI on the West Coast of Vancouver Island was the personal impetus for this study. Ultimately, I hope that this study will help protect the wolves that inhabit the Broken Group Islands and provide a better understanding of the people who use the area.

### *Statement of the Problem*

The recent increase in interactions between wolves and people has caused concern for visitor safety and wolf protection by park staff and managers at Pacific Rim National Park Reserve. To respect Parks Canada's prime mandate of ecological integrity while taking into account the importance of visitor satisfaction, the Pacific Rim National Park Reserve background report, *Researching and Managing an Integrated Social Ecological System: Bear, Cougar and Wolf-Human Relationship Research* (Sparkes, 2004), asserts that combining social and biological research is essential if managers are to effectively sustain both visitor satisfaction and the wolf population within the BGI. The park requires a deeper understanding of visitor's attitudes toward and perceptions of wolves to develop effective management approaches.

### *Purpose of the Study*

To better understand the research problem, a mixed methods approach was used, where both quantitative and qualitative collection strategies were implemented. Questionnaires were used to assess paddlers' attitudes toward wolves, while open-ended interviews were conducted to explore what wolves mean to paddlers and paddlers' responses to wolves living in the BGI.

This study, being part of the much larger human-carnivore initiative within Pacific Rim National Park Reserve, provided baseline information on paddlers' attitudes and perceptions of wolves while visiting the BGI. This baseline information will act as a foundation from which Parks Canada can continue to monitor paddlers' attitudes and

perceptions of wolves in the BGI through a longitudinal study that focuses on measuring the success of different management interventions to enhance both visitor and wolf safety.

### *Research Questions*

1. What are paddlers' current perceptions and attitudes of wolves in the BGI?
2. What factors have influenced these perceptions and attitudes?
3. What do wolves mean to paddlers in the BGI and why?
4. How do paddlers feel about the current wolf management strategies in the BGI?

### *Importance of the Study*

In the context of National Parks in both Canada and the United States, Bath and Enck (2003) stressed that:

National Park managers are faced in part with the difficult tasks of providing opportunities for visitors to enjoy and learn about wildlife, protecting wildlife from visitors, protecting visitors from wildlife ... and making all these decisions with the support and understanding of the various publics interested in national parks and their management. (p. 1)

These collective tasks can be applied on a more local scale within the BGI of Pacific Rim National Park Reserve where the local warden has expressed a similar opinion (Dan Vedova, personal communication, October 26, 2004).

This study addressed the issues that these difficult tasks present by providing managers, field staff and stakeholders with insights into paddlers' attitudes toward wolves and what wolves mean to them in the BGI. According to Bath and Enck (2003), "a greater

understanding of human perceptions of interactions with wildlife, along with ecological knowledge and an understanding of the various other human perspectives of natural resource management can help managers make better decisions” (p. 2). As previously mentioned, this study is part of a broader initiative to explore both the human dimensions of human-carnivore interactions in and around Pacific Rim National Park Reserve.

### *Definition of Terms*

**Absolute Relativism:** The ontology that reality is constructed from our ideas and is inseparable from our beliefs, cultures and experiences; and the epistemology that reality is only *partially* knowable (Proctor, 1998).

**Absolute Realism:** Ontologically, reality exists independent of our ideas and separate from our beliefs and cultures; and epistemologically, reality is based on absolute truths (Proctor, 1998).

**Attitudes:** For the purpose of this research, attitudes are considered to be descriptive and are used in an exploratory manner. Kellert (1980a) defined attitudes as “broadly integrated feelings, beliefs and values” (p. 31) that do not necessarily maintain a strong link to individual behaviours (Patterson et al., 2000; Ungar, 1994).

**Charismatic mega fauna:** Large animals that have widespread popular appeal (Lynn, 1998).

**Commercial Paddlers:** Paddlers who are travelling within a group that is led by a hired guide.

**Constructionist Philosophy:** The philosophical proposition that reality is constructed by our ideas, culture, beliefs and experiences, closely tied to relativism (Scarce, 1998; Russell, 1995).

Constrained Constructivism: An ontological view that reality is both socially constructed *and* limited by material reality (Demeritt, 2002; Eden, 2001; Gerber, 1997; Proctor, 1998; Russell, 1994, 2001).

Conflict: For the purpose of this study, conflict refers to the negative interactions between humans and wildlife.

Ecocentric: An ethic where nature deserves moral consideration because it has intrinsic value.

Ecological Integrity: “a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes” (Parks Canada, 2004, p. 1).

Epistemology: The lens through which we see the world; a branch of philosophy that studies “ways of knowing” (Martin, Cashel, Wagstaff & Breunig, 2006).

Food-conditioning: Occurs when animals learn to scavenge from areas where humans, intentionally or unintentionally, leave food or food related items in the open (Burns & Howard, 2003). Food-conditioning poses more threat to human and wildlife safety than habituation (Klenzendorf, 1997). Once conditioned, animals develop a dependency to food handouts or easily accessible food items. If food is withheld after conditioning has occurred then, aggression toward other animals (including humans) often results (Burns & Howard, 2003).

Habituation: occurs when animals become accustomed with an area that is frequented by humans, thus losing their fear of people (Klenzendorf, 1997).

Human footprint: a global map of human impact and influence on the Earth's surface (Sanderson et al., 2002).

Interactions: There exist three types of interactions between humans and wildlife: 1) people enjoying wildlife; 2) people harassing or negatively affecting wildlife; and 3) wildlife negatively influencing or conflicting with people (Bath & Enck, 2003). People enjoy wildlife in many different ways and for many different reasons. For example, wildlife-viewing such as whale-watching or bird watching are considered positive interactions from a human perspective. People negatively affect wildlife when they cause stress to nonhuman species, disturb essential activities and/or cause death or serious injury either intentionally or unintentionally (Bath & Enck, 2003). Wildlife are considered to be in conflict with people when they become a minor nuisance, cause human injury or death and/or cause an increase in perceived risk to human safety (Bath & Enck, 2003).

Meanings: Socially constructed emotional values given to beings, objects or places that are influenced by historical and social contexts (Scarce, 1998).

National Park Reserve: A National Park that is subject to comprehensive First Nations claims.

Ontology: Philosophically, ontology deals with the nature and organization of reality (Smith, 1996); more simply it is a way of being.

Paddlers: individuals who used kayaks or canoes as their primary mode of transportation within the BGI.

Recreational Paddlers: Kayakers and canoeists who travel with friends or family on non-commercially guided trips.

Purposive Sampling Selection: A qualitative sampling technique used to gather information from selected individuals who have specialized knowledge of a specific issue or phenomenon (Creswell, 2003).

Risk: Activities or situations that endanger a person's safety, whether real or perceived.

Social ecological systems: A study of how our social systems (human society) interact with and among ecological systems.

Wild Wolves: Wolves that maintain a wariness of humans and are relatively unimpacted by people (Scarce, 1998).

#### *Delimitations and Limitations*

This study confined itself to interviewing and surveying paddlers within the Broken Group Islands Unit of Pacific Rim National Park Reserve. These islands were chosen as the setting for this study because I have extensive experience paddling within this area, I am familiar with current issues and I was asked by park staff to conduct this research. Paddlers (private groups and commercial groups) were chosen as the focus of this study because they have been recognized as the significant user group within the BGI. The main purpose of this study was to provide Parks Canada with baseline information regarding paddlers' attitudes toward wolves and what wolves mean to them while visiting the park. This research was confined to paddlers' responses to wolves, rather than bears and cougars because wolves are the only large carnivores that currently inhabit the BGI.

Data collection occurred in July, August and September, 2005 and represents only a portion of the visitor season to the BGI. During the summer of 2005, park visitation was down by 60% and there was a tsunami warning at the beginning of the season creating a

challenge for collecting enough data. Due to time constraints and the transient nature of park visitation, I was unable to send the interview transcripts and interpretations back to participants for them to confirm that the data represented what they intended to say, as is recommended in qualitative research strategies (Henderson, 1991).

I wish to note that perspectives of the Nuu-chah-nulth First Nations are also important and no less influential when understanding the current conflicts between humans and large carnivores. First Nations people have lived since time immemorial with large carnivores and generally have a deep and symbolic respect for their animal kin (Kellert, 1996; Stumpff, 2003). Historically, Native peoples in Canada and the United States have given the wolf a place of honour and prestige in contrast to the historic views of early settlers and colonialists of the “New World” (Stumpff, 2003). This perspective, however, is beyond the scope of this research but will be further discussed in the section relating to future research recommendations.

The data that were collected from the questionnaires have been reported using both unweighted data (original data) and weighted data (each questionnaire was weighted to equal 5.6 questionnaires). The weighted data were reported at the request of Parks Canada staff who have strongly supported my research and I feel it is appropriate to grant their request. I am however, aware that weighing the data artificially inflates the differences within the sample and that this could potentially lead to misleading results. This issue will be further discussed in Chapter 4.

A final limitation of this study resulted from the questionnaire being compiled from three previous questionnaires (sources: Bruskotter, 2002; Carrow, unpublished; Kellert, 1990). The questionnaire used in this study is stronger in terms of context and manager

validity, as opposed to content validity given the challenge for substantial field testing of the instrument prior to use. Context validity refers to the ability to avoid incurring type III errors (solving the “wrong” problem) which are common when dealing with complex environmental problems (Dunn, 2000; see also Wiggins, 1993). Manager validity refers to the practical applications of the questionnaire that relate directly to management needs. Although this questionnaire was not pre-tested in the field, it was pre-tested on a group of second and third year Outdoor Recreation, Parks and Tourism students. It was also reviewed by experts in the field including Pacific Rim Wildlife Biologist, Bob Hansen and Social Science Specialist, Jennie Sparkes for face and content validity.

## CHAPTER 2

### Literature Review

#### *Introduction*

The “human dimensions of wildlife management” research has become established in the field of wildlife management. In this literature review, five areas will be explored. First, arguments regarding the importance of wild carnivore conservation will be presented. Next, wild carnivore habituation and food conditioning as they relate to tourism and visitor safety will be discussed. The third section will provide a brief overview of the human dimensions of wildlife management literature and how it relates to outdoor recreation and nature-based tourism. Finally, predictive and descriptive attitudes will be reviewed, followed by an exploration of constrained constructivism and the co-construction of nature. The overarching purpose of this literature review is to familiarize the reader with theories and issues surrounding human-carnivore co-existence, particularly relating to the problem of increasing human-wolf conflict in the Broken Group Islands Unit of Pacific Rim National Park Reserve.

#### *The Issue*

There is a global increase in human-wildlife conflicts (Madden, 2004). One cause of these conflicts was addressed at the 2004 International Union for Conservation of Nature (IUCN) World Parks Congress, where it was reported that protected areas are becoming islands surrounded by seas of development and cultivation (Madden, 2004). Consequently, viable wildlife habitat is diminishing and negative human-carnivore interactions are increasing (Musiani & Paquet, 2004).

These conflicts have been exacerbated in the face of humans occupying or employing roughly 83% of the Earth's surface (Sanderson, et al., 2002). That number continues to increase significantly as the world population grows, intensifying our impacts on natural resources and ecosystems (Madden, 2004, Quammen, 2003). According to Alessa et al. (2003), focusing on human values, knowledge and perceptions is key to reducing our environmentally degrading behaviours.

The negative impacts that humans have on the environment are partially due to poor public education programs (Kellert, 1994; Kollmuss & Agyeman, 2002) and inefficient government legislation, poverty, environmental degradation and colonialism (Kellert, 1994; Scarce, 1998). Therefore, agencies also need to concentrate on eliciting public support for management decisions and on better understanding human perceptions as a way to influence public behaviour (Bath & Enck, 2003; Brown & Decker, 2001; Kellert, 1994).

### *Human Dimensions and Large Carnivore Conservation*

Researchers concerned with environmental conservation and the effects of human actions on the Earth's ecosystems have issued a call to action (Alessa et al., 2003; Kaplan, 2000; Osbaldiston & Sheldon, 2003; Pierce et al., 2001; Pooley & O'Connor, 2000; Slocombe, 2004; Stern, 2000). Alessa et al. (2003) articulated why they believe this call is needed:

Humans are capable of modifying biophysical systems on local to global scales. The mediator of these modifications is human behavior which interfaces between human cognition (social and psychological) and human actions (social and biophysical)...all

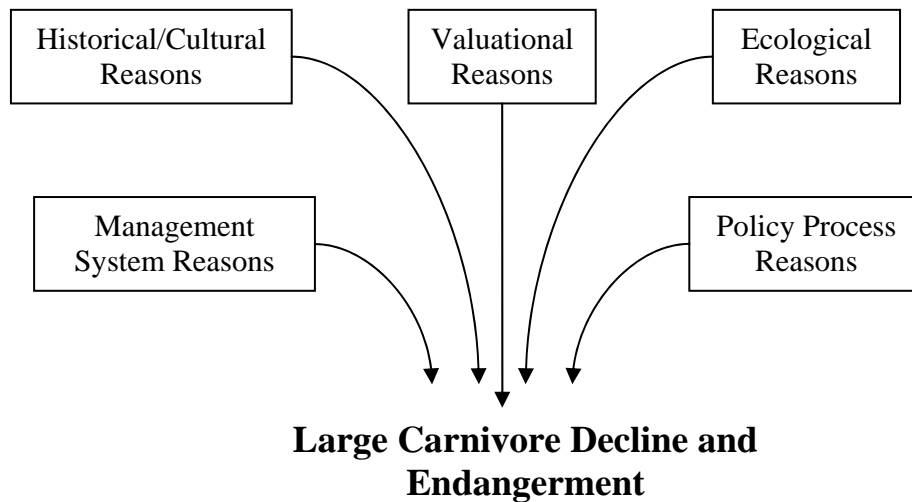
behaviors which visitors [to protected areas] have levy some degree of biological cost. (p. 209)

Examples of intense human influences on the environment include, but are not limited to, urban sprawl, clear-cut logging and myriad forms of pollutions (air, water, light, noise, etc.). Some conservationists have identified and monitored “umbrella species”, such as the grizzly bear (*Ursus arctos*) and the wolf as indicators of change within natural systems. These umbrella species benefit many other components of natural systems; for example, dedicating regions as grizzly protection areas also protects smaller flora and fauna (Darimont & Paquet, 2001, 2002; McAllister, Musgrave, O’Grady & Young, 2001; McNay, 2002; Riley, et al., 2002).

Some biologists have shown that wolves, as top predators, ensure stable populations of other species by maintaining healthy predator-prey relations and indirectly assisting other animals that are dependant on their kills for survival (Darimont & Paquet, 2001, 2002). Wolves are thus acknowledged as an important indicator of environmental health. Without wolves, and large predators in general, a significant link in the intricate web of life is lost, altering the function of ecosystems (Darimont & Paquet, 2001, 2002; Noss, Quigley, Hornocker, Merrill, & Paquet 1996).

As illustrated in Figure 1 (Clark, Curlee & Reading, 1996), the decline in large carnivore populations in North America has been caused predominantly by human action. While not exhaustive, Figure 1 represents an initial step in creating effective carnivore conservation initiatives by identifying and grouping five factors that influence the decline of large carnivore conservation efforts . The five factors in this figure are portrayed as independent, but in reality are interrelated in various ways. For example policy formation

can influence management and hunting practices; while hunting and trapping practices (historical/cultural) can influence the ecological systems that support the wolves. This interconnectedness illustrates how the social and ecological systems influence each other and create a complex picture of large carnivore management and conservation.



**Figure 1.** Schematic representation of the five factors that influence large carnivore conservation in North America (Clark, Curlee & Reading, 1996)

Management systems and the policy process play significant roles in this model. Linnell, Swenson and Andersen (2001) articulated that a major reason for the decline in large carnivore populations during the 18<sup>th</sup> and 19<sup>th</sup> centuries was the existing management regimes. During this time, bounty hunting was popular and furs had high market values, creating conducive conditions for exterminating large carnivores in North America and Europe (Mech, 1995; Stevens, et al. 1994).

Linnell et al. (2001) believe that large carnivore conservation is possible at high human densities, *if* management and public opinions are in favour of co-existence. For example, in Europe and North America, it has been found that “large carnivores and their prey can persist within many heavily modified habitats (though not all) at high human

densities” when management regimes are favourable (Linnell, et al., 2001). Although this finding is of interest, it does not negate the fact that people (myself included) still need to be accountable for the consequences of their actions. This statement should not be viewed as an argument to continue the development of wilderness areas, but instead should be viewed as an acknowledgment of the resilience of some large carnivores to human intrusion (Weaver, Paquet, & Ruggiero, 1996).

### *Habituation and Food-Conditioning*

It may be possible for large carnivores, including wolves, to persist in areas of high human densities, but their habits and behaviours are nonetheless affected by the presence of humans (Dalle-Molle & Van Horne, 1989; Green, 2003). Diminishing viable wildlife habitat in the name of “progress” generally results in humans and large carnivores directly competing for the same territory and resources (Musiani & Paquet, 2004).

One major cause of negative interactions between people and carnivores in this context is the loss of fear exhibited by carnivores who have been “habituated, food-conditioned, diseased, or may have exhibited fearless behaviour because they were naïve or misidentified people as prey” (McNay, 2002, p. 833; see also Linnell, et al., 2002).

Habituation of an animal occurs when that animal loses its fear of people because of “frequent non-consequential encounters” (McNay, 2002, p. 833; see also Olson et al., 1997).

If nothing deters an animal from human contact, there will be no impetus to avoid humans and a loss of fear will result. Food-conditioning refers to animals “that have formed an [positive] association between food and people” (Klenzendorf, 1997, p. 7). This type of positive reinforcement is difficult to reverse (Klenzendorf, 1997). Although habituation and

food- conditioning change carnivore behaviours in distinct ways, both result in carnivores losing their fear of humans (McNay, 2002). This situation causes safety issues in wilderness settings for both people and carnivores (Burns & Howard, 2003; Green, 2003; Orams, 2002).

The global increase in food-conditioning of wildlife has led to documented cases of conflict between humans and carnivores resulting in human injury and carnivore destruction (Green, 2003). Such a case occurred in Victoria, Australia, where wildlife viewers regularly fed resident dingoes (Orams, 2002). The dingoes began expecting food and became aggressive when food was withheld. Two attacks on tourists resulted from the food-conditioning of wild dingoes (Orams, 2002). Several hours after the attacks, park officials tracked down and destroyed the conditioned dingoes to avoid further human-dingo conflicts (Orams, 2002).

As a response to negative human-wildlife interactions, researchers have increasingly advocated for the practice of aversive conditioning, such as firing cracker shells, making noise, shooting wildlife with plastic plugs (Burns & Howard, 2003; Dalle-Molle & Van Horne, 1989). This has proven to be an effective strategy to reduce human-wildlife conflicts, especially with bears (Dalle-Molle & Van Horn, 1989). Less intrusive habitat modification strategies, such as building fences and providing bear-proof containers for food and garbage storage are also recommended by Orams (2002) and Burns and Howard (2003).

Aversive conditioning is an effective method for instilling fear of humans into wildlife, including wolves (McNay, 2002). It can be argued, however, that management strategies which focus on the human dimensions of wildlife management may help prevent the need for aversive conditioning in the first place (Green, 2003; Howard & Burns, 2003; Orams, 2002). Many researchers assert that reducing human-wildlife conflict begins with

managing people (Burns & Howard, 2003; Forbes, 2004; Madden, 2004; Noble, 2004; Orams, 2002; Roggenbuck, 1992; Slocombe, 2004; Treves & Karanth, 2003). Unfortunately, management policies in many parts of the world are slow to fully embrace this technique (Burns & Howard, 2003).

In Scandinavia, Western Europe, Australia, Mexico, Canada and the United States, researchers have examined public attitudes toward wolves in an attempt to gain a better understanding of what management techniques will enable wolves and people to co-exist (Enck & Brown, 2002; Ericsson & Heberlein, 2003; Kaltenborn & Bjerke, 2002; Kaltenborn, Bjerke & Strumse, 1998; Musiani & Paquet, 2004; Rodriguez, Krausman, Ballard, Villalobos, & Shaw, 2003; Williams, Ericsson, & Heberlein, 2002). By focussing on the management of both humans and wildlife, managers hope to create a situation where, despite key wildlife habitats shrinking and humans and wildlife being forced into closer and closer proximity to each other, co-existence is possible (Burns & Howard, 2003; Compton, 1994; Forbes, 2004; Linnell, et al., 2001; Madden, 2004; Orams, 2002).

### *Social-Ecological Systems*

In developed countries, such as those in North America and Europe, managers and researchers within National Parks have begun integrating social science research with biological and ecological studies in order to address human-wildlife conflicts (Madden, 2004). For example, Parks Canada has begun a number of social science initiatives to address human uses of Canadian parks as they relate to ecological integrity, natural resource management and visitor satisfaction (Nilsen, 2003; Parks Canada Agency, 2004; Sparkes, 2005). According to Payne (2000), within parks “an improved social science capacity and a

consistent, coordinated long term direction for social science research will be essential to manage human use more effectively” (p. 1).

The evolution of natural resource management in North America began with a focus on “natural resources first, foremost and forever,” which transformed into the outlook that “natural resource management, for better or for worse, involves people” (Kennedy & Koch, 2004, p. 497). The goal of natural resource management then shifted to present thinking that managing natural resources should include “people and ecosystem relationships” (Kennedy & Koch, 2004, p. 497). The current view of social-ecological systems, where humans are considered part of the natural ecosystem, is gaining momentum within academia and parks management agencies (Anderies, Janssen & Ostrom, 2004; Bath & Enck, 2003; Kenedy & Koch, 2004; Musiani & Paquet, 2004; Payne, 2000). Current Canadian and United States National Park authorities now strive to “establish and preserve the ecological integrity of sensitive natural ecosystems as well as to care for the demand of recreational activities in a natural setting, conduct research, and establish parks as places for environmental education” (Papageorgiou, 2001, p. 61). There does exist however, in some areas, a resistance to incorporating social systems research, such as traditional ecological knowledge and local ecological knowledge, into ecological and biological research (Lemelin & Smale, 2004).

A major challenge, faced by researchers studying socio-ecological systems, is that these complex systems that are continuously co-evolving “are never fully designed or controllable, nor are they amenable to the definition of one simple, easily measurable performance index” (Anderies et al., 2004, p. 3). The benefit of a social-ecological system approach, as applied to wildlife management issues, is that it incorporates natural science with social science through stakeholder participation to understand how change influences

both systems. Such an integrated approach can significantly increase the effectiveness of management choices (Anderies et al., 2004; Bath & Enck, 2004; Kennedy & Koch, 2004; Mitchell, 1989; Payne, 2000; Payne & Nilsen, 2002). Indeed, integrating biological sciences with social sciences in a parks context is thought to increase the ability of wildlife professionals to create programs that target human dimensions (Brown & Decker, 2001; Riley, Decker, Carpenter, Organ, Siemer, Mattfeld & Parsons, 2002).

### *Human Dimensions of Wildlife Management*

Wildlife managers have shown interest in the human dimensions of wildlife for over half a century (Witter & Jahn, 1998). For example, King (1948) and then Gilbert (1971) advocated that technological information should be infused with peoples' understandings of their relationships to wild game. These wildlife managers focussed primarily on obtaining public polls and surveys regarding the relationship between hunters and wildlife (Brown & Decker, 2001; Manfredo, 1989; Manfredo, Vaske & Sikorowski, 1996; Patterson et al., 2000).

The 1980's were witness to the next movement in the field of human dimensions of wildlife – the focus began to shift from human consumption to park user and tourist patterns (Brown & Decker, 2001; Kellert, 1985a). In 1981, Kellert notably initiated one of the first academic human dimensions of wildlife research groups which laid the groundwork for today's school of thought (Brown & Decker, 2001).

Currently, academics and managers generally argue that the concept of human dimensions in wildlife management relates to four major themes: understanding the public's support or opposition to management actions; understanding how people value wildlife;

working with people who can affect, or are affected by, management decisions regarding wildlife; and integrating biological with social sciences (Decker, Brown & Knuth, 1996; Decker et al., 2001; Patterson et al., 2000). Underlying each of these themes is the belief that wildlife management begins with managing people and cannot be successful if it relies solely on scientific and specialist perspectives (Gray, 1993).

Research that focuses on the human dimensions is pursued with the intent “to provide wildlife managers with information regarding political, economic, and sociocultural factors, which when combined with biological and ecological information, comprise the body of knowledge necessary to direct wildlife management” (Patterson et al., 2000, p. 215; see also Bath & Enck, 2003; Decker et al., 2001; Decker et al., 1996). The focal point for studies attempting to understand human dimensions of wildlife management has undeniably been attitudes (Brown & Decker, 2001; Decker et al., 2001; Decker et al., 1996; Kellert, 1999, 1996, 1991, 1990, 1985a, 1985b; Kellert, Black, Reid Rush & Bath, 1996; Patterson et al., 2000). Whether attempting to understand perceptions, responses or behaviour toward wildlife, attitudes have been key elements in academic and managerial research (Patterson et al., 2000).

### *Attitudes*

During the 18<sup>th</sup> and 19<sup>th</sup> centuries, throughout the colonies of North America and across Europe, the symbolization of wolves was decidedly negative (Ericsson & Heberlein, 2003; Schanning & Vazquez, 2005). For example, western euro-centric mythologies and stories such as *Peter and the Wolf*, *The Boy Who Cried Wolf*, *The Three Little Pigs*, and *Little Red Riding Hood*, all helped to vilify this animal (Ericsson & Heberlein, 2003; Schanning &

Vazquez, 2005). Steeped in these childhood tales, European and early American settlers generally held strong negative attitudes toward wolves that went far beyond solely viewing these animals as competition for food; wolves were also perceived as a major threat to personal safety, livestock and progress (Kellert, 1985b; Kellert et al., 1996; Schanning & Vazquez, 2005). Wolves were perceived as “denizens of the wilderness” and, as such, entities that needed to be conquered and vanquished (Bath & Buchanan, 1989; Enck & Brown, 2002; Kellert, 1985a; Kellert et al., 1996). These negative attitudes were, in a large part, the impetus to extirpate the wolf from most of southern Canada, Mexico and the mainland United States (Darimont & Paquet, 2002; Lopez, 1978; Mech, 1995, 1970; Musiani & Paquet, 2004).

Some people would argue that Western society has “conquered” nature, effectively removing people from it and providing “refuge” for people in the concrete safety of cities (Carson, 1962; Kellert, 1996, 1985a; Leopold, 1945; Thoreau, 1997). Many wildlife researchers have asserted that this shift has led to a drastic change in attitudes toward wolves; from vermin to an integral part of a healthy ecosystem (Enck & Brown, 2002; Hunziker, 1999; Kellert, 1991, 1985b; Kellert et al., 1996; Musiani & Paquet, 2004; Williams, Ericsson & Heberlein, 2002).

There are exceptions, however; negative attitudes toward wolves generally remain among farmers and rural residents throughout North America and Europe (Ericsson & Heberlein, 2003; Kellert, 1996; Kaltenborn, Bjerke & Strumse, 1998). Attitudinal studies have concluded that residents who live close to established wolf populations and/or own livestock tend to maintain negative attitudes toward large carnivores (Kellert, 1999, 1996, 1991, 1990, 1985a, 1985b; Kellert, et al., 1996). Evidently then, there exists differing

attitudes toward wolves throughout Canada and across the United States. According to Kellert et al. (1996), “throughout North America’s history of intense persecution of wolves, the animal has been a powerful barometer of changing attitudes toward the natural world” (p. 981).

Gaining a better understanding of public attitudes toward wolves (within regions or within specific communities of people, such as paddlers) helps natural resource managers to integrate social science research into wildlife management (Bath & Enck, 2003). One result of positive public attitudes toward wolves has been the support from interest groups and government agencies in the form of protective legislation; in direct contrast to the bounty hunting of large carnivores in the past (Stevens, More & Glass, 1994).

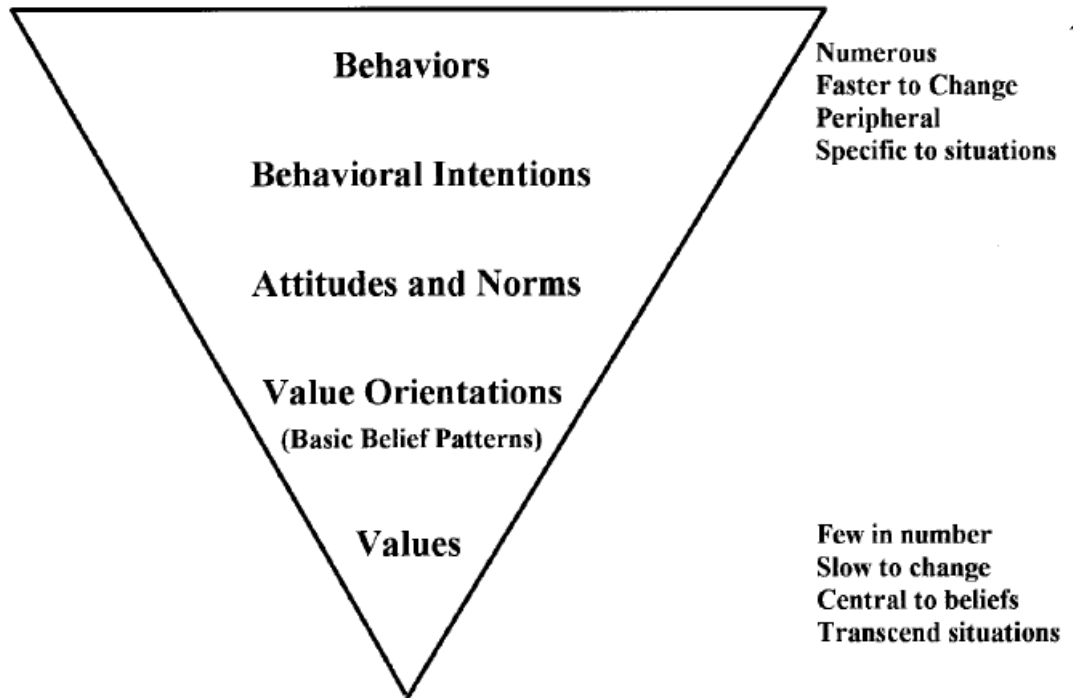
#### *Attitudes through a Social Psychological Lens*

Before addressing descriptive attitudes, it is important to understand attitudes from a social psychological perspective. Within the social sciences, social psychology has dominated the human dimensions of wildlife research (Manfredo, 1989; Manfredo, Vaske & Decker, 1995; Patterson et al., 2000). According to many social psychologists, the underlying factors that motivate a person to act are his or her perceptions and beliefs, which in turn affect attitudes, intentions and behaviours (Ajzen, 1988, 1985; Alessa et al., 2003; Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975; Fishbein & Manfredo, 1992). Two behavioural theories in social psychology are the Theory of Reasoned Action and the Theory of Planned Behaviour. These theories postulated that if one could uncover a person’s beliefs and attitudes toward a subject or target, then conceivably one could influence the behaviour that

indirectly results from those positive or negative attitudes (Ajzen, 1985; Fishbein & Ajzen, 1975).

This approach has been used in many studies whose goal is to predict human behaviour (Ajzen, 1988, 1985; Fishbein & Ajzen, 1975). Within the perspective of behavioural prediction, “reality is seen as being composed of complex wholes that can be decomposed into independent units of basic information that can be described by multivariate models, the elements of which can be studied together or separately” (Patterson & Williams, 2002 p. 15).

Understanding how to effectively influence human behaviours in the context of visitors to National Parks is essential if managers aim to protect the environmental integrity in these significant areas. Gaining insight into human attitudes and beliefs enables managers to better understand visitor behaviours, an important aspect of influencing human behaviour to achieve ecological integrity objectives. Vaske and Donnelly (1999) suggest that “an individual’s view of the environment in which he or she lives can be organized into a cognitive hierarchy of values, value orientations (i.e., patterns of basic beliefs), attitudes/norms, behavioral intentions and behaviors” (p. 524). Figure 2 provides a visual illustration of the cognitive hierarchy, as described by Fulton et al. (1996).



*Figure 2.* A model of cognitive hierarchy describing the relationship between values and behaviours (Fulton et al., 1996, p. 36).

The potential benefits of using this approach is that wildlife managers can design strategies to influence people’s value orientations (their beliefs) which can in turn, conceivably, influence people’s behaviours (Alessa et al., 2003; Eagly & Chaiken, 1993; Fransson & Garling, 1999; McCool & Braithwaite, 1989; Pierce et al., 2001; Pooley & O’Connor, 2000). However, I believe that two fundamental questions remain: Are humans rational creatures who unerringly translate their intentions into behaviour, as the above mentioned theories assume? And can we effectively predict human behaviour in an unpredictable environment? These questions will be partially addressed in the following section, although a complete explanation and investigation is beyond the scope of this literature review.

### *Critiques of a Social Psychological Lens*

As noted, both the Theory of Reasoned Action and the Theory of Planned Behaviour assert that if intentions are understood, then behaviour can be predicted (Ajzen, 1985, 1988; Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). The major assumption of these models is “that attitudes actually cause behavior” (Bright, 2003, p. 327). If a researcher does not hold this assumption, then these models will be of little use to that researcher. Even if the researcher does agree that attitudes are the driving force of behaviours, it must still be noted that many factors influence people’s attitudes and, as such, behaviour prediction is a complex and non-linear endeavour (Bright, 2003). Admittedly, “[c]urrent measurement methods also pay attention to the fact that the relationship between attitude and behaviour is imperfect” (Alessa et al., 2003, p. 379; see also Bamberg, 2003). Still, Bright (2003) argues that “general linear models usually focus on single behaviors, [yet] the benefits of addressing several behavior alternatives in examining attitude-behavior relations are apparent. Many situations require that a person choose between two or more behaviors” (p. 328).

These theoretical behavioural models have been used in the health field and in controlled environments (Eagly & Chaiken, 1993). They appear to be less effective, however, in predicting environmental behaviour within the fields of outdoor recreation and education (Alessa et al., 2003; Kollmuss & Agyeman, 2002). Ungar (1994) found that “the environment is a domain in which attitudes do not predict behaviours very well” (p. 288) and that “the environment is a synthetic macrocategory with weak A-B [attitude-behaviour] relationships that are not amenable to a methodological fix” (p. 296). Similarly, Patterson and Williams (2002) asserted that “to reduce a phenomenon to its ‘basic’ elements or to remove

elements from the larger context is to eliminate much of what is meaningful about the phenomenon” (p. 15).

Behavioural choices that are pro-environmental, for example, seem to be affected by more than one variable (Bright, 2003; Ewert & Galloway, 2005). Alessa et al. (2003) argue that “there are many possible determinants of a pro-environmental behaviour. Thus, the same behaviour may be performed for different reasons by different individuals or by the same individuals at different times” (p. 378). Furthermore, “the question of what shapes pro-environmental behavior is such a complex one that it cannot be visualized through one single framework or design” (Kollmuss & Agyeman, 2002). Armitage and Conner (2001) conclude that “[i]n the prediction of social behaviours, there are no absolutes” (p. 473). Environmental behaviour, in many cases, is self-reported, creating a discrepancy between what people say and what they actually do.

While social psychological theories may not effectively predict pro-environmental or outdoor recreational behaviour, they can still be useful. For example, Kollmuss and Agyeman (2003) assert that although “developing a model that incorporates all the factors behind pro-environmental behaviour might neither be feasible nor useful, we do find diagrams that serve as visual aids in clarifying and categorizing such factors helpful” (p. 256).

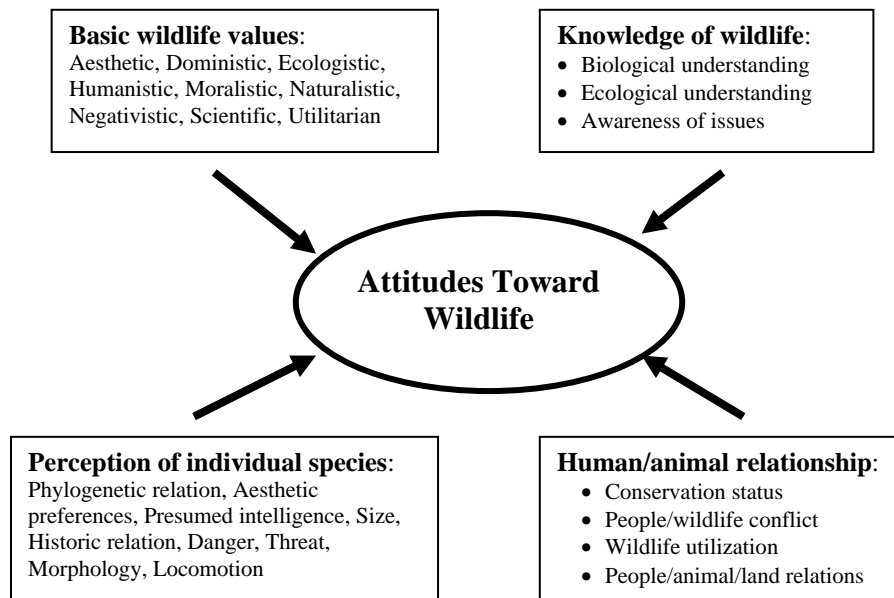
### *Attitudes through a Sociological Lens*

The above critique was taken to heart in this research, where the focus was not on predicting human behaviour, but exploring and describing paddlers’ attitudes toward wolves. The sociological literature offers a different approach from the primarily predictive socio-

psychological schools of thought (Patterson et al., 2000). According to Williams and Patterson (1999), “there is growing recognition that key underlying ontological assumptions (e.g., humans are rational, analytical information processors whose behavior is motivated by specific goals and expectations) are not always the appropriate basis for understanding environmental attitudes, preferences, and behaviors” (p. 151).

Sociologist Stephen Kellert (1999, 1996, 1994, 1991, 1990, 1985a, 1985b, 1980a, 1980b, et al. 1996), is one of the first researchers who attempted to develop a comprehensive understanding of attitudes as they related to wildlife. His research has provided wildlife professionals with a better understanding of how the public perceives wildlife and management techniques (Patterson et al., 2000). According to Kellert (1980a), attitudes and behaviours are clearly distinct elements of a person’s psyche: “attitudes are broadly integrated feelings, beliefs and values...that are not necessarily consistent with an individual’s behavior” (p. 31). Kellert’s original attitudinal studies were therefore intended to be exploratory and “descriptive (i.e. to describe types of attitudes and how they differ across different groups of people) rather than explanatory or predictive (i.e. to use attitudes as a basis for explaining or predicting behaviour)” (Patterson et al., 2000, p. 216).

Kellert (1996) postulated that there exist four major factors that influence people’s attitudes toward wildlife (see Figure 3): basic values that people hold toward nature and wildlife; different perceptions people have of wildlife; knowledge of wildlife; and general understandings of human/wildlife relationships.



**Figure 3.** Factors shaping attitudes toward wildlife (Kellert, 1996, p. 100)

Kellert (1990) took these four factors into consideration when he created his six attitude scales. Kellert (1990) defined these seven attitude scales as follows:

Humanistic: Strong affection for the wolf and for its existence, value and protection.

Naturalistic: Strong interest in direct outdoor recreational contact with the wolf.

Negativistic: Strong fear, dislike, or indifference toward the wolf.

Doministic: Strong interest in mastery, control and dominance of the wolf, often in a consumptive use and sporting context.

Utilitarian: Strong support for the utilization of the wolf, or subordination of wolf habitat for the practical benefit of humans.

Ecologistic: Strong interest in the ecological value of the wolf, and its relationship to other species and the natural environment. (p. 74)

While socio-psychological and, to a degree, sociological attitude approaches are common in human dimensions of wildlife literature, research focusing on sociological

approaches to meanings is becoming increasingly popular within academia and management agencies (Felt, 1994; Hyman & Wernstedt, 1995; Scarce, 2000, 1998; Sutherland & Nash, 1994). Meanings are expressive, intangible and symbolic; differing from attitudes because they “cannot be tied to measurable (tangible) environmental features” (Williams & Patterson, 1999, p. 152). Patterson et al. (2000) assert that research investigations involving meanings will continue to grow in importance, particularly in the area of conflict resolution between differing human agencies and between humans and wildlife.

### *Constrained Constructivism*

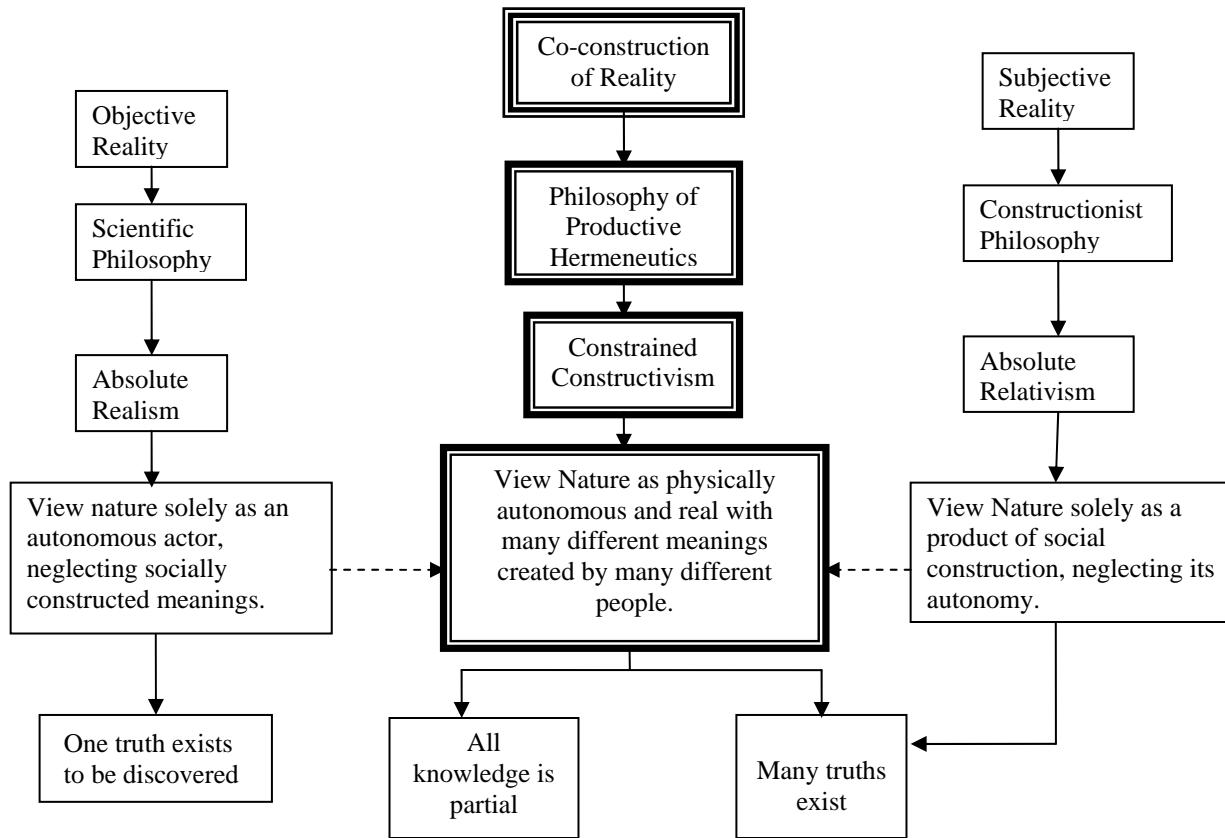
As a complement to descriptive attitudinal research, meanings are able to access deep, rich and contextual data. For example, exploring people’s historical and cultural backgrounds in relation to their “understandings of other animals is a relatively new area of research and has already begun to result in a rich body of work” (Russell, 1995, p. 151). From a sociological perspective, meanings are formed from the understandings that people have of the world and are specific to cultural and historical contexts (Scarce, 1998). Similarly, Eden (2001) argues that: “[w]e need to link conceptual research on what ‘nature’ and ‘the environment’ *mean* to practical research on how to manage them” (p. 83, italics added).

Williams and Patterson (1999) consider meanings to be intangible, symbolic, cultural and emotional responses “through which people attend to and perceive nature” (p. 151; see also Scarce, 1998). The different meanings that people hold about nature, wilderness and wildlife affect the various attitudes they have toward these entities (Kaltenborn, Bjerke, & Strumse, 1998; Williams & Patterson, 1999). Meanings are affected in turn by socially represented languages and symbols with which people are familiar (Gerber, 1997).

Meanings are shaped by social influences and by the physical world that surrounds us. According to Patterson and Williams (2002), “the world as experienced [by people] is not solely a construction of an individual’s mental processes nor merely a reflection of the external world...Instead, it is seen as being co-constituted by the individual and the world” (p. 14). This view is consistent with a constrained constructivist ontology which recognizes that reality is not only socially constructed and thus composed of multiple truths, but also limited to material reality (Demeritt, 2002; Eden, 2001; Gerber, 1997; Proctor, 1998; Russell, 2001, 1994). As illustrated in Figure 4, constrained constructivism exists within the middle ground between absolute realism (objective reality) and absolute relativism (subjective reality).

Soper (1995) asserted that nature is both socially constructed and independent of those who construct it. She stated that although the social construction of nature “is a ‘cultural construct’ in the sense that it has acquired its form as a consequence of human activity, that activity does not ‘construct’ the powers and processes upon which it is dependent for its operation” (p. 249; see also Woodgate & Redclift, 1998). In other words, human activities (and perceptions of the environment) are dependant on nature, but nature is not dependant on human activity for its existence.

### Understandings of Reality



Compiled from Demeritt (2002), Eden (2001), Gerber (1997), Patterson & Williams (2002), Proctor (1998) and Russell (2001).

**Figure 4.** Visual representation of a constrained constructivist understanding of reality

This is not to say that nature and wildlife do not exist outside of our socially constructed realities, but that the “real” world influences the meanings that we give to tangible objects and intangible perceptions (Crist, 2004). Nature does not become “part of a *discursive* world, [where] any ‘problems’ which might exist within this world are produced and solved by debate rather than by embodied action” as Kidner suggests (2000, p. 341). While the constrained constructivist worldview maintains that nature does not need humans to exist because it exists independently of human thought and meaning, the human footprint

covers more and more of the Earth's ecosystems. Thus, "nature can no longer be regarded as operating solely outside of the social purview, and society cannot be regarded as separate from nature" (Kleese, 2002, p. 313; see also Tovey, 2003). Although nature does not need humans for its existence, if we as a species wish to continue *our* existence, we need to promote pro-environmental behaviour and act in the best interest of self-preservation, for our own sake and the sake of the planet as we know it (Alessa et al., 2003; Kleese, 2002; Sanderson et al., 2002)

### *Conclusion*

Research into large carnivore conservation and the human dimensions of this endeavour has evolved over the past thirty years. As a result, wildlife management has become concerned not only with biological aspects of carnivore conservation, but also with managing humans as a means to protect and conserve wild carnivores and increase human safety. Many wildlife researchers and park managers alike agree that large carnivore conservation is an integral element to maintaining healthy and functioning ecosystems. As illustrated in this review of literature, some researchers have advocated that human co-existence with large carnivores is possible if integrated with favourable management strategies that are supportive of this effort.

One of the key elements in human dimensions of wildlife research that has received much attention from both the socio-psychological and sociological disciplines is people's attitudes toward wildlife. Complementing this research is the growing recognition that the meanings people make about wildlife are also important factors in developing effective strategies to influence human behaviour and to achieve wildlife management objectives.

For example, in Pacific Rim National Park Reserve, social-ecological systems research is currently being employed to better understand the increase in human-carnivore encounters in the various units of the park. To achieve this, the park has two research streams investigating the causes of and solutions to human-carnivore encounters. One research stream is focusing on wildlife physiology and behaviour, while the other is focusing exclusively on the human dimension of the issue, of which this study is part. My research has explored both attitudes toward wolves and the different meanings that paddlers make about wolves in order to create baseline information and to gain a better understanding of how paddlers perceive wolves in the Broken Group Islands Unit.

## CHAPTER 3

### Methods

#### *Methodology and Methods*

The following chapter will clarify the differences between qualitative and quantitative paradigms and provide a rationale for using both data collection methods.

This research was pursued within a qualitative methodological paradigm using a mixed methods approach for data collection. The qualitative paradigm is congruent with my interest in a constrained constructivist understanding of human/wolf relations. Both the qualitative paradigm and constrained constructivism recognize that reality is composed of multiple truths and that individuals develop subjective meanings about objects or experiences (Demeritt, 2002; Eden, 2001; Gerber, 1997; Proctor, 1998; Russell, 2001). As Creswell (2003) argues, “meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas” (p. 8).

Quantitative data were also collected in this study in order to access information from a large number of people. This approach is congruent with the wishes of Parks Canada and will enable this agency to build upon their existing quantitative human-carnivore data in the Long Beach and West Coast Trail Units of the park. The quantitative paradigm is based on the scientific method and asserts that science is “characterized by empirical research; all phenomena can be reduced to empirical indicators which represent the truth. The ontological position of the quantitative paradigm is that there is only one truth, an objective reality that exists independent of human perceptions” (Sale, Lohfeld & Brazil, 2002, p. 44). Alternately, the qualitative paradigm is based on interpretivism and constructionism which asserts that

“there are multiple realities or multiple truths based on one’s construction of reality” (Sale et al., 2002, p. 45).

Creswell suggested that mixing data collection methods means that the “results from one method can help develop or inform the other method” (Creswell, 2003, p.16). Similarly Sale et al. (2002) asserted that mixing methods could be successfully done if the methods are used to complement each other with the understanding that each explores a different phenomenon. In order to successfully combine these two paradigmatically different methods, the researcher must acknowledge the different phenomena that each respective method is attempting to explore: “The distinction of phenomena in mixed-methods research is crucial and can be clarified by labelling the phenomenon examined by each method...the distinction between ‘lived experience’ and ‘measure’ reconciles the phenomenon to its respective method and paradigm” (Sale et al., 2002, p. 50). For example, in this study, paddlers’ attitudes toward wolves were measured by using attitudinal scales on a questionnaire (quantitative), while the ways in which paddlers viewed wolves and the meanings that paddlers held about wolves and why were investigated using interviews (qualitative).

### *Implementation Sequence*

The quantitative questionnaires and the qualitative interviews were gathered using a modified version of Creswell, et al. (2003) concurrent triangulation design (see Figure 5). In this technique “the quantitative data collection and qualitative data collection are concurrent, happening during one phase of the research study. Ideally, the priority would be equal between the two methods...This design usually integrates the results of the two methods during the interpretation phase” (Creswell et al., 2003, p. 228). The major flaw with this

technique was noted by Trend (1978/1979) who concluded that using the concurrent triangulation strategy of mixing qualitative and quantitative methods when collecting, analyzing and interpreting data can lead to polarization and conflict: “each side held so tightly to its own views that it was impossible to brush aside the lack of congruence” (Maxwell & Loomis, 2003, p. 260). To avoid these pitfalls, the present design was employed with the intent of pursuing two distinct phenomena as outlined and espoused by Sale et al. (2002). Following the analysis phase, these two phenomena of attitudes and meanings were integrated during the interpretation phase.

Using this data collection strategy, I gained access to individuals willing to participate in the interviews through their involvement in the questionnaire. It is possible that these individuals’ interview responses may have been influenced by initially responding to the questionnaire; however, this influence will be minimal, because different phenomena were being explored. A visualization of the data collection strategy is illustrated below in Figure 5.

As shown, both quantitative and qualitative data collections are given equal priority. This is depicted by the capitalization of both methods in Figure 5, as suggested by Morse (1991) and Tashakkori and Teddlie (1998). In this model, both types of data are collected before analysis occurs. After collection was completed, the qualitative and quantitative data were analyzed separately in order to maintain ontological congruity. Both the quantitative and qualitative data were integrated during the discussion phase of the research as recommended by Creswell et al. (2003).

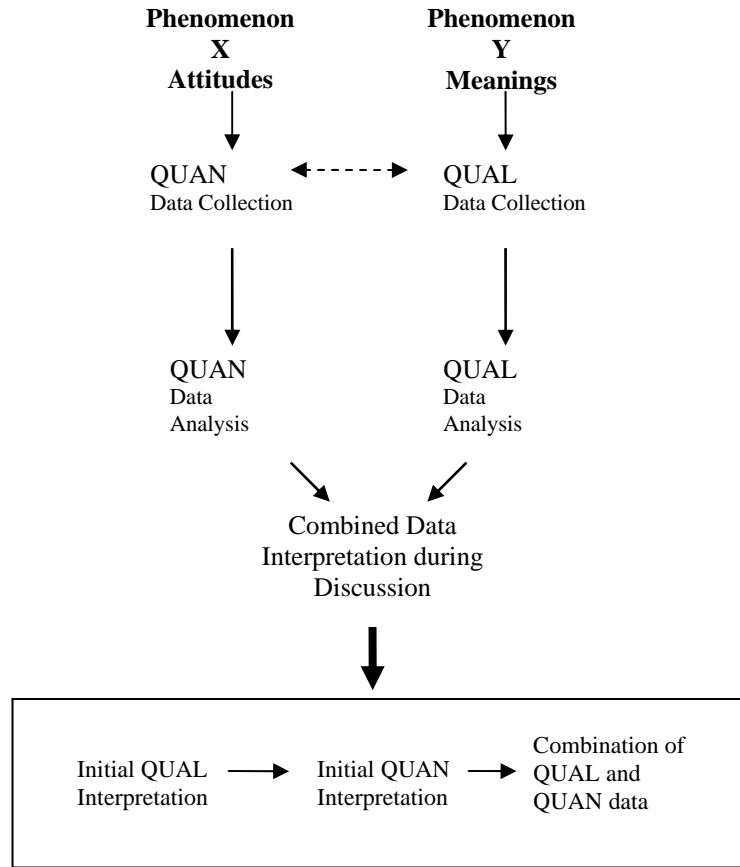


Figure 5. Visualization of concurrent data collection methods (compiled from Creswell, Clark, Gutmann & Hanson, 2003; Sale, Lohfeld & Brazil, 2002).

### *The Place, the People and the Time*

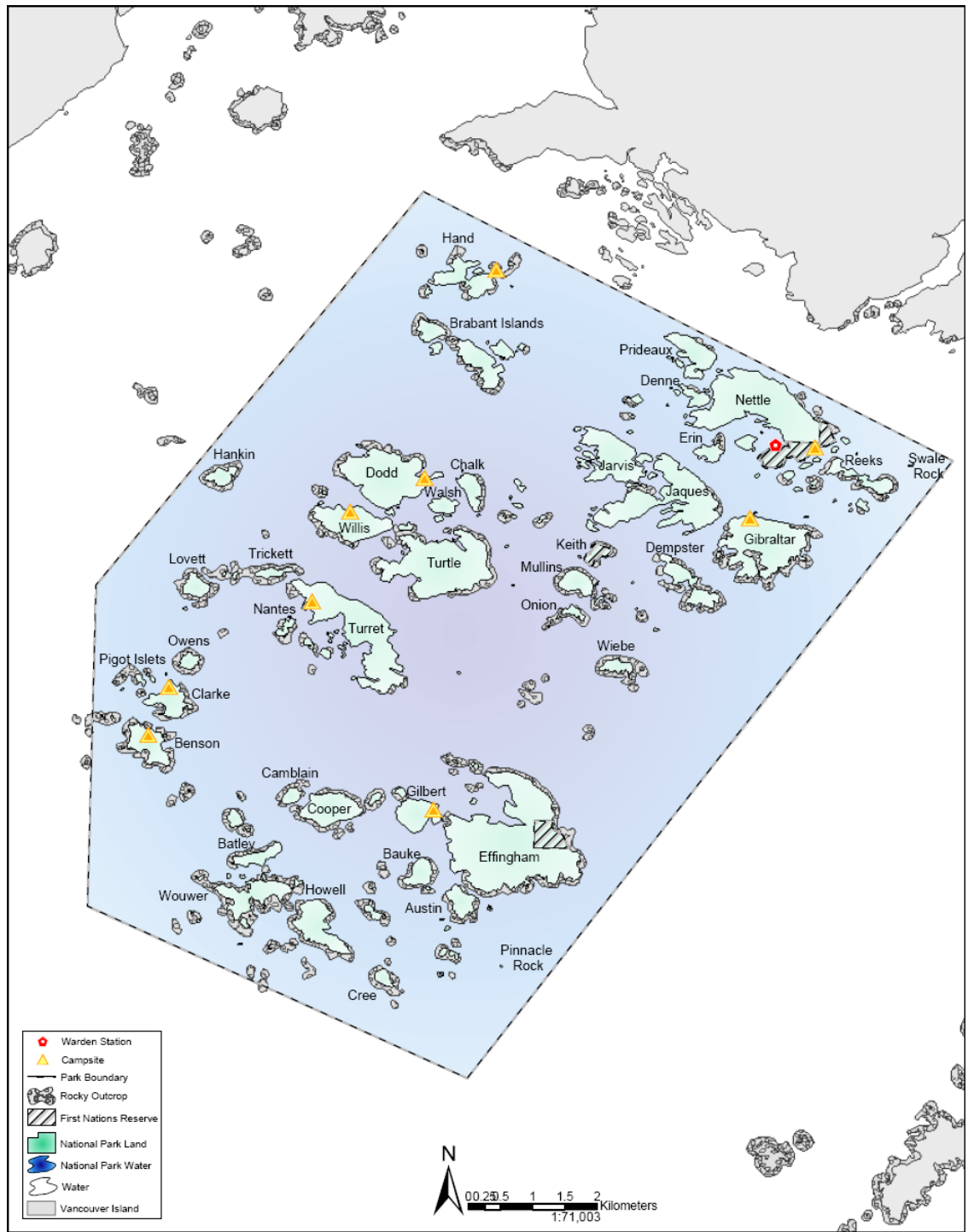
#### *The Place*

This study took place in the Broken Group Islands Unit (BGI) unit of Pacific Rim National Park Reserve of Canada. The BGI can be found on the West Coast of Vancouver Island, north of Bamfield and south of Ucluelet in Barkley Sound. Eight available campsites are situated on eight different islands and have historically been the only areas in the park where visitors may spend the night (Figure 6). Each campsite includes paths that lead from sandy beaches to the camping areas and is equipped with a solar composting toilet. In 2005,

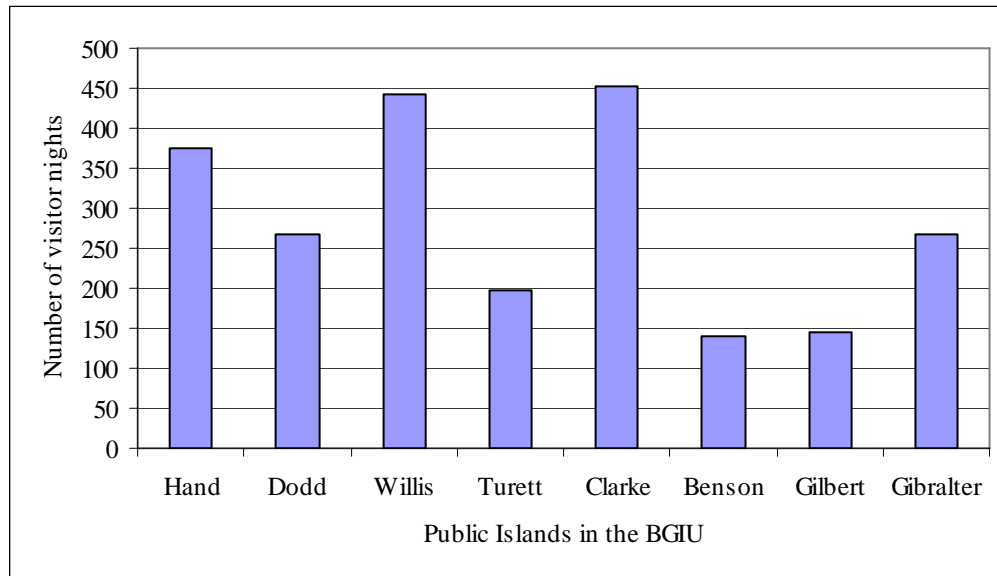
an island in the BGI was rented from the local First Nations band and was privately used by one commercial kayaking company, increasing the number of islands included in this study from eight to nine.

There are two main access points into the BGI for paddlers. The first access point, Toquart Bay, is accessed by driving down a 16 km road (45min) from the Tofino highway. Most paddlers from this area spend their first night on Hand Island. The second access point is from the Sechart Lodge, located just north of the park on Vancouver Island. Paddlers access the lodge via ferry boat from Port Alberni, Ucluelet or Bamfield. Most paddlers who access the BGI from the lodge explore the islands surrounding Gibraltar where they generally spend their first night (Figure 6).

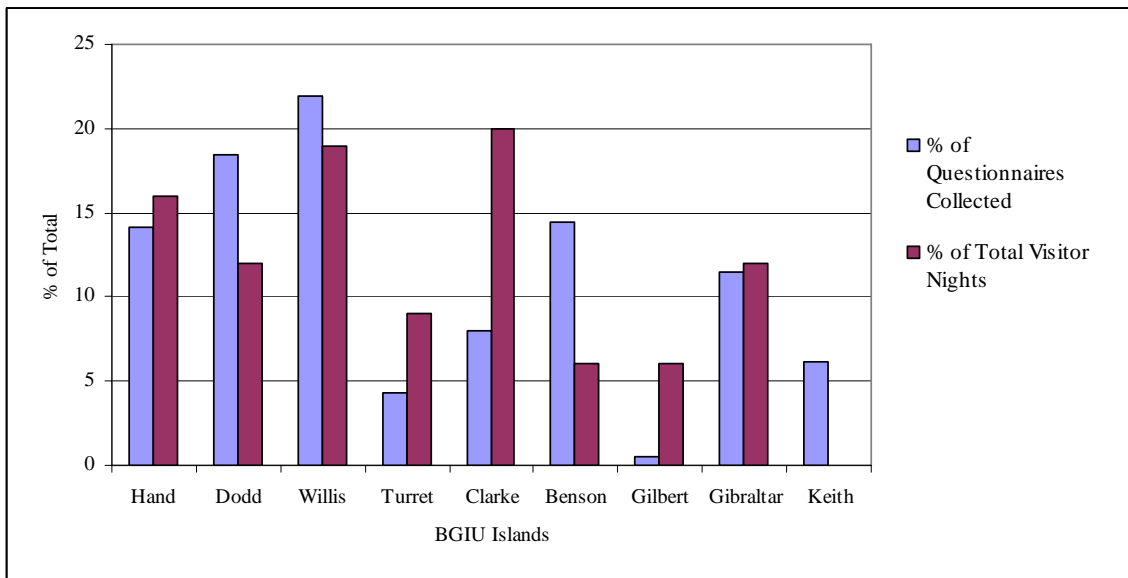
Islands such as Hand and Gibraltar are considered the most protected and easily accessed as they are the closest to Vancouver Island. Conversely, islands such as Clarke and Benson are more remote and exposed to the elements of the full Pacific Ocean. As illustrated in Figure 7, the visitor distribution between the 8 public campsites shows that in 2005, Willis, Clarke and Hand were the three most popular sites. The islands' spatial distribution was taken into account when questionnaires were distributed and interviews recorded from campsites with higher visitor densities (Figure 8).



**Figure 6.** The Broken Group Islands of Pacific Rim National Park Reserve (Not for navigation).



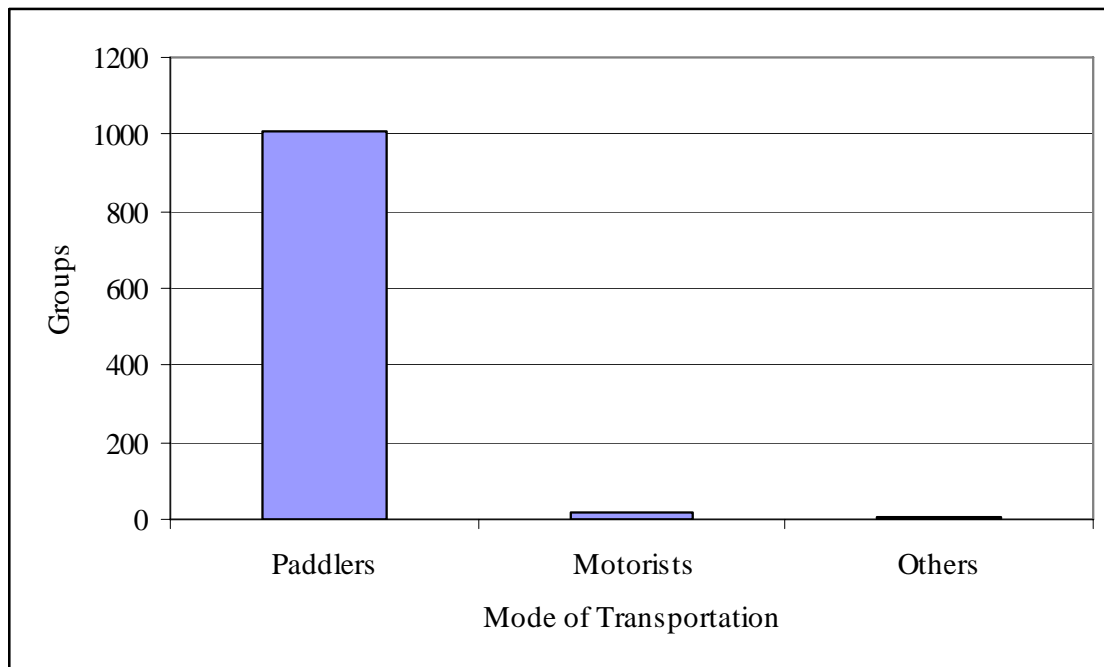
**Figure 7.** 2005 Visitor distribution between the eight public campsites in the BGI. Source: 2005 BGI visitor permits



**Figure 8.** Comparison of 2005 visitor distribution per night and number of questionnaires collected per island in percent.

## *The People*

The population from which the quantitative sample and the qualitative participants were chosen from were paddlers within the Broken Group Islands Unit of Pacific Rim National Park Reserve who had spent at least one overnight within the islands. For the purpose of this study, individuals who used kayaks or canoes as their primary mode of transportation within the BGI were considered to be paddlers. As shown in Figure 9, paddlers were a significant user group within the BGI in 2005. Out of the 1023 groups who entered the Broken Group Islands Unit of the park in 2005, 986 were paddlers (see Figure 9). In other words, 96% of visitors who entered the BGI came to paddle. Clearly, paddlers are an important user group within this unit of the park, whose attitudes and perceptions warrant understanding by park managers and field staff.

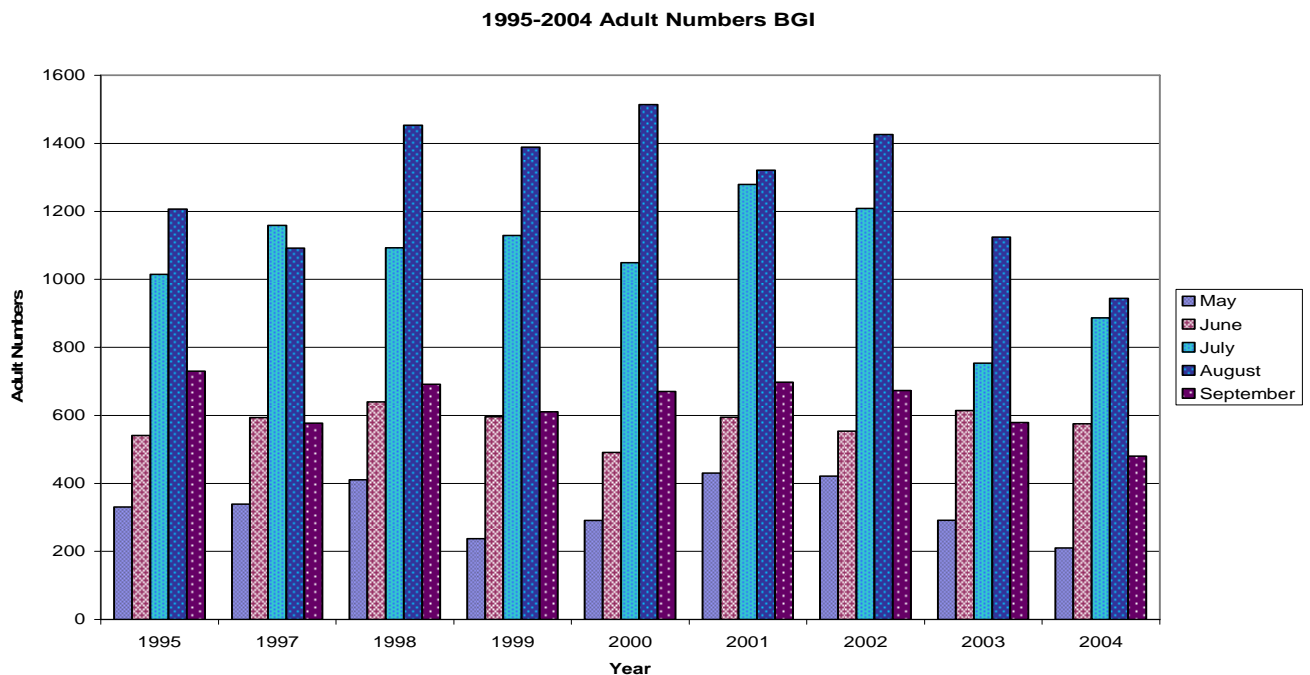


**Figure 9.** Types of transportation used in the BGI in 2005. (Source: BGI visitor permits)

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## The Time

Temporal distribution was taken into account when distributing the questionnaires and conducting the interviews. As shown in Figure 10, the temporal distribution for the past 10 years illustrates that July and August are peak visiting times. This timing coincides with the Canada Day and Labour Day weekends that occur on either side of the summer season. I spent an average of two and half weeks each month during July, August and September kayaking and camping throughout the islands. Both quantitative and qualitative data were collected during this time. Figure 10 illustrates the numbers for *all* visitors into the BGI, not only paddlers (although paddlers made up 96% of the total visiting population in 2005 as shown in Figure 9).



**Figure 10.** Total BGI user numbers from 1995 to 2004 (all users). Source: BGI visitor permits

## *Quantitative*

### *Population, Sample Size and Response Rate*

The population of paddlers was stratified into two groups: recreational paddlers and commercial paddlers. These represent the two main types of paddlers who visit the BGI. Relatively equal representation was also given to males and females within each of the stratifications. The questionnaires were distributed and collected on-site at each of the nine islands, using a convenience sampling method. Paddlers were approached to take part in this study after all survival responsibilities were completed (shelter, food, heat, boats) and individuals could give their full attention to the study.

Of the 405 surveys that were distributed, 397 were returned. Once the completed questionnaires were reviewed, the total usable number was 374, yielding a response rate of 92%. In 2005, the total number of paddlers (individuals) who visited the park was down from 3316 in 2004 to 2113. However, the 374 usable questionnaires represent a sampling of 18% of all BGI visitors during the 2005 summer season.

### *Quantitative research instrument*

The quantitative instrument used for this study was a self-administered questionnaire (Appendix A) that targeted paddlers' attitudes toward wolves. It was administered on-site at the nine campsites within the BGI. The questionnaire included a 5 point Likert attitudinal scale adapted from Kellert's (1990) instrument that examined attitudes about the timber wolf in Michigan. Additional questions have also been adapted from a questionnaire created by Geoff Carrow that was distributed in the fall of 2004 along the West Coast Trail. Carrow's questionnaire drew on his 9 years of experience as a Warden in the West Coast Trail Unit

and was used to address Pacific Rim National Park Reserve's request to better understand hiker-cougar interactions along the West Coast Trail. Finally, questions have also been adapted from Bruskotter's (2002) study on the reintroduction of wolves to the state of Utah.

The questionnaire solicited general information about paddlers, their attitudes toward wolves in general, their attitudes toward wolves in the area, and their attitudes toward the management of human-wolf interactions in the BGI. It was pre-tested in three fourth-year Outdoor Recreation, Parks and Tourism classes for face validity. Before being administered, the questionnaire was also reviewed by the thesis committee and two experts working with Pacific Rim National Park Reserve, and one Parks Canada social science specialist.

### *Data Analysis*

Quantitative data were analyzed using the SPSS statistical computer program. A preliminary analysis was run using nominal, ordinal and ratio statistics. The quantitative data were interpreted using descriptive analysis, independent samples t-tests and one-way ANOVAs. As requested by Parks Canada, the data were also weighted up to the 2005 visitor population count for the BGI to meet Parks Canada needs. Both weighted and unweighted data are presented in this study.

This study was conducted with Kellert's (1996) assertion in mind, creating a caveat for the use of surveys:

...although scales have been statistically corroborated, they represent only crude approximations of the underlying values. Surveys permit the efficient gathering of information from a large number of people, but they represent a blunt instrument for exploring the complexities of how people perceive nature. (p. 38)

Thus, interviews were also used to elicit an in-depth understanding of the contextual and rich perceptions that paddlers have of wolves.

### *Qualitative*

According to Henderson (1991), “interviewing is the best method for pursuing a subject in-depth, operating in a discovery mode, and creating interaction with an individual...[this] method also provides some of the richest data that we can find” (p. 71-72). Sampling within the qualitative approach “is not concerned about adequate numbers or random selection, but in trying to present a working picture of the broader social structure from which the [interviews] are drawn” (Henderson, 1991, p. 132; see also Creswell, 2003; Neuman, 2003). Consequently, purposive sampling selection was used to collect qualitative stories. According to Neuman (2003), “purposive sampling is appropriate...when a researcher wants to identify particular types of cases for in-depth investigation. The purpose is less to generalize to a larger population than it is to gain a deeper understanding” (p. 213).

Qualitative research has been conducted by Scarce (1998), Deruiter (2002), Hunter and Brehm (2004), Patterson et al. (2000), and Montag, Freimund and Patterson (2000) on public perceptions, value orientations toward and meanings given to wildlife. The richness of data, thick with description collected in these qualitative studies, offers important perspectives that can be useful to wildlife managers. Patterson et al. (2000) argued that “meaning-based research typically adopts methodology employing systematic, but non-standardized in-depth interviews...and often collects, represents, and analyzes data in non-numerical form” (p. 219). As advocated by these qualitative researchers, open-ended, semi-structured, conversation-like interviews were employed in this study. These interviews were

conducted with the two types of paddlers present in the BGI and were used to elicit the meanings and values that individuals place on wolves.

While qualitative data were collected with the intention of obtaining data that were representative of paddlers in the BGI, it was not the intention of this research to achieve generalizability from the interviews. Five interviews were conducted with individuals and with small groups of up to three people and three interviews were conducted with small groups of two to three people, for a total of thirteen interview participants. Seven of these interviewees were recreational paddlers and six were commercial paddlers.

### *Research instruments*

As mentioned, the primary qualitative instrument that was used in this study was a conversation-like, open-ended interview (Appendix B). Neuman (2003) asserted that the interview is “a joint production of a researcher and a member. Members are active participants whose insights, feelings, and cooperation are essential parts of a discussion process that reveals subjective meanings” (p. 390). Interviews were conducted with paddlers in the BGI using a small voice recorder enabling me to be as unobtrusive as possible to increase participants’ level of comfort.

The interviews used semi-structured questions to guide the conversation and maintain a dynamic interaction between interviewee and interviewer. According to Henderson (1991), “the interview guide approach...uses topics and issues to be covered but does not specify any particular way that the questions should be asked. It provides general areas of questioning but no specific protocol for asking those questions” (p. 73).

Field notes were also used to contextualize and complement both the interviews and questionnaires as recommended by Neuman (2003) and Henderson (1991). By maintaining a daily record of the spatial, temporal and situational contexts within which the interviews and questionnaires were conducted, I could better understand the factors that influenced participants' responses (Gubrium & Holstein, 1997; Riessman, 1993). For example, people's morale could be affected if it has been raining for two weeks in a row, or if they have just witnessed a humpback whale breaching; their focus may not be on filling out a questionnaire or participating in an interview. My field notes recorded observations of social interactions, general weather and sea conditions, wildlife and bird sightings, and any other significant occurrences that arose.

### *Coding and Analysis*

Once transcribed, each of the qualitative interviews was read a minimum of seven times with notes taken each time. The N-Vivo computer analysis program that assists with analyzing text and images was used to help organize and explore the qualitative data. The emergent themes from the qualitative data were coded using Bogdan and Biklen's (1998) constant comparative method. The initial codes were then reviewed and grouped into the themes that are presented in Chapter 5.

As this research involved interviewing visitors, it was not possible or feasible to send the report back to the interviewees in order to elicit their feedback and to ensure that the data was representative of what they intended to say, although ideally this would be the case.

### *Data Management*

Once the quantitative data were collected, questionnaires were stored in waterproof containers until such time that the raw data could be entered into SPSS. Similarly, once the qualitative interviews were conducted, they were stored in the audio device until such time that they could be downloaded and transcribed into Microsoft Word. Finally, the field notes were stored in a waterproof container and kept separately from both questionnaires and interviews.

### *Ethical considerations*

Each potential participant was approached in a professional and courteous manner. They were asked to read a cover letter (found on page 2 of the questionnaire) that briefly described the research purpose, methods, and guarantees of confidentiality and anonymity (Appendix A). Participants who agreed to complete the questionnaire did so anonymously and understood that they were giving their consent by filling in the questionnaire; they therefore were not obligated to sign a consent form. The participants who agreed to take part in the interviews were asked to carefully read and sign a consent form stating that they understood the purpose of the study, that the data they provided would be confidential, that anonymity would be maintained, that they were in no way to be subject to psychological or physiological harm, and that they could withdraw from the research without penalty of any kind (Appendix C).

Confidentiality was maintained by the researcher at all times and at no time was the raw data distributed. Since this research was done on-site, I do know the identity of participants. All participants, however, have and will remain anonymous in data

dissemination. In no way will anyone be able to trace participants' identities to their responses. Any participant-identifying information was removed during data analysis and all names were replaced with pseudonyms.

The first draft of the thesis was reviewed by the thesis committee and was sent to Pacific Rim National Park Reserve for an initial assessment. Once revised, the completed thesis underwent an external evaluation. Two copies of the completed thesis were sent to Pacific Rim National Park Reserve along with a PowerPoint presentation that outlined the major findings of the research. The completed document was also submitted to Dr. Connie Russell (supervisor), Lakehead University Library, the School of Outdoor Recreation, Parks and Tourism, and the Office of Graduate Studies. In addition, a summary of the study was made available to all participants who voiced their interest in the results.

## CHAPTER 4

### Quantitative Results

A sample of 107 males and 105 females from the recreational paddling groups completed the questionnaire. A total of 72 males and 82 females from the commercial paddling population also completed the questionnaire (Table 1). Table 2 depicts both weighted and unweighted values. The unweighted values represent the percentage of questionnaire responses (n = 374); while the weighted values represent the questionnaire responses in relation to the total visitors to the BGI in 2005 (n = 2113).

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**Table 1.**

Sample sizes for stratified paddler populations. (*Weighted data*)

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Gender	Males	<b>179 (1011)</b>
	Females	<b>187 (1056)</b>
	Missing	<b>8 (45)</b>
	Total	<b>374 (2113)</b>
Paddler Type	Recreational	<b>216 (1220)</b>
	Commercial	<b>158 (893)</b>
	Total	<b>374 (2113)</b>

---

As requested by park researchers, this sample was weighted at 5.645 to be representative of the 2113 paddlers who visited the BGI in 2005. Within the weighted data, each individual who completed a questionnaire is therefore equal to 5.645 paddlers in the BGI. In some cases weighting the data caused significance to be reported in areas that were not significant with the original (unweighted) data. The weighted and unweighted data are therefore represented separately when differences in the results were reported, enabling the reader to observe the differences between the two types of data.

The quantitative data were analyzed with descriptive and inferential statistical tests including frequencies, cross-tabs, independent sample t-tests and one-way ANOVAs. The unweighted t-tests ( $df = 1$ ) have a power of .80 with an effect size of .30 using a p-value of .05 (Cohen, 19677). The unweighted ANOVAs for age ( $df = 4$ ) have a power of .85 and an effect size of .20, while for education ( $df = 3$ ) have a power of .90 with an effect size of .20. Finally, the unweighted ANOVAs for visitation ( $df = 2$ ) have a power of .94 and an effect size of .20 (Cohen, 1977).

The following analyses are based on unweighted and weighted data from the 374 usable questionnaires. Statistical tests using descriptive frequencies did not yield different results between the different types of data, however, cross-tabs, independent samples t-tests and one-way ANOVAs did generate different results. The effects of these differences will be further discussed at the end of this chapter. The frequency data are represented in percentages that were rounded to the nearest decimal.

### *Demographics*

The majority of questionnaire participants were from Canada (70%) and the United States (24%). The remainder of respondents were from Europe (3.5%), Australia (1%), Mexico (.5%), Asia (.5%), and South America (.5%). The highest level of education for 51% of the respondents was college or university; 31% had completed graduate school; 6% had finished technical school and; 10% had attained an educational level of high school or less. The age group with the highest frequency was 46-55 (30%), followed by 36-45 year olds (24%), 26-35 (21%) and 56+ (13%). The age group with the lowest frequency was 18-25 year olds (10%).

A considerable number of paddlers surveyed (63%) did not know wolves were present in the BGI before entering the park. Of the remaining 37% who were aware of wolves in the BGI, only 23% sought out information prior to entering the park regarding wolves and what to do in the event of an encounter. Of those individuals who chose to inform themselves about wolves, 33% accessed information available from National Parks, 24% used scientific data, 24% obtained information from public media sources (such as the internet), and 18% used information from other sources.

When testing the original data with a cross tabulation of the two types of paddlers and previous awareness of wolves in the area, no significance was represented ( $n = 370$ ,  $p = .093$ ) with a chi square value of 2.828. Once the data were weighted however, the cross-tabulation yielded a statistically significant ( $p < .01$ ) chi square value of 16.152, indicating a difference between the type of paddler (recreational or commercial) and previous awareness of wolves (yes or no) ( $n = 2090$ ). Cramer's V (.088) and the Contingency Coefficient (.088) values indicated that the difference between the variable was very weak. In this case, the weighted data showed that more recreational paddlers ( $n = 486$ ) knew about wolves before entering the park than commercial clients ( $n = 282$ ).

A crosstabulation of the type of paddlers and whether or not they informed themselves about wolves in the park and what to do in the case of an encounter was not statistically significant with the unweighted or weighted data sets ( $p = .872$ ,  $p = .721$  respectively). There was therefore no difference between these two variables. In both the unweighted and weighted data, more commercial clients ( $n = 42$ ,  $n = 237$  respectively) and recreational paddlers ( $n = 69$ ,  $n = 390$  respectively) were uninformed about wolves or what to do in the case of an encounter prior to visiting the BGI.

Of the 38% of paddlers who were aware that wolves were present in the BGI, the possibility of seeing or hearing wolves had little influence on their decision to visit the islands. Specifically, 95% of those people indicated that seeing or hearing wolves in the BGI had nothing to do with their decision to visit the area and only 5% stated that the presence of wolves somewhat influenced their decision to visit the islands.

Once aware of wolves in the park, and when asked what effect the presence of wolves in the park had on their interest in the BGI, 64% of the paddlers in the area specified that the presence of wolves did not effect their interest, 34% indicated that the presence of wolves increased their interest in the BGI, and 2% expressed that the presence of wolves decreased their interest in the area.

The most common points used by paddlers to access the BGI were via Toquart Bay (56%) and Sechart Lodge (44%). When the original/unweighted data for access points and previous knowledge of wolves in the park were cross-tabulated a chi square value of 1.136 was displayed indicating that no significant difference was illustrated ( $n = 357, p = .286$ ), whereas when the data were weighted and the access variable was cross-tabulated with the variable of knowledge that wolves were present in the islands before arriving in the BGI, a chi-square value of 6.456 ( $p = .011$ ) indicated significant difference. There was therefore a significant difference between access points and previous knowledge of wolves in the park only when the data were weighted. Cramer's V (.057) and the Contingency Coefficient (.056) values indicated that there is a very weak difference between the two variables. Weighted data showed that more visitors who accessed the area via Toquart Bay ( $n = 441$ ) knew that wolves lived within the islands than paddlers who entered the park from Sechart Lodge ( $n = 294$ ).

A statistically significant ( $p < .01$ ) chi square value of 17.093 was present when the unweighted data for the gender variable and the variable for the effect of wolves on paddlers' interest in the park were cross-tabulated ( $n = 365$ ). Cramer's V and Contingency Coefficient values for this cross-tabulation were both .216, demonstrating a slight difference between the variables. More women ( $n = 9$ ) indicated that the presence of wolves decreased their interest in the area than men ( $n = 0$ ).

When a cross-tab analysis was performed on weighted data between gender and the effect of wolves in the park on paddlers' interest in the BGI, a statistically significant ( $p < .001$ ) chi-square value of 96.825 was also present, indicating a difference between the two variables. Cramer's V and Contingency Coefficient values for this cross-tabulation test were .217 and .212 respectively, demonstrating the difference between the two variables to be of low strength. As illustrated with the weighted data, more women ( $n = 51$ ) indicated that the presence of wolves decreased their interest in the area than males ( $n = 0$ ).

Respondents were also asked to choose what they thought should be the top priority for minimizing human-wolf interaction. By far, the majority of paddlers in both unweighted and weighted data indicated that education should be the top priority (76%). The second most frequently chosen response was to minimize human-wolf interactions by maintaining wolf numbers (relocating wolves out of the park if their numbers increased or into the park if their numbers decreased) presently in the BGI (16%). The options to increase law enforcement and to decrease the number of visitors only received support from 4% and 3% of paddlers respectively.

To sum, the results of this questionnaire indicated that over half of the paddlers surveyed (63%) were unaware that wolves existed in the park before arriving in the Broken

Group Islands. Of those paddlers who were aware that wolves were present in the area, roughly a quarter (23%) chose to inform themselves about wolves and what to do in the unlikely event of an encounter. Results from the weighted data have also shown that commercial paddlers were slightly more likely to be aware of wolves in the park before arriving than recreational paddlers. Of those paddlers who were aware that wolves were in the park, an overwhelming number (95%) indicated that seeing or hearing wolves in the BGI had nothing to do with their decision to visit the area.

When paddlers were asked what effect wolves in the park had on their interest in the area, there was a marked range in answers. The majority of paddlers (64%) indicated that the presence of wolves did not affect their interest in the area. It was also found that both unweighted and weighted data showed that females were slightly more likely than males to indicate that their interest in the area dropped because of the presence of wolves.

The majority of paddlers who participated in this study in the BGI (76%) chose education as a management strategy to reduce human-wolf interactions. Although over half of the surveyed paddlers were not previously aware of wolves in the BGI, the new knowledge that these animals existed in the park did pique people's interest in the animals and the islands (34%).

In the BGI, visitors who accessed the area from Sechart Lodge were met by wardens and given a pre-briefing about safety in the islands that included living with wildlife and wolves before entering the park. Less visitors who accessed the BGI via Sechart lodge ( $n = 294$ ) reported that they knew about wolves before arriving than paddlers who entered via Toquart Bay ( $n = 441$ ), which illustrated a significant difference only within the weighted data.

## *Attitudes*

In his Michigan study of public attitudes toward wolves and wolf restoration, Kellert (1990) originally used six attitude scales, however for the purpose of this study; only the five most relevant scales were used. The attitude section of the questionnaires consisted of 35 items divided into five scales: ecologicistic; naturalistic; humanistic; negativistic and; doministic (see p. 30 for definitions). The ecologicistic scale contained 7 items; the naturalistic scale consisted of 9; there were 3 items in the humanistic scale; the negativistic scale consisted of 6 and; the doministic scale was made up of 10 items (Appendix D). Appendix D also illustrates the items that were used in each scale. The reliability analyses (Cronbach's alpha) were based on items that were correlated onto a single scale before weighting the data. Again, the following statistical tests were conducted with both the unweighted and weighted data.

Reliability analysis measures the consistency of each item within the scale and can be interpreted as a correlation coefficient that ranges from 0 to 1. Although the scales used in this research were based on Kellert's (1990) study, they were not an exact replica of the Michigan study. The factor analysis and reliability tests therefore have been re-created to reflect the items and scales in this particular research (Table 2).

---

***Table 2.***

Reliability and number of items within each attitudinal scale.

<b>Attitudinal Scales</b>	<b>Number of Items</b>	<b>Highest Possible Score</b>	<b>Reliability Analysis (Cronbach's alpha)</b>
Ecologicistic	7	35	0.764
Naturalistic	11	55	0.735
Humanistic	3	15	0.515*
Negativistic	6	30	0.758
Doministic	7	35	0.797
Total	35		

Note. \* The low reliability score for the humanistic attitude is most likely due to the small amount of items within this scale.

Independent sample t-tests were used to compare attitudes with variables such as gender, paddler type, region of residence (Canada or international), residence setting (urban or rural), and if they had had previous encounters with wolves in their natural environment. One-way ANOVAs were also used to compare attitudes with items that contained more than two variables such as age, education and how often paddlers had visited the BGI.

### *Gender and Attitudes*

#### *Unweighted data.*

Gender was statistically significant only within the negativistic attitude scale (Table 3). Levene's Test for Equality of Variance was assumed for this attitude scale ( $p = .840$ ). Within the negativistic scale, females ( $n = 187, M = 13.22, SD = 4.127$ ) reported higher levels than males ( $n = 179, M = 12.25, SD = 3.855$ ),  $t(364) = -2.316, p = .02$  (two-tailed). Generally, females who participated in this research reported significantly stronger feelings of fear, dislike or indifference toward the wolf than males (Table 4).

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**Table 3.**

Independent samples t-test illustrating values for gender using **unweighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologistic	-1.194	364	.233
Naturalistic	1.914	364	.056
Humanistic	-0.619	345.4	.536
Negativistic*	-2.316	364	.021*
Doministic	1.800	364	.073

Note: \* signifies statistical significance at the .05 level

**Table 4.**

Group statistics for the **unweighted** data illustrating the attitude scales, gender, total number in sample, mean and standard deviation.

Attitude	Gender	N	M	SD
Ecologistic	Male	179	28.59	4.336
	Female	187	29.13	4.252
Naturalistic	Male	179	39.64	7.400
	Female	187	38.14	7.618
Humanistic	Male	179	9.92	1.948
	Female	187	10.03	1.609
Negativistic	Male	179	12.25	3.855
	Female	187	13.22	4.127
Doministic	Male	179	11.42	4.459
	Female	187	10.65	3.788

*Weighted data.*

Gender was statistically significant in four of the five attitude scales: ecologistic; naturalistic; negativistic; and doministic (Table 5). Levene's Test for Equality of Variance was assumed for ecologistic ( $p = .956$ ), naturalistic ( $p = .142$ ) and negativistic ( $p = .630$ ) attitude scales. Equal variance was not assumed for doministic attitude scales ( $p = .022$ ). Within the ecologistic attitude scale, females ( $n = 1057$ ,  $M = 29.13$ ,  $SD = 4.243$ ) had significantly higher scores than males ( $n = 1011$ ,  $M = 28.59$ ,  $SD = 4.326$ ),  $t(2066) = -2.845$ ,  $p < .01$  (two-tailed). Males ( $n = 1011$ ,  $M = 39.64$ ,  $SD = 7.383$ ) showed significantly higher scores in naturalistic attitudes than females ( $n = 1057$ ,  $M = 38.14$ ,  $SD = 7.601$ ),  $t(2066) = 4.559$ ,  $p < .01$  (two-tailed).

Within the negativistic scale, females ( $n = 1057$ ,  $M = 13.22$ ,  $SD = 4.118$ ) reported higher levels than males ( $n = 1011$ ,  $M = 12.25$ ,  $SD = 3.846$ ),  $t(2066) = -5.517$ ,  $p < .01$  (two-tailed). Males ( $n = 1011$ ,  $M = 11.42$ ,  $SD = 4.449$ ) also reported statistically greater levels than females ( $n = 1057$ ,  $M = 10.65$ ,  $SD = 3.780$ ) on the doministic attitude scale,  $t(1982.629) = 4.274$ ,  $p < .01$  (two-tailed). Generally, females reported higher scores on the ecologistic and

negativistic attitude scales, while males presented higher naturalistic and doministic attitudes (Table 6).

**Table 5.**

Independent samples t-test illustrating values for gender using **weighted** data for *t*, degrees of freedom and two-tailed significance.

Attitude	<i>t</i>	<i>df</i>	Sig. (Two-tailed)
Ecologistic	2.845	2066	.004*
Naturalistic	4.5559	2066	.000*
Humanistic	-1.474	1960.6	.141
Negativistic	-5.517	2066	.000*
Doministic	4.274	1982.6	.000*

Note: \* signifies statistical significance at the .05 level

**Table 6.**

Group statistics for the **weighted** data illustrating the attitude scales, gender, total number in sample, mean and standard deviation.

Attitude	Gender	N	M	SD
Ecologistic	Male	1011	28.59	4.326
	Female	1057	29.13	4.243
Naturalistic	Male	1011	39.64	7.383
	Female	1057	38.14	7.601
Humanistic	Male	1011	9.92	1.944
	Female	1057	10.03	1.606
Negativistic	Male	1011	12.25	3.846
	Female	1057	13.22	4.118
Doministic	Male	1011	11.42	4.449
	Female	1057	10.65	3.780

### *Paddler Types and Attitudes*

#### *Unweighted data.*

When attitudes were compared between paddler types, one attitude scale (naturalistic) was found to be statistically significant (Table 7). Equal variance was assumed for the naturalistic attitude scale, where Levene's Test for Equality of Variance was not significant ( $p = .156$ ). The commercial clients ( $n = 158$ ,  $M = 40.08$ ,  $SD = 6.999$ ) had statistically higher

levels of naturalistic attitudes than recreational paddlers ( $n = 216$ ,  $M = 38.05$ ,  $SD = 7.779$ ),  $t(372) = -2.601$ ,  $p = .01$  (two-tailed) (Table 8). To sum, commercial clients who participated in this research therefore, tended to have a stronger interest in direct outdoor recreational contact with the wolf than recreational paddlers who participated in this research.

**Table 7.**

Independent samples t-test illustrating values for paddler types using **unweighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologistic	-1.364	372	.173
Naturalistic	-2.601	372	.010*
Humanistic	-0.173	372	.862
Negativistic	1.688	372	.092
Doministic	-1.223	372	.222

Note: \* signifies statistical significance at the .05 level.

**Table 8.**

Group statistics for the **unweighted** data illustrating the attitude scales, paddler types, total number in sample, mean and standard deviation.

Attitude	Paddler Types	N	M	SD
Ecologistic	Recreational	216	28.55	4.348
	Commercial	158	29.16	4.226
Naturalistic	Recreational	216	38.05	7.779
	Commercial	158	40.08	6.999
Humanistic	Recreational	216	9.97	1.884
	Commercial	158	10.00	1.643
Negativistic	Recreational	216	13.09	3.987
	Commercial	158	12.38	4.100
Doministic	Recreational	216	10.85	4.031
	Commercial	158	11.38	4.325

*Weighted data.*

When attitudes were compared between paddler types, four attitude scales were found to be statistically significant: ecologistic; naturalistic; negativistic; and doministic (Table 9).

In the case of the ecologistic attitude scale, Levene's Test for Equality of Variance was

significant ( $p = 0.017$ ) therefore equal variances were not assumed. The commercial clients ( $n = 893$ ,  $M = 29.16$ ,  $SD = 4.34$ ) reported significantly higher ecologicistic attitudes than recreational paddlers ( $n = 1220$ ,  $M = 28.55$ ,  $SD = 4.34$ ),  $t(1952.364) = -3.264$ ,  $p < .01$  (two-tailed). Equal variance was not assumed for the naturalistic attitude scale, where Levene's Test for Equality of Variance was also significant ( $p < .01$ ). The commercial clients ( $n = 893$ ,  $M = 40.08$ ,  $SD = 6.980$ ) had statistically higher levels of naturalistic attitudes than recreational paddlers ( $n = 1220$ ,  $M = 38.05$ ,  $SD = 7.764$ ),  $t(2023.767) = -6.299$ ,  $p < .01$  (two-tailed) (Table 10).

Equal variances were assumed for both negativistic (Levene's Test = .126) and doministic (Levene's Test = .488) attitudes. Recreational paddlers ( $n = 1220$ ,  $M = 13.09$ ,  $SD = 3.980$ ) reported a higher level of negativistic attitudes compared to commercial clients ( $n = 893$ ,  $M = 12.38$ ,  $SD = 4.089$ ),  $t(2111) = 4.020$ ,  $p < .01$  (two-tailed). Commercial clients ( $n = 893$ ,  $M = 11.38$ ,  $SD = 4.314$ ) showed a significantly greater level of doministic attitudes than recreational paddlers ( $n = 1220$ ,  $M = 10.85$ ,  $SD = 4.024$ ),  $t(2111) = -2.914$ ,  $p < .01$  (two-tailed) (Table 11). Commercial clients therefore, tended to have higher scores on the ecologicistic, naturalistic and doministic attitude scales than recreational paddlers, while recreational paddlers scored higher on the negativistic scale.

**Table 9.**

Independent samples t-test illustrating values for paddler types using **weighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologicistic	-3.264	1952.4	.001*
Naturalistic	-6.299	2023.8	.000*
Humanistic	-0.422	2047.2	.673
Negativistic	4.020	2111	.000*
Doministic	-2.914	2111	.004*

Note: \* signifies statistical significance at the .05 level.

**Table 10.**

Group statistics for the **weighted** data illustrating the attitude scales, paddler types, total number in sample, mean and standard deviation.

Attitude	Paddler Types	N	M	SD
Ecologistic	Recreational	1220	28.55	4.340
	Commercial	893	29.16	4.215
Naturalistic	Recreational	1220	38.05	7.764
	Commercial	893	40.08	6.980
Humanistic	Recreational	1220	9.97	1.880
	Commercial	893	10.00	1.639
Negativistic	Recreational	1220	13.09	3.980
	Commercial	893	12.38	4.089
Doministic	Recreational	1220	10.85	4.024
	Commercial	893	11.38	4.314

### *Region of Residence and Attitudes*

#### *Unweighted data.*

Statistical significance was reported in two of the five attitude scales (ecologistic and naturalistic) when comparing paddlers from different regions of residence (Canada or international) (Table 11). In the case of the ecologistic attitude scale, Levene's Test for Equality of Variance was not significant ( $p = .322$ ), indicating that equal variance could be assumed. Whereas, Levene's Test for Equality of Variance for the naturalistic attitude scale was found to be significant ( $p = .02$ ), indicating that equal variance was not assumed.

Within the ecologistic scale, paddlers who came to the BGI from international regions ( $n = 111$ ,  $M = 29.68$ ,  $SD = 3.922$ ) reported higher scores than those who came from Canada ( $n = 259$ ,  $M = 28.45$ ,  $SD = 4.408$ ),  $t(368) = -2.554$ ,  $p = .01$  (two-tailed). Paddlers who came from international regions ( $n = 111$ ,  $M = 40.37$ ,  $SD = 6.658$ ) also demonstrated higher scores than Canadian paddlers on the naturalistic scale ( $n = 259$ ,  $M = 38.22$ ,  $SD = 7.805$ ),  $t(241.96)$

= -2.703,  $p < .01$  (two-tailed) (Table 12). To sum, international visitors to the BGI scored significantly higher on the ecologicistic and naturalistic attitude scales than Canadians.

**Table 11.**

Independent samples t-test illustrating values for region of residence using **unweighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologicistic	-2.554	368	.011*
Naturalistic	-2.703	242.0	.007*
Humanistic	-0.171	368	.865
Negativistic	-0.141	368	.888
Doministic	0.133	229.7	.894

Note: \* signifies statistical significance at the .05 level.

**Table 12.**

Group statistics for the **unweighted** data illustrating the attitude scales, region of residence, total number in sample, mean and standard deviation.

Attitude	Residence	N	M	SD
Ecologicistic	Canadian	259	28.45	4.408
	International	111	29.68	3.922
Naturalistic	Canadian	259	38.22	7.805
	International	111	40.37	6.658
Humanistic	Canadian	259	9.97	1.854
	International	111	10.00	1.646
Negativistic	Canadian	259	12.76	3.992
	International	111	12.83	4.138
Doministic	Canadian	259	11.10	4.289
	International	111	11.04	3.861

*Weighted data.*

Statistical significance was reported in two of the five attitude scales (ecologicistic and naturalistic) when comparing paddlers from different regions of residence (Canada or international) (Table 13). In the case of both attitude scales, Levene's Test for Equality of Variance was significant ( $p < .05$ ), indicating that equal variances were not assumed for

either of the attitude scales. Within the ecologicistic scale, paddlers who came to the BGI from international regions ( $n = 627$ ,  $M = 29.68$ ,  $SD = 3.907$ ) reported higher scores than those who came from Canada ( $n = 1463$ ,  $M = 28.45$ ,  $SD = 4.401$ ),  $t(1324.3) = -6.380$ ,  $p < .01$  (two-tailed). Paddlers who came from international regions ( $n = 627$ ,  $M = 40.37$ ,  $SD = 6.633$ ) demonstrated higher scores than Canadian paddlers on the naturalistic scale as well ( $n = 1463$ ,  $M = 38.22$ ,  $SD = 7.793$ ),  $t(1379.3) = -6.444$ ,  $p < .01$  (two-tailed) (Table 14). To sum, similar to the unweighted data, international visitors to the BGI scored significantly higher on the ecologicistic and naturalistic attitude scales than Canadians.

**Table 13.**

Independent samples t-test illustrating values for region of residence using **weighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologicistic	-6.380	1324.3	.000*
Naturalistic	-6.444	1379.3	.000*
Humanistic	-0.407	2088	.684
Negativistic	-0.335	2088	.738
Doministic	0.318	1309.7	.750

Note: \* signifies statistical significance at the .05 level.

**Table 14.**

Group statistics for the **weighted** data illustrating the attitude scales, region of residence, total number in sample and standard deviation.

Attitude	Residence	N	M	SD
Ecologicistic	Canadian	1463	28.45	4.401
	International	627	29.68	3.907
Naturalistic	Canadian	1463	38.22	7.793
	International	627	40.37	6.633
Humanistic	Canadian	1463	9.97	1.851
	International	627	10.00	1.640
Negativistic	Canadian	1463	12.76	3.985
	International	627	12.83	4.123
Doministic	Canadian	1463	11.10	4.282
	International	627	11.04	3.847

## Setting of Residence and Attitudes

### Unweighted data.

When attitudes were compared between paddlers who live in the city and those who currently live in the country, a significant difference was reported only within the negativistic attitude scale (Table 15). Levene's Test for Equality of Variance for the negativistic attitude scale was not significant ( $p = .445$ ); therefore equal variance could be assumed. Paddlers who lived in the city ( $n = 277$ ,  $M = 13.06$ ,  $SD = 4.038$ ) reported having higher scores on the negativistic scale than those who lived in the country ( $n = 93$ ,  $M = 11.97$ ,  $SD = 3.916$ ),  $t(368) = 2.269$ ,  $p = .02$  (two-tailed) (see Table 16). To sum, urbanites that were surveyed, presented stronger feelings of fear, dislike or indifference toward the wolf than surveyed paddlers who live in rural surroundings.

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**Table 15.**

Independent samples t-test illustrating values for the area in which paddlers currently live using **unweighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologistic	-0.887	368	.376
Naturalistic	-1.527	368	.128
Humanistic	1.094	129.2	.276
Negativistic	2.269	368	.024*
Doministic	-1.347	368	.179

Note: \* signifies statistical significance at the .05 level.

**Table 16.**

Group statistics for the **unweighted** data illustrating the attitude scales, area in which paddlers currently live, total number in sample, mean and standard deviation.

Attitude	Currently Live	N	M	SD
Ecologistic	City	277	28.70	4.271
	Country	93	29.16	4.392
Naturalistic	City	277	38.52	7.397
	Country	93	39.89	7.884
Humanistic	City	277	10.04	1.643
	Country	93	9.77	2.173
Negativistic	City	277	13.06	4.038
	Country	93	11.97	3.916
Doministic	City	277	10.91	3.917
	Country	93	11.58	4.801

*Weighted data.*

When attitudes were compared between paddlers who live in the city and those who currently live in the country, a significant difference was reported in all five attitudes (Table 17). Levene's Test for Equality of Variance for the ecologistic ( $p = .732$ ), naturalistic ( $p = .617$ ) and negativistic ( $p = .069$ ) attitudes scales were not significant; therefore equal variance could be assumed. Equal variance could not be assumed, however, for the humanistic ( $p = .000$ ) or doministic ( $p = .001$ ) scales. Within the ecologistic attitude scale, paddlers who lived rurally at the time of the study ( $n = 525$ ,  $M = 29.16$ ,  $SD = 4.372$ ) reported higher scores than urbanites ( $n = 1565$ ,  $M = 28.70$ ,  $SD = 4.264$ ),  $t(2088) = -2.113$ ,  $p = .035$  (two-tailed). Paddlers who lived in the country ( $n = 525$ ,  $M = 39.89$ ,  $SD = 7.849$ ) also reported having statistically higher naturalistic scores than those who lived in the city ( $n = 1565$ ,  $M = 38.52$ ,  $SD = 7.386$ ),  $t(2088) = -3.637$ ,  $p < .01$  (two-tailed). Finally, paddlers who resided in rural areas at the time of this study ( $n = 525$ ,  $M = 11.58$ ,  $SD = 4.780$ ) reported

scoring higher than those who lived in urban settings ( $n = 1565$ ,  $M = 10.91$ ,  $SD = 3.911$ ) on the doministic attitude scale  $t(773.611) = -2.907$ ,  $p < .01$  (two-tailed) (Table 18).

City dwellers ( $n = 1565$ ,  $M = 10.04$ ,  $SD = 1.641$ ) presented higher scores than paddlers who live in the country ( $n = 525$ ,  $M = 9.77$ ,  $SD = 2.163$ ) on the humanistic scale,  $t(737.5) = 2.611$ ,  $p = .01$  (two-tailed). Paddlers who lived in the city ( $n = 1565$ ,  $M = 13.06$ ,  $SD = 4.032$ ) also reported having higher scores on the negativistic scale than those who lived in the country ( $n = 525$ ,  $M = 11.97$ ,  $SD = 3.899$ ),  $t(2088) = 5.406$ ,  $p < .01$  (two-tailed) (Table 19).

To sum, paddlers who lived in the country at the time of this study reported higher scores in ecologicistic, naturalistic and doministic attitudes than those who lived in the city. Urbanites, however, presented higher scores in the humanistic and negativistic scales than paddlers who lived in rural surroundings.

**Table 17.**

Independent samples t-test illustrating values for the area in which paddlers currently live using **weighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologicistic	-2.113	2088	.035*
Naturalistic	-3.637	2088	.000*
Humanistic	2.611	737.5	.009*
Negativistic	5.406	2088	.000*
Doministic	-2.907	773.6	.004*

Note: \* signifies statistical significance at the .05 level.

**Table 18.**

Group statistics for the **weighted** data illustrating the attitude scales, area in which paddlers currently live, total number in sample, mean and standard deviation.

Attitude	Currently Live	N	M	SD
Ecologistic	City	1458	28.70	4.264
	Country	633	29.16	4.372
Naturalistic	City	1458	38.52	7.366
	Country	633	39.89	7.849
Humanistic	City	1458	10.04	1.641
	Country	633	9.77	2.163
Negativistic	City	1458	13.06	4.032
	Country	633	11.97	3.899
Doministic	City	1458	10.91	3.911
	Country	633	11.58	4.780

*Previous Encounters with Wolves in their Natural Habitat and Attitudes*

*Unweighted data.*

When comparing people who had previous encounters with wolves in their natural habitat with those who had not encountered wolves there were significant differences in attitudes on three of the five scales: naturalistic; negativistic; and doministic (Table 19). Equal variances were assumed for naturalistic ( $p = .461$ ), negativistic ( $p = .564$ ) and doministic ( $p = .442$ ) attitude scales according to Levene's Test. If paddlers had previously encountered wolves in their natural habitat (not necessarily in the BGI) ( $n = 140$ ,  $M = 40.07$ ,  $SD = 7.235$ ), they had higher scores on the naturalistic scale than those who had not ( $n = 230$ ,  $M = 38.11$ ,  $SD = 7.622$ ),  $t(368) = 2.443$ ,  $p = .02$  (two-tailed). Paddlers who had not previously encountered wolves ( $n = 230$ ,  $M = 13.32$ ,  $SD = 4.104$ ) scored significantly higher on the negativistic attitude scale than those who had encountered wolves before ( $n = 140$ ,  $M = 12.01$ ,  $SD = 3.801$ ),  $t(368) = -3.045$ ,  $p < .01$ . (two-tailed). Finally, paddlers who had previous encounters with wolves ( $n = 140$ ,  $M = 11.87$ ,  $SD = 4.517$ ) presented higher scores

on the doministic scale than those who had not previously encountered wolves ( $n = 230$ ,  $M = 10.61$ ,  $SD = 3.883$ ),  $t(368) = 2.850$ ,  $p < .01$  (two-tailed) (Table 20).

To sum, surveyed paddlers who had encountered wolves in their natural habitat reported higher scores for direct outdoor recreation contact with wolves (naturalistic attitudinal scale) and mastery, control and dominance of the wolf (doministic attitude scale) than paddlers who had not previously encountered wolves. Attitudes of fear, dislike or indifference towards wolves (negativistic attitude scale) were only reported by paddlers who had not encountered wolves.

**Table 19.**

Independent samples t-test illustrating values for previous encounters with wolves using **unweighted** data for  $t$ , degrees of freedom and two-tailed significance.

Attitude	$t$	$df$	Sig. (Two-tailed)
Ecologistic	1.207	368	.228
Naturalist	2.443	368	.015*
Humanistic	-0.357	368	.721
Negativistic	-3.045	368	.002*
Doministic	2.850	368	.005*

Note: \* signifies statistical significance at the .05 level.

**Table 20.**

Group statistics for the **unweighted** data illustrating the attitude scales, previous encounters with wolves, total number in sample, mean and standard deviation.

Attitude	Encounters	N	M	SD
Ecologistic	Yes	140	29.14	3.986
	No	230	28.58	4.495
Naturalistic	Yes	140	40.07	7.235
	No	230	38.11	7.622
Humanistic	Yes	140	9.94	1.901
	No	230	10.00	1.724
Negativistic	Yes	140	12.01	3.801
	No	230	13.32	4.104
Doministic	Yes	140	11.87	4.517
	No	230	10.61	3.883

*Weighted data.*

When comparing people who had previous encounters with wolves in their natural habitat with those who had not encountered wolves there were significant differences in attitudes on four of the five scales: ecologicistic; naturalistic; negativistic; and doministic (Table 21). Equal variances were assumed for ecologicistic ( $p = .055$ ), naturalistic ( $p = .079$ ), negativistic ( $p = .169$ ) and doministic ( $p = .067$ ) attitude scales according to Levene's Test. Paddlers who had previously encountered wolves ( $n = 791$ ,  $M = 29.14$ ,  $SD = 3.974$ ) scored higher than paddlers who had not ( $n = 1299$ ,  $M = 28.58$ ,  $SD = 4.487$ ) on the ecologicistic scale  $t(2088) = 2.875$ ,  $p < .01$  (two-tailed). If paddlers had previously encountered wolves ( $n = 791$ ,  $M = 40.07$ ,  $SD = 7.213$ ), they had higher scores on naturalistic scale than those who had not ( $n = 1299$ ,  $M = 38.11$ ,  $SD = 7.609$ ),  $t(2088) = 5.820$ ,  $p < .01$  (two-tailed). Paddlers who had had previous encounters with wolves ( $n = 791$ ,  $M = 11.87$ ,  $SD = 4.503$ ) presented higher scores on the doministic scale than those who had not previously encountered wolves ( $n = 1299$ ,  $M = 10.61$ ,  $SD = 3.876$ ),  $t(2088) = 6.788$ ,  $p < .01$  (two-tailed). Finally, paddlers who had not previously encountered wolves ( $n = 1299$ ,  $M = 13.32$ ,  $SD = 4.097$ ) scored significantly higher on the negativistic attitude scale than those who had encountered wolves before ( $n = 791$ ,  $M = 12.01$ ,  $SD = 3.790$ ),  $t(2088) = -7.254$ ,  $p < .01$ . (two-tailed) (Table 22).

To sum, similar to the unweighted data (except for the ecologicistic attitude scale), paddlers who had encountered wolves in their natural habitat reported higher values on the ecologicistic, naturalistic and doministic attitude scales than paddlers who had not previously encountered wolves. The negativistic attitude scale was the only scale on which paddlers who had not encountered wolves scored higher than those who had.

**Table 21.**

Independent samples t-test illustrating values for previous encounters with wolves using **weighted** data for *t*, degrees of freedom and two-tailed significance.

Attitude	<i>t</i>	<i>df</i>	Sig. (Two-tailed)
Ecologistic	2.875	2088	.004*
Naturalistic	5.820	2088	.000*
Humanistic	-0.831	1545.2	.406
Negativistic	-7.254	2088	.000*
Doministic	6.788	2088	.000*

Note: \* signifies statistical significance at the .05 level.

**Table 22.**

Group statistics for the **weighted** data illustrating the attitude scales, previous encounters with wolves, total number in sample, mean and standard deviation.

Attitude	Encounters	N	M	SD
Ecologistic	Yes	791	29.14	3.974
	No	1299	28.58	4.487
Naturalistic	Yes	791	40.07	7.213
	No	1299	38.11	7.609
Humanistic	Yes	791	9.94	1.896
	No	1299	10.00	1.721
Negativistic	Yes	791	12.01	3.790
	No	1299	13.32	4.097
Doministic	Yes	791	11.87	4.503
	No	1299	10.61	3.876

### *Age and Attitudes*

#### *Unweighted data.*

No significance was reported when using a one-way ANOVA to test for differences between the ecologistic  $F(4, 365) = 1.538, p = .191$ , naturalistic  $F(4, 365) = 1.176, p = .321$ , humanistic  $F(4, 365) = .808, p = .521$ , negativistic  $F(4, 365) = 1.906, p = .109$ , and doministic  $F(4, 365) = 1.214, p = .304$  attitude scales within the various age groups (Table 23). This indicates that the age of participants in the survey did not have an influence on the attitudes that participants held towards wolves.

**Table 23.**

**Unweighted** data illustrating sample size, means and standard deviations for the various age groups within each attitude scale.

Attitude	Age	N	Mean	Std. Deviation
Ecologistic	18-25	36	27.75	4.285
	26-35	81	29.11	3.814
	36-45	90	28.77	4.785
	46-55	113	28.62	4.540
	56 +	50	29.92	3.34
	Total	370	28.85	4.298
Naturalistic	18-25	36	36.44	8.581
	26-35	81	39.58	7.206
	36-45	90	39.13	7.044
	46-55	113	38.99	8.036
	56 +	50	39.28	6.887
	Total	370	38.95	7.539
Humanistic	18-25	36	9.50	2.035
	26-35	81	10.14	1.909
	36-45	90	10.01	1.646
	46-55	113	10.00	1.758
	56 +	50	10.00	1.761
	Total	370	9.98	1.793
Negativistic	18-25	36	13.97	4.539
	26-35	81	12.84	4.167
	36-45	90	13.09	3.747
	46-55	113	12.04	3.869
	56 +	50	12.60	4.066
	Total	370	12.74	4.022
Doministic	18-25	36	12.22	4.611
	26-35	81	10.90	4.064
	36-45	90	10.50	4.068
	46-55	113	11.19	4.339
	56 +	50	10.82	3.379
	Total	370	11.01	4.128

*Weighted data.*

All attitude scales except negativistic ( $p = .464$ ) were significant ( $p < .05$ ) when testing for the homogeneity of variance, suggesting that the assumption of homogeneity of variance was not met (except with negativistic attitudes). See Table 24 for the age distribution, means and standard deviations of paddlers in the BGI within each attitude scale.

As the assumption of homogeneity of variance was not met, additional tests were consequently run using Welch and Brown-Forsythe statistics to test for the equality of group means. These statistical tests are preferable to the  $F$  statistic when the assumption of equal variance does not hold. A Bonferoni post hoc test was used to determine significance on variables where equal variance was assumed and a Tamhane post hoc test was used on variables where equal variance was not assumed.

Using a one-way ANOVA test, within the negativistic attitude scale, age was a significant factor  $F(4, 2085) = 10.886, p < .01$ , indicating that there were differences among the various age groups. Welch and Brown-Forsythe statistics were then used as an alternative to the  $F$  statistic to test for differences within the ecologicistic, naturalistic, humanistic and doministic attitude scales among the various age groups. Using the Welch ( $W$ ) and the Brown-Forsythe ( $BF$ ) statistical tests, age was statistically significant on the ecologicistic  $W(4, 827.0) = 11.315, p < .01, BF(4, 1672.7) = 9.334, p < .01$ ; naturalistic  $W(4, 805.3) = 5.511, p < .01, BF(4, 143.0) = 6.636, p < .01$ ; humanistic  $W(4, 769.0) = 3.710, p < .01, BF(4, 1427.9) = 4.431, p < .01$ ; and doministic  $W(4, 814.5) = 6.107, p < .01, BF(4, 1480.8) = 7.002, p < .01$  attitude scales.

**Table 24.**

**Weighted** data illustrating sample size, means and standard deviations for the various age groups within each attitude scale.

Attitude	Age	N	Mean	Std. Deviation
Ecologistic	18-25	203	27.75	4.236
	26-35	458	29.11	3.795
	36-45	508	28.77	4.763
	46-55	638	28.62	4.524
	56 +	282	29.92	3.322
	Total	2090	28.85	4.293
Naturalistic	18-25	203	36.44	8.481
	26-35	458	39.58	7.169
	36-45	508	39.13	7.012
	46-55	638	38.99	8.007
	56 +	282	39.28	6.830
	Total	2090	38.95	7.530
Humanistic	18-25	203	9.50	2.012
	26-35	458	10.14	1.899
	36-45	508	10.01	1.638
	46-55	638	10.00	1.751
	56 +	282	10.00	1.747
	Total	2090	9.98	1.791
Negativistic	18-25	203	13.97	4.486
	26-35	458	12.84	4.145
	36-45	508	13.09	3.729
	46-55	638	12.04	3.855
	56 +	282	12.60	4.032
	Total	2090	12.74	4.017
Doministic	18-25	203	12.22	4.558
	26-35	458	10.90	4.043
	36-45	508	10.50	4.049
	46-55	638	11.19	4.324
	56 +	282	10.82	3.351
	Total	2090	11.01	4.124

Note. Number of paddlers is weighted at 5.65 which accounts for the discrepancy in the total number of paddlers computed for the age variable.

Within the negativistic attitude scale, Bonferroni post hoc tests showed that significant differences were found between the age groups of 18-25 and 26-35 ( $p < .01$ ); 46-55 ( $p < .01$ ); and older than 56 ( $p < .01$ ). Tamhane post hoc tests were run with the

ecologistic, naturalistic, humanistic and doministic attitude scales. Within the ecologistic attitude scale, significant differences were found between the age groups of 18 to 25 and 26 to 35 ( $p < .01$ ); and 18 to 25 year old and paddlers who were 56 years and older. Paddlers 56 years and older scored significantly higher on the ecologistic attitude scale than 18 to 25 ( $p < .01$ ), 26 to 35 ( $p = .02$ ), 36 to 45 ( $p < .01$ ), and 45 to 55 ( $p < .01$ ). Post hoc tests revealed that differences were present between the age groups of 18-25 and 26-35 ( $p < .01$ ); 18 to 25 and 36 to 45 ( $p < .01$ ); 18 to 25 and 46-55 ( $p < .01$ ); and 18 to 25 and paddlers older than 56 ( $p < .01$ ) within the naturalistic attitude scale. Similarly, within the humanistic attitude scale there were differences between 18 to 25 and 26 to 35 ( $p < .01$ ); 18 to 35 and 36 to 45 ( $p = .01$ ); 18 to 25 and 46 to 55 ( $p = .02$ ); and 18 to 25 and paddlers 56 and older ( $p = .05$ ). Finally, Post hoc tests revealed differences between the age groups of 18 to 25 and 26-35 ( $p < .01$ ); 18 to 25 and 36 to 45 ( $p < .01$ ); 18 to 25 and 46 to 55 ( $p = .04$ ); and 18 to 25 and 56 or older ( $p < .01$ ) within the doministic attitude scale (Table 24).

To sum, 18 to 25 year old paddlers scored significantly higher on the negativistic attitude scale than paddlers between the ages of 26 to 35, 46 to 55, and 56 or older. Paddlers between the ages of 18-25 scored significantly lower on the ecologistic attitude scale than paddlers between 26-35 and 56+. Paddlers who were 56 years of age and older scored significantly higher on the ecologistic scale than any other age group. Within the naturalistic and humanistic attitude scales, paddlers between the ages of 18-25 scored significantly lower than all other age groups. Finally, 18-25 year olds scored higher on the doministic attitude scale than any other age group.

## Education and Attitudes

### Unweighted data.

Only the negativistic attitude scale was significant ( $p = .04$ ) when testing for homogeneity of variance, suggesting that the assumption of equal variance could not be met, only for this scale. Additional tests were consequently run using Welch ( $W$ ) and Brown-Forsythe ( $BF$ ) statistics to test for the equality of group means when equal variance cannot be assumed. These statistical tests are preferable to the  $F$  statistic when the assumption of equal variance does not hold (Gravetter, 2005). Within the negativistic attitude scale differences between educational levels were not significant;  $W(3, 74.6) = 2.779, p = .05, BF(3, 92.3) = 2.267, p = .09$ .

No significance was reported when using a one-way ANOVA to test for differences between various levels of education on the ecologicistic  $F(3, 365) = 2.293, p = .08$ , naturalistic  $F(3, 365) = 1.794, p = .148$ , humanistic  $F(3, 365) = 2.182, p = .09$ , and doministic  $F(3, 365) = .359, p = .783$  attitude scales (Table 25).

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**Table 25.**

**Unweighted** data illustrating sample size, means and standard deviations of the various levels of education within each attitude scale.

Attitude	Education	N	Mean	Std. Deviation
Ecologicistic	High school	39	27.59	3.618
	Technical school	24	27.96	4.841
	College/University	189	29.33	4.149
	Graduate school	117	28.74	4.544
	Total	369	28.87	4.296
Naturalistic	High school	39	38.92	7.596
	Technical school	24	38.67	9.558
	College/University	189	39.78	7.088
	Graduate school	117	37.74	7.673
	Total	369	38.97	7.531

Attitude	Education	N	Mean	Std. Deviation
Humanistic	High school	39	9.90	1.667
	Technical school	24	10.50	1.794
	College/University	189	10.14	1.714
	Graduate school	117	9.70	1.877
	Total	369	10.00	1.766
Negativistic	High school	39	14.08	3.793
	Technical school	24	11.75	5.391
	College/University	189	12.37	3.576
	Graduate school	117	13.09	4.369
	Total	369	12.74	4.027
Doministic	High school	39	11.56	4.012
	Technical school	24	11.21	4.273
	College/University	189	10.89	3.992
	Graduate school	117	10.86	4.200
	Total	369	10.97	4.069

*Weighted data.*

Ecologistic, naturalistic, humanistic and negativistic attitude scales were significant ( $p < .05$ ) when testing for the homogeneity of variance, suggesting that the assumption of homogeneity of variance was not met. None of the education levels were significantly different within the doministic attitude scale. See Table 26 for levels of education, means and standard deviations of paddlers in the BGI within each attitude scale. Again, additional tests were consequently run using Welch and Brown-Forsythe statistics to test for the equality of group means. Tamhane post hoc tests were used to detect differences on all variables where equal variance was not assumed.

Welch ( $W$ ) and Brown-Forsythe ( $BF$ ) statistical tests were used to test for differences among various levels of education within the ecologistic, naturalistic, humanistic, and negativistic attitude scales. Within the ecologistic  $W(3, 453.6) = 15.533, p < .01, BF(3, 705.2) = 12.914, p < .01$ , naturalistic  $W(3, 436.8) = 10.321, p < .01, BF(3, 597.7) = 8.682, p < .01$ , humanistic  $W(3, 453.3) = 11.803, p < .01, BF(3, 836.0) = 12.627, p < .01$ , and

negativistic  $W(3, 434.2) = 16.216, p < .01, BF(3, 548.7) = 13.101, p < .01$  attitude scales significant differences were recorded among the various levels of education. Within the doministic scale, significant differences were not illustrated among the various levels of education  $F(3, 2080) = 2.046, p = 1.05$ .

The Tamhane post hoc test was used because of the unequal variances among the various levels of education. Within the ecologicistic attitude scale, differences existed between college/university level education and high school ( $p < .01$ ), technical school ( $p = .01$ ) and graduate school ( $p = .04$ ). Differences were also reported between high school and graduate school ( $p < .01$ ). Within the naturalistic attitude scale, Tamhane post hoc tests revealed that differences existed between college/university and graduate school ( $p < .01$ ). Significant differences were also found between high school and technical school ( $p = .01$ ), technical school and graduate school ( $p < .01$ ), and graduate school and college/university ( $p < .01$ ) within the humanistic attitude scale. Finally, within the negativistic attitude scale, differences were found between high school and technical school ( $p < .01$ ), college/university ( $p < .01$ ) and graduate school ( $p = .01$ ) as well as between graduate school and technical school ( $p = .04$ ) and college/university ( $p < .01$ ) levels of education.

To sum, paddlers who had completed college or university scored significantly higher than high school, technical school or graduate school graduates within the ecologicistic attitude scale. Paddlers who had completed graduate school also scored significantly higher than high school graduates within this same scale (the ecologicistic attitude scale). Within the naturalistic attitude scale, college/university graduates scored significantly higher than paddlers who had completed graduate school. Within the humanistic attitude scale, graduate school graduates scored lower than technical or college/university graduates. High school graduates also

scored lower on the humanistic attitude scale than technical school graduates. The humanistic scale should be viewed with caution due to the low reliability score (Cronbach's alpha).

Within the negativistic attitude scale high school graduates had significantly higher scores than technical school, college/university, or graduate school graduates. Interestingly, paddlers who had completed graduate school also scored significantly higher on the negativistic scale than technical school and college/university graduates.

**Table 26.**

**Weighted** data illustrating sample size, means and standard deviations of the various levels of education within each attitude scale.

Attitude	Education	N	Mean	Std. Deviation
Ecologistic	High school	220	27.59	3.580
	Technical school	136	27.96	4.756
	College/University	1068	29.33	4.140
	Graduate school	661	28.74	4.528
	Total	2085	28.87	4.292
Naturalistic	High school	220	38.92	7.515
	Technical school	136	38.67	9.392
	College/University	1068	39.78	7.072
	Graduate school	661	37.74	7.646
	Total	2085	38.97	7.523
Humanistic	High school	220	9.90	1.649
	Technical school	136	10.50	1.762
	College/University	1068	10.14	1.710
	Graduate school	661	9.70	1.870
	Total	2085	10.00	1.774
Negativistic	High school	220	14.08	3.753
	Technical school	136	11.75	5.297
	College/University	1068	12.37	3.568
	Graduate school	661	13.09	4.353
	Total	2085	12.74	4.022
Doministic	High school	220	11.56	3.969
	Technical school	136	11.21	4.199
	College/University	1068	10.89	3.984
	Graduate school	661	10.86	4.186
	Total	2085	10.97	4.064

Note. Number of paddlers is weighted at 5.65 which accounts for the discrepancy in the total number of paddlers computed for the education variable.

## *Amount of Park Visitation and Attitudes*

### *Unweighted Data.*

When testing for homogeneity of variance, none of the attitude scales were significant, indicating that equal variance could be assumed between all groups. See table 27 for frequency of park visitation, sample sizes, means and standard deviations within each attitude scale. Significant differences ( $p = .036$ ) were found within the ecologicistic attitude scale among the various frequencies of park visitation  $F(2, 367) = 3.341$ . When Bonferroni post hoc tests were performed, it was found that significant differences existed between paddlers who had visited the BGI once and those who had visited more than ten times ( $p = .047$ ).

Significant differences were not found between the various frequencies of visitation to the BGI on the naturalistic  $F(2, 367) = .347, p = .707$ , humanistic  $F(2, 367) = 1.126, p = .325$ , negativistic  $F(2, 367) = .364, p = .695$ , or doministic  $F(2, 367) = .240, p = .787$  attitude scales. To sum, paddlers who had visited the BGI more than ten times had significantly higher scores on the ecologicistic attitude scale than paddlers who had visited the area only once.

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**Table 27.**

**Unweighted** data illustrating sample size, means and standard deviations for the frequency of visitation within each attitude scale.

Attitudes	Visitation	N	Mean	Std. Deviation
Ecologicistic	Once	261	28.54	4.430
	Between 1 and 10 times	99	29.11	3.948
	More than 10 times	10	31.90	3.479
	Total	370	28.79	4.312
Naturalistic	Once	261	38.84	7.447
	Between 1 and 10 times	99	38.73	7.767
	More than 10 times	10	40.80	7.955
	Total	370	38.86	7.533

Attitude	Visitation	N	Mean	Std. Deviation
Humanistic	Once	261	9.89	1.903
	Between 1 and 10 times	99	10.18	1.480
	More than 10 times	10	10.30	1.494
	Total	370	9.98	1.791
Negativistic	Once	261	12.86	4.011
	Between 1 and 10 times	99	12.71	4.006
	More than 10 times	10	11.80	4.917
	Total	370	12.79	4.027
Doministic	Once	261	11.16	4.428
	Between 1 and 10 times	99	10.93	3.538
	More than 10 times	10	10.40	3.373
	Total	370	11.08	4.176

*Weighted data.*

Significant differences were found within the ecologicistic and humanistic attitude scales when comparing the groups of frequency of visitation. When testing for the homogeneity of variance, the humanistic attitude scale was significant ( $p < .01$ ). The assumption of homogeneity of variance, therefore, could not be assumed. In the case of the ecologicistic attitude scale, the assumption of homogeneity could be assumed ( $p = .072$  for Levene's statistic). See Table 28 for levels of education, means and standard deviations of paddlers in the BGI within each attitude scale. Additional tests were consequently run using Welch and Brown-Forsythe statistics to test for the equality of group means for the humanistic attitude scale. Tamhane post hoc tests were used on the humanistic attitude scale, where equal variance was not assumed, while Bonferroni post hoc tests were used on the ecologicistic attitude scale where equal variance was assumed.

Welch ( $W$ ) and Brown-Forsythe ( $BF$ ) statistical tests were used to test for differences on the humanistic attitude scale among the various frequencies of visitation. There were significant differences on the humanistic  $W(2, 152.9) = 7.916, p < .01, BF(2, 281.3) = 8.782, p < .01$  attitude scale among frequency of visitation groups. Within the ANOVA test,

significant ( $p < .05$ ) differences were found among the frequency of visitation groups within the ecologicistic  $F(2, 2087) = 19.0$  attitudes scale.

Bonferroni post hoc tests revealed that there were differences in ecologicistic attitudes between paddlers who visited the BGI once with those who had come between once and ten times ( $p = .02$ ) and more than 10 times ( $p < .01$ ). Differences were also reported within the ecologicistic attitude scale between paddlers who had visited the area between once and ten times with those who had visited more than ten times ( $p < .01$ ). Significant differences were also found between paddlers' attitudes who visited the area once and those who had come between once and ten times ( $p < .01$ ) within the humanistic attitude scale, using the Tamhane post hoc test. To sum, first time paddlers in the BGI tended to have much lower interest in the ecological value of the wolf (ecologicistic attitudinal scale) and affection for wolves and its existence and protection (humanistic attitudinal scale) than paddlers who had come to the BGI more than ten times. Visitors who had come to the area between one and ten times also had reported having higher interest in the ecological value of wolves (ecologicistic attitude scale) than those who had visited more than ten times.

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**Table 28.**

**Weighted** data illustrating sample size, means and standard deviations for the frequency of visitation within each attitude scale.

Attitudes	Visitation	N	Mean	Std. Deviation
Ecologicistic	Once	1475	28.54	4.423
	Between 1 and 10 times	559	29.11	3.932
	More than 10 times	57	31.90	3.330
	Total	2090	28.79	4.308
Naturalistic	Once	1475	38.84	7.435
	Between 1 and 10 times	559	38.73	7.734
	More than 10 times	57	40.80	7.615
	Total	2090	38.86	7.525

Attitude	Visitation	N	Mean	Std. Deviation
Humanistic	Once	1475	9.89	1.900
	Between 1 and 10 times	559	10.18	1.474
	More than 10 times	57	10.30	1.430
	Total	2090	9.98	1.789
Negativistic	Once	1475	12.86	4.005
	Between 1 and 10 times	559	12.71	3.989
	More than 10 times	57	11.80	4.707
	Total	2090	12.79	4.023
Doministic	Once	1475	11.16	4.421
	Between 1 and 10 times	559	10.93	3.523
	More than 10 times	57	10.40	3.229
	Total	2090	11.08	4.172

Note. Number of paddlers is weighted at 5.65 which accounts for the discrepancy in the total number of paddlers computed for the visitation variable.

### *Weighting the Data*

This study was strongly supported by Parks Canada and as per their request, the quantitative data was weighted to meet their comparative needs and to account for sample biases. However, as illustrated in the following discussion, the weighing of the data changed the significance of the results where attitudes were tested using independent samples t-tests and one-way ANOVAs. Both types of data were therefore reported.

### *Summary of Unweighted Data*

In general, the paddling population in the BGI were more likely to have a strong interest in the ecological value of the wolf, and its relationship to other species and the natural environment. In this study, the independent variables (such males and females within gender) were compared to each other among the dependent variables (attitude scales). It is therefore possible, for example, that females reported high scores for both negativistic and naturalistic attitudes because they were being compared to males, not to other females within each attitude scale.

Ecologistic attitudes were only significantly higher in international visitors to the BGI. The differences within gender, paddler type, region of residence, setting of residence and previous encounters with wolves were not reportedly significant within the ecologistic attitude scale. International visitors were more likely to value the wolf for its ecological value and its relationship to other species and the natural environment than Canadian visitors (Table 29).

Within the ecologistic attitude scale, significant differences were reported within the visitation variable where paddlers who visited the BGI more than ten times scored higher than those who had visited only once. Significance was not reported, however, within the age or education variables indicating that neither age nor education significantly affected paddlers' ecologistic attitudes toward wolves (Table 30).

Naturalistic attitudes were expressed by commercial paddlers, international visitors, and paddlers who had previously encountered a wolf in its natural habitat. These groups were more likely to have a strong interest in direct outdoor recreational contact with the wolf than recreational paddlers, Canadian visitors, and paddlers who had not previously encountered a wolf in its natural habitat. Within the gender and setting of residence (city/country) variables, significant differences were not reported on the naturalistic attitude scale (Table 29).

Using unweighted data, groups within gender, paddler type, region of residence, setting of residence and previous encounters with a wolf in its natural habitat did not show significance differences on the humanistic attitude scale, (Table 29). It should be noted that the humanistic scale yielded a low reliability (Cronbach's  $\alpha = .515$ ), indicating that there was low internal consistency within this attitude scale.

On the negativistic scale: females scored significantly higher than males; paddlers from urban areas scored significantly higher than those from rural area; and paddlers who had no previous wolf encounters scored higher than those who had previously encountered a wolf. Paddlers who reported higher scores on this attitude scale were more likely to have stronger feelings of fear, dislike or indifference toward the wolf than males, paddlers from rural areas, or paddlers who had had previous wolf encounters (Table 29).

Using the weighted data, doministic attitudes were more likely expressed in paddlers who had previously encountered a wolf in its natural habitat. These paddlers were more likely to have a strong interest in mastery, control and dominance of the wolf, often in a consumptive use and sporting context than paddlers who had not previously encountered a wolf (Table 29).

Within the naturalistic, humanistic, negativistic and doministic attitude scales no significance between or among groups was reported for the variables of age, education or, visitation to the BGI (Table 30). This finding indicates that the various groups within age, education, and park visitation did not have significant differences on the naturalistic, humanistic, negativistic or doministic attitudes.

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**Table 29.**  
**Unweighted** data summarizing the statistically significant independent variables within gender, paddler type, region of residence, setting of residence and previous wolf encounters for each attitude scale.

Attitude	Gender	Paddler Type	Region	Setting	Previous Encounters
Ecologistic	N/S	N/S	International	N/S	N/S
Naturalistic	N/S	Commercial	International	N/S	Yes
Humanistic	N/S	N/S	N/S	N/S	N/S
Negativistic	Females	N/S	N/S	Urban	No
Doministic	N/S	N/S	N/S	N/S	Yes

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**Table 30.**

**Unweighted** data summarizing the statistically significant independent variables within age, education and park visitation for each attitude scale.

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Attitude	Age	Education	Visitation
Ecologistic	N/S	N/S	> 10 times    Once*
Naturalistic	N/S	N/S	N/S
Humanistic	N/S	N/S	N/S
Negativistic	N/S	N/S	N/S
Doministic	N/S	N/S	N/S

---

*Summary of Weighted Data*

Ecologistic attitudes were reportedly higher in females, commercial paddlers, international visitors, paddlers who live in rural areas and those who had previously encountered a wolf in its natural habitat. Paddlers in these groups were more likely to value the wolf for its ecological value and its relationship to other species and the natural environment (Table 31).

Within the ecologistic attitude scale and between the various age groups, paddlers between the ages of 26-35 scored higher than paddlers between 18-25 years old. Paddlers who were 56 years or older had significantly stronger interests in the ecological value of the wolf than any other age group (Table 32). Among the various education levels college/university graduates scored higher on the ecologistic attitude scale than high school, technical school or graduate school graduates. Paddlers who had completed graduate school scored significantly higher than paddlers whose highest level of education was high school (Table 32). Finally, among the various levels of park visitation paddlers who had been to the BGI more than ten times had significantly stronger ecological interests in the wolf than paddlers who had visited only once, while paddlers who had come to the BGI between one

and ten times had higher scores than those who had visited only once or more than ten times (Table 32).

Naturalistic attitudes were more likely expressed by males, commercial paddlers, international visitors, paddlers who live in rural areas and paddlers who had previously encountered a wolf in its natural habitat. These groups were more likely to have a strong interest in direct outdoor recreational contact with the wolf (Table 32).

Within the naturalistic attitude scale, significant differences were found between and among various categories in age and education. There was, however, no significant difference among the different rates of visitation within the naturalistic attitude scale.

Paddlers between the ages of 18-25 had significantly less interest in direct outdoor recreational contact with the wolf than paddlers who were 26 years or older (Table 32).

Within the education variable, paddlers who had completed college/university diplomas/degrees scored significantly higher on the naturalistic attitude scale than paddlers who had completed graduate school degrees (Table 32).

Humanistic attitudes were higher in paddlers from urban areas. This group had stronger affection for the wolf, its existence and its protection than paddlers from rural settings (see Table 31). Keep in mind the low internal consistency within this attitude scale (Cronbach's alpha = .515). Within the humanistic attitude scale (similar to the naturalistic scale) paddlers between the ages of 18-25 scored significantly lower than older paddlers above the age of 26 (Table 32). Paddlers whose highest level of education was technical school had significantly stronger affection for the wolf and for its existence, value and protection than paddlers whose highest level of education was graduate school and high school. Paddlers who had graduated from college/university scored significantly higher on

the humanistic scale than paddlers who had completed graduate school (Table 32). Finally, paddlers who had visited the BGI between one and ten times had significantly higher scores on the humanistic attitude scale than paddlers who had visited the area only once (see Table 32). It should continue to be noted that the humanistic attitude scale has a low internal consistency because it was made of only three items with a Cronbach's alpha score of .515.

Negativistic scores reflective of fear, dislike or indifference towards wolves were higher in females, recreational paddlers, paddlers from urban areas, and paddlers who had no previous wolf encounters. Paddlers who reported higher scores on this attitude scale were more likely to have a stronger fear, dislike or indifference toward the wolf than males, commercial paddlers, paddlers from rural areas, or paddlers who had had previous wolf encounters (Table 31).

Within the negativistic attitude scale, significance was found among various levels in the age and education variables. Various groups within the amount of visitation variable, however, did not illustrate significant differences on this attitude scale. Paddlers between the ages of 18 to 25 had stronger feelings of fear, dislike or indifference toward the wolf than paddlers between the ages of 26-35, 46-55 and 56 or older (Table 32). Paddlers whose highest level of education was high school reported higher negativistic attitudes than technical school, college/university, or graduate school graduates. Interestingly, paddlers whose highest level of education was graduate school also scored higher on the negativistic attitude scale than technical school or college/university (Table 32)

Doministic attitudes were more likely expressed by males than females; commercial paddlers than recreational; paddlers from rural areas than urban; and paddlers who had previously encountered a wolf than those who had not. Males, commercial paddlers, urban

paddlers and paddlers who had previously encountered a wolf were more likely to have a strong interest in mastery, control and dominance of the wolf, often in a consumptive use and sporting context (Table 31).

**Table 31.**

**Weighted** data summarizing the statistically significant independent variables within gender, paddler type, region of residence, setting of residence and previous wolf encounters for each attitude scale.

Attitude	Gender	Paddler Type	Region	Setting	Previous Encounters
Ecologistic	Females	Commercial	International	Rural	Yes
Naturalistic	Males	Commercial	International	Rural	Yes
Humanistic	N/S	N/S	N/S	Urban	N/S
Negativistic	Females	Recreational	N/S	Urban	No
Doministic	Males	Commercial	N/S	Rural	Yes

Within the doministic attitude scale significant differences were found among the various age levels, but none was found within the education or visitation variables. Paddlers between the ages of 18-25 had significantly stronger interest in mastery, control, and dominance of the wolf than any other age group (Table 32).

Table 32.

**Weighted** data summarizing the statistically significant independent variables within age, education and park visitation for each attitude scale.

Attitude	Age		Education		Visitation	
	Higher score	Lower score	Higher score	Lower score	Higher score	Lower score
Ecologistic	26-35	18-25	College/University	High school	> 10 times	Once
	56+	18-25	College/University	Technical school	>1 to 10 times	Once
	56+	26-35	College/University	Graduate school	>1 to 10 times	> 10 times
	56+	36-45	Graduate school	High school		
	56+	46-55				
Naturalistic	26-35	18-25	College/University	Graduate school	N/S	N/S
	36-45	18-25				
	46-55	18-25				
	56+	18-25				
Humanistic	26-35	18-25	Technical school	Graduate school	> 1 to 10 times	Once
	36-45	18-25	College/University	Graduate school		
	46-55	18-25	Technical school	High school		
	56+	18-25				
Negativistic	18-25	26-35	High school	Technical school	N/S	N/S
	18-25	46-55	High school	College/University		
	18-25	56+	High school	Graduate school		
			Graduate school	Technical school		
Doministic	18-25	26-35	N/S	N/S	N/S	N/S
	18-25	36-45				
	18-25	46-55				
	18-25	56+				

To sum, as illustrated by comparing table 29 with table 31 and table 30 with table 32, the weighted data indicated significant differences among groups (that did not exist within the unweighted data) in all independent variables: gender, paddler type, region of residence, setting of residence, previous encounters, age, education and visitation. Weighting the data (making each questionnaire worth 5.65) therefore changed the results, suggesting that results from the unweighted data are valid in relation to understanding the sample that was surveyed; but the weighted data are more valid in relation to understanding the attitudes of the larger paddler population within the BGI. Which data set is drawn upon will depend on the purpose of the data. For the purposes of park management the weighted data is of more value as it represents a visiting population (i.e. all paddlers to the BGI in 2005). However, for the purposes of thesis and academia, the unweighted data provides an accurate representation of the paddler population surveyed.

## CHAPTER 5

### Qualitative Results

To increase the reader's connection with the interview participants, the following table outlines each individual's attributes as they relate to this study (see Table 33). It should be noted that 9 of the 13 interview participants were over the age of 46, while the remaining 4 interviewees were over the age of 26.

**Table 33.**

Attribute table for interview participants.

Participant	Experience In BGI	Island	Paddler Type	Interviewed With	Age	Education	Access Point
Andy	First time	Dodd	Commercial	Alone	55-56	Grad School	Toquart
Bill	7 times	Clarke	Recreational	Alone	66-75	University	Toquart
Gus	3 times	Clarke	Recreational	Sally	26-35	University	Sechart
Sally	First time	Clarke	Recreational	Gus	26-35	University	Sechart
James	First time	Dodd	Commercial	Beatrice & Kelly	46-55	College (US)	Toquart
Beatrice	First time	Dodd	Commercial	James & Kelly	46-55	Grad School	Toquart
Kelly	First time	Dodd	Commercial	Beatrice & James	46-55	College (US)	Toquart
Mona	3 times	Gibraltar	Recreational	Dave & Sheryl	56-65	College (US)	Sechart
Dave	3 times	Gibraltar	Recreational	Mona & Sheryl	56-65	Technical School	Sechart
Sheryl	First time	Gibraltar	Recreational	Mona & Dave	56-65	College (US)	Sechart
Pete	First time	Dodd	Commercial	Alone	36-45	College (US)	Toquart
Roger	First time	Benson	Commercial	Alone	36-45	College (US)	Toquart
Shelly	3 times	Clarke	Recreational	Alone	46-55	Grad School	Toquart

The idea of wolves living in the BGI elicited an overall positive response from nearly all participants. There were, however, mixed feelings surrounding various hypothetical scenarios and actions when faced with the reality that wolves were present in the area. Though individual perceptions and emotions surrounding wolves were unique, common themes developed from the data. The five themes that emerged were: what is a wolf?; being prey; human impacts; co-existence; and management. It was difficult during the interpretation of the interviews to clearly define individuals' perceptions of wolves. These perceptions tended to be dynamic and fluid rather than static and easily categorized, leading to a need for a complex level of analysis.

#### *What is a wolf?*

When discussing wolves with participants, a whole range of symbols and emotions were elicited. Wolves symbolized many things and were closely tied to the perception of wilderness. Some participants also recognized that wolves were misunderstood by society in general and attributed fear and negative emotions to this perception.

For many of the interview participants, the wolf was tied to wild remote places, wilderness and nature (Pete, Roger, Shelly, Andy). Wolves were beautiful, rare, mysterious, and aloof (Beatrice & Andy); they epitomized wilderness and embodied adventure (Pete, Shelly). For others, wolves brought to mind loyal, family-oriented dogs and cute puppies (James, Kelly, Andy, Gus, Sally). Still others thought of them as howling predators and large carnivores who travelled in packs (Mona, Dave). Wolves thus meant many things to many different people; they were symbols of adventure and mystery, loyalty and familiarity, predators and danger, freedom and wilderness.

Knowing that wild animals were in the area was often considered part of the whole wilderness experience and part of why Kelly, James and Roger came to the area. Roger, for example, stated that the reason he came was “to get away from the crowds and experience nature and to see wildlife.” Pete and Roger talked about their hopes of bringing home stories of adventure and excitement, such as seeing a whale breach, exploring intertidal life, watching thousands of sea lions, paddling through 10 foot swells and, maybe catching a glimpse of a wolf.

Not only did wolves mean many different things, they also elicited various emotions. These emotions ranged from decidedly positive to outright negative. Roger maintained that he would feel extremely excited if he were to see a wolf: “it’s exciting, I don’t feel like they don’t belong, [n]or [am I] scared...I hope I see one.” The majority of interviewees, however, voiced that their initial reactions to seeing a wolf would most likely be a mixture of curiosity and caution. Andy, for example, thought “there’s a reason to be cautious or vigilant, but not to be overly concerned. I think they’re no more dangerous than bears, probably somewhat less so.”

Some of the participants were concerned that people would fear wolves because they are sometimes misunderstood and portrayed as “growling, snarling beasts that might run in a pack and can be dangerous” (Pete). Sally also made reference to the propaganda fed to adults and children about wolves (and predators in general), lizards, snakes and insects that generate misrepresentation of these animals: “We’ve read children’s stories about the big bad wolf...[so] why are kids scared of snakes right off the bat? Snakes and bugs...because that’s what we ingrain into them right off the bat.”

### *Being Prey*

The feeling of being prey was a prevalent theme that emerged from the interviews. Although individuals expressed unique reactions to being prey, common themes developed throughout the data. Varying degrees of fear, caution and awe were expressed when discussing wolves in hypothetical and actual scenarios. The feeling of being prey also generated impressions for some participants that wolves are highly dangerous to human safety.

### *Fear, Caution & Awe*

Surprisingly to me, an unexpected emotion emerged from the transcripts: benign fear. Most people, except Dave, were not adamant that wolves were dangerous and thus were not openly afraid of them. I interpreted benign fear, then, as fear of wolves that was not explicitly stated. People tended to maintain a cautious approach toward wolves, but were willing to accept their presence in the BGI. Most participants articulated some form of initial fear or caution, but were more than willing to accept that this was the wolves' home and that *they* were the visitors. Their feelings, therefore, were secondary to the welfare of wolves in the BGI and surrounding area.

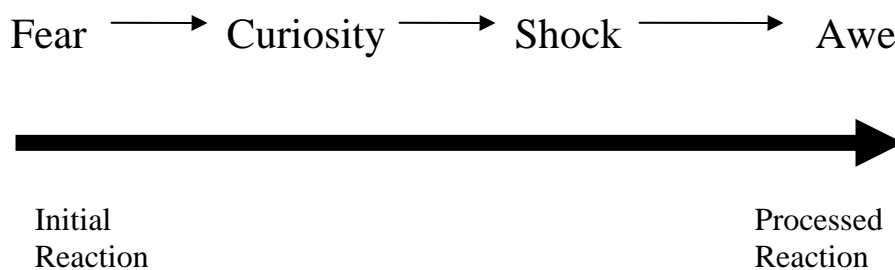
In some cases participants explained that they feared the wolf because it was wild, and wild meant that it was unpredictable (Sally, Dave). Others stated that they would be afraid of a wolf if it was habituated and no longer wild (Gus) or if a wolf acted abnormally because of rabies or starvation (Mona, Sheryl). Sally also explained that she feared that other people were choosing to bring smelly foods and were irresponsibly managing their waste. With her new knowledge of wolves in the area, she also showed concern about her own

actions, whether she had brought the proper kinds of food and whether she was keeping her site clean enough to avoid attracting wolves.

Fear became a situationally elicited emotion; different situations presented varying degrees of this emotion. As Bill explained, his level of comfort when hypothetically seeing a wolf was highly dependant upon the setting:

It depends upon the setting...To me, if I'm in a kayak and it's ashore, I'm going to linger...but if I'm on a trail and it's on the trail ahead of me, I don't want it to linger... or if I'm in a campground and if one was to stick it's head through there, I would react somewhat differently.

Most participants responded similarly, if a wolf were observed on land there was more self-reported fear than if the animal were seen from a kayak. Emotions when hypothetically seeing a wolf on land for most participants can be described on a continuum (see Figure 11) ranging from fear at the onset of the encounter, to curiosity, shock and awe: “[my] first reaction would probably be fear, then curiosity then once it was gone probably like, ‘Wow, that was incredible!’” (James) and “I’d probably be in shock, shock and awe” (Beatrice).



**Figure 11.** Summarized continuum of emotion during a hypothetical wolf encounter on land

Participants' level of comfort with a hypothetical encounter was also highly dependant on the distance between the wolf and the person. If a wolf were perceived to be

too close, most participants admitted that fear would be the primary reaction and that they would feel the need to remove themselves from the situation. For example, Sheryl said she would feel “scared actually... my reaction wouldn’t be to look it in the eye...I would back up.” If the encounter were perceived to be within an individual’s comfort range then the experience would most likely be positive: “it depends also on how close but if it was comfortable viewing distance I think it’d really [be an] incredible...incredible experience” (Gus). Although no one specified the exact distance at which they felt threatened, this distance seemed dependant on their surroundings. If the encounter were to occur in an open area, the distance at which participants generally felt threatened would be larger, whereas if the encounter occurred in a forested area, participants seemed to accept a closer range.

There was also a marked difference in reactions if the hypothetical encounter occurred while kayaking. Many participants voiced that seeing a wolf from the water would be a more positive experience than encountering one on land:

Yeah, that would be better to me because I would feel like I had a little more control about staying away from it if it [had] any bad intent...because then you’d get the benefit of seeing the wolf and having that interaction...seeing it in its natural habitat and then be able to calmly go and leave it alone. I think that it’s an important thing with whatever wild creatures you have; to let them do their own thing. I don’t *need* to interact with a wolf...I don’t *want* to interact with wolf...I don’t think the wolf wants me to interact with it. So obviously if I’m in a kayak that would make it better because it’s on land, its cool, it’s happy. (Pete)

Part of the difference between seeing a wolf on land and seeing a wolf from the water appeared to be the perceived safety buffer that the water provided. Participants expressed that

they would want the hypothetical experience to last as long as possible when sitting in the relative safety of the kayak as compared to wanting to remove themselves from the situation if a wolf were encountered on land.

There also seemed to be an increase in comfort when viewing a wolf from the water because of the perception that the wolf would be unaware of human presence thus allowing the person to maintain control of the situation and to observe a “wild” animal in its natural habitat: “I think that’s nature...that’s truly the best way to enjoy them. It’s maybe not the flashiest, but everybody’s better off that way” (Sally). Some people also expressed that viewing a wolf from the water would be better because they would not feel like they were intruding on the animal and that they were experiencing a rare thrill of watching a wild animal in its own habitat, undisturbed by human presence.

Emotions were not only situationally based, but contextual as well. It was interesting to observe the reactions of Beatrice, Shelly and James when the context of wolves on the same island changed from a hypothetical situation to a real one:

Beatrice & Kelly: The wolf?!!

Beatrice: Ha ha! Alright, if there’s a wolf on the island...heh heh, maybe I would be a little scared...

James: I would also think that [with] the population of people and campers on this island ...they’re not gonna want to come around.

Jen: There were tracks found on Moonsnail beach... on the other side of this island...So, as far away from this campsite basically as you can get.

Beatrice: Oh, ok.

Kelly: But still on this island?

Jen: Still on this island.

Kelly: Oh! Really?

Beatrice: No shit!

Kelly: On this island?

Jen: On this island, yeah.

James: Oh wow, so that disproves my theory.

In this situation, there tended to be a perception that the wolves were not on the islands where people camped. It was interesting that the *idea* of wolves in the islands was positively received, whereas when wolves became a possible *reality* the reactions changed from excitement to caution.

Interestingly, when Shelly actually did encounter a wolf in the BGI on her way to the washroom, her experience was positive and powerful. It changed her attitude toward wolves and made her feel more comfortable in the islands and in wilderness settings:

It was awesome! I wrote about it in my journal, I've thought about it for two years since and I've had more interest in wolves since then...If an article in a magazine talks about wolves I'll read it now...I feel like I've made more of a connection with wolves since that experience...So I think it probably changed my attitude to more positive and I certainly am not fearful now of hiking or walking in the woods by myself or anything like that because of that experience.

Similarly, in an email that I received this summer, two women who also encountered wolves while stranded on one of the more exposed islands overnight because of a wind storm this past summer shared that, "It really was quite the experience for us and made our trip unforgettable."

Although these two actual encounters occurred on land, they were interpreted as positive experiences for all three women involved. These encounters and their repercussions will be discussed in further detail in the sub-theme of risk.

### *Dangerous*

When discussing wolves, one participant mentioned that a wolf would be considered evil from the perspective of a hare. From the prey's point of view, Gus asserted that "anything that preys upon you, you'd be scared of and you would classify it as evil," while his partner Sally maintained that there was a difference between killing something for survival as opposed to destroying a life for the sole purpose of destruction: "whenever it's survival, it's not evil. It's when you kill for no purpose, and I mean no survival purpose."

Dave considered wolves to be destructive creatures who kill for the sheer pleasure of killing, although his wife Mona and their friend Sheryl were not convinced:

Dave: The ranchers hate 'em [wolves] because they go out and kill their animals. And they kill not to eat them always, they kill just for the love of killing.

Mona: Well, the coyotes do too.

Dave: Just for the sport of it.

Mona: Coyotes do too.

Sheryl: So do people

Mona: Yeah, so do people

Although some predators were seen as inherently evil because they destroyed life, Gus poignantly stated that above all else "'man [sic] is the greatest evil of all' because we destroy

all the different animals in the web, not only directly, but indirectly and for a number of different reasons.”

While not everyone I talked to considered wolves evil, many did voice opinions that wolves were dangerous to some extent. Bill, Roger, Andy and Sheryl did not feel threatened in most cases, although Bill did mention that if he were to see a wolf on the trail, he would not want the animal to linger in the area for long, and Dave perceived wolves as dangerous when they moved as a pack:

one wolf wouldn't bother me, if there's more than one or a pack of 'em then that would bother me... 'cause they hunt in packs and that's the way they generally attack and kill their prey is in packs...just a single by itself isn't probably much of a threat to a human being, but in packs I think they can be.

Dave was not the only one to voice this opinion, although others were less adamant, Mona and James also had similar perceptions of wolf packs being more dangerous to people's safety.

Despite the fact that Dave was adamant about the dangers and risks of wolves being in the same area as himself and people in general, he did say that he liked “the idea of large predators being around. I'd really feel bad if they were gone, but I think there should be a separation of people and animals.”

### *Risk*

During these interviews, risks associated with wolf encounters in the BGI were discussed as being both acceptable and unacceptable. Although risk was another common

theme, individuals held unique perspectives within this theme that are discussed in the following section.

### *Acceptable Risk*

Acceptable risk indicated a willingness to accept the possible and highly unlikely threat that wolves presented while visiting a wilderness area. All participants were aware that they were visiting a wilderness area. Most came to the BGI specifically because they sought a wilderness experience, and they accepted the inherent risks that come with that activity: “I think there’s a certain percent of the population that would come to see the wolves...they’re directly part of the reason for coming here the experience [of] being able to experience the wildlife” (James).

Mona voiced her opinion that we constantly live with risks everyday; her partner however, had a different view. The following excerpt is from their conversation on Gibraltar Island:

Mona- Yeah, but see you gotta learn to live with them, that’s what they’re

[Coloradans] trying to do

Dave- No, I don’t have to learn to live with them. Not if they’re gonna eat me...

Mona- Learn to live...don’t you like a little risk in life, c’mon!...Not everybody

agrees obviously, most people in Colorado tend to not agree with him and are trying to live with animals that are dangerous...They accept that there’s a risk and that they’re out there and that you have to do certain things correctly...You know, and you have to be careful and so forth...

In this discussion, it was obvious that Mona was comfortable with the idea of wild carnivores in and around the area general. She acknowledged that large carnivores present a possible, albeit unlikely, danger and that if people choose to camp in the wilderness then they are choosing to accept the unlikely possibility of re-entering the food chain.

Many participants compared the risks of wilderness camping to crossing the street in an urban area or getting into a car accident. For example, Andy observed that when living with large carnivores there are always elements of risk, but “far, far less than automobile accidents.” When someone chooses to camp in a wilderness setting, they are accepting the risks that are entailed with that action: “when you come out and it’s wilderness, wild animals are a part of the whole thing...So, if one acts out, [its] doin’ his own thing, but you know that’s part of it. I mean you could get run over by an automobile getting here” (Kelly).

Most participants were thus able to put the risks of wilderness camping into perspective and were willing to accept wolves in the area, with the provision that they were not in close proximity to the campsites. This was the case even with the three women who encountered wolves in BGI. Shelly described her encounter with a wolf on Clarke Island as follows:

It was just at dusk and I didn’t have a flashlight, I was able to see...I don’t recall if there was a full moon or whatever, but I was walking to the outhouse and just before I got to the ramp that goes up to it, an animal jumped in front of me onto the log on the left hand side and froze. And it was ... and I froze too and I looked at it and I realized “wolf” and then I thought “dog” and then I thought, “I’d better get out of here”. And I backed up and it took off. And it was probably, maybe 5-10 seconds at the most that we were confronting each other. But we were both just, you know, it was all silent

and very quick and exhilarating. My adrenaline was pumping for an hour afterwards... Yeah, it was really neat.

Similarly, the two women who encountered wolves on a remote island in the BGI expressed the following about their encounter:

We paddled from Clark Island over to Wouwer Island and got stuck on the island overnight due to high winds. We camped on the West side of Wouwer on the beach. At about 2 am in the morning, my partner woke me up because she heard something. I sat bolt upright and stared through the mesh door of the tent. There, about 6 feet in front of the tent, was a wolf staring right back at me. The wolf stayed there for about a minute and then walked down to the water and out of sight. About 5 minutes later, the wolf started howling and about 10 seconds later another wolf started howling across the island somewhere. As we were all alone on the island and my partner had badly twisted her ankle that evening, we were very much afraid. We basically did not sleep the rest of the night. It was not until I got home and read up on the wolf that I knew that they are very friendly, social and highly intelligent animals. Had I known this, I might not have been so afraid.

It should be noted that in this encounter, the women were on an island where camping is illegal unless in an emergency scenario, which was the case in this situation. I hazard to speculate that the wolves were probably not used to seeing people on this island and were curious about the strange forms and smells that appeared on the beach.

Both scenarios resulted in an increased interest in wolves: “So I think it probably changed my attitude to a more positive and I certainly am not fearful now of hiking or walking in the woods by myself or anything like that because of that experience” (Shelly). “It

really was quite the experience for us and a made our trip unforgettable” (Two women stranded on Wouwer island).

### *Unacceptable Risk*

Unacceptable risk regarding wolves in the BGI was defined by one participant as a feeling that he could not let down his guard for fear that a threatening predator might emerge from the woods:

I like to enjoy what I'm doing right now and not be worried, laying here on this beach and [not being] worried about a bear up raiding my tent or about to come down and attack me...Now, that's a real nice feeling for me. And that's the way I'd like it to stay. (Dave)

Some participants were also unwilling to accept the risks of camping in the park if food-conditioned wolves that posed a threat to human safety were present. Furthermore, people were unwilling to accept the presence of wolves in the area if the BGI ecosystem proved unable to sustain the wolf population, causing wolves to become desperately hungry and turning to people for food: “I guess you can scare the animal, but if the animal is truly hungry, he's going to go to where there's food” (Sally).

Roger held an alternative view, perceiving people as the risk instead of the wolves. Roger clearly stated that he viewed people as the unacceptable risk factor:

Because when you make 'em tame they become more dependent on that and maybe come close to humans, and then that's when they become aggressive, when they don't get food you know...And your changing the whole nature of them...from being a natural predator to being dependent on human food.

He recognized that wolves are an opportunistic species that they will feed on whatever is easiest for them to obtain. If people choose to leave food out or to actively bait wolves, the wolves will take advantage of what they recognize as an easy meal.

### *Human Impacts*

Perceptions of various human impacts emerged in the interviews leading to discussions surrounding the consequences of human rights over animals', food and food (mis)management, and uninformed "stupid" people.

### *Human versus Animal Rights*

Some participants recognized that humans are now in a position to make decisions that directly effect the population of wolves in the BGI. Humans can decide who or what survives and how. We have the power and the choice to remove the wolves entirely from this ecosystem, do nothing, or actively control people's impacts on the population of wolves, perhaps allowing them to thrive without our direct interference. As Mona said, "We're almost into totally being god-like...we're deciding what lives, what doesn't, where it lives, how it lives, etcetera. So, it's pretty awful to have to make those decisions."

The majority of the participants held the belief that it was not right, moral or ethical to destroy a wolf because it became aggressive as a result of human action: "But I still don't condone killing something because somebody fed it. You know, it just doesn't seem right, it doesn't seem fair and it doesn't seem moral" (Roger). Similarly, Beatrice lamented that: "I think it's really highly unfortunate that we're moving into living spaces that are really natural habitats for animals."

Many participants wanted both people and wolves to have the right to access the islands because both are part of the natural environment. This ecocentric view was exemplified by Pete when he stated that: “I think people have a place in the environment too. But you certainly should try to be smart about it and the least people can do is learn what they can and should do to make it ok for the wolves.” The responsibility, he felt, rests with people to educate themselves in what they need to know and how they should behave in areas with large carnivores.

Dave, however, had a different view. When discussing the rights of animals, he asserted that: “people have more rights than animals.” Similarly, Sheryl and Mona admitted that their bias was toward people and that people should continue to have access to the BGI. They did not like the idea of eliminating tourism, even if that was what was best for the wolves: “well, I don’t think I’d use the word rights...except I am a human and I want the people to survive” (Sheryl); “Well, let’s admit [it], we have a prejudice” (Mona).

### *Food*

The general perception of participants was that people would not intentionally feed a wolf. The implications of feeding a wild animal (either intentionally or unintentionally) are wide ranging and include, but are not limited to, altering their hunting behaviour, endangering their lives and changing their very nature of being (Roger;).

Animals that learn to associate people with food and consequently become aggressive are ultimately destroyed in the BGI. Gus felt that if an animal was fed on purpose so that people could extend their “wilderness” experience and interact longer, those people were essentially putting a death sentence on that animal. He noted that wanting to *experience* the

wolf and extending an intimate encounter by enticing the animal with food might not have obvious and immediate effects because “[you] don’t have to reap the aftermath.” James had a similar concern. He stated that if people feed the animal, it is they who create the monster and are to blame: “the real issue is that they fed them and made them used to humans and [they] expect food from humans so there’s no fear and *they* created the monster.”

### *“Stupid” People*

A number of participants felt that perhaps the biggest reason that there are habituated wolves in the BGI was because visitors were uninformed about the consequences of their actions or non-actions when managing their food (Roger, Andy, Shelly). People’s actions, whether intentional or unintentional, have impacts on their environment. As Beatrice said, “people can be really stupid and do things to put the animals in danger.” Pete, James and Shelly were willing to give people the benefit of the doubt, thinking that perhaps people are unaware that their actions cause problems. Gus, on the other hand, felt that some people are fully aware that their actions could result in the food-conditioning or death of a wolf, but consciously choose to feed the animal because they do not have to personally witness that death. He wondered if they do not feel a vested interest in the area and so do not feel any responsibility toward the area or its inhabitants: “I think they just want pictures and experience with the animal. ‘Hey, bait the animal, I’m not here, I don’t have to reap the aftermath, I get to see what I wanna see and the animal gets what it wants, right’? A bullet?...What kind of idiot feeds a wolf!?”

### *Co-existence*

Dave was the only participant out of the thirteen interviewees who was strongly against the possibility of humans co-existing with wolves. In his opinion, there is no fool-proof way to educate everyone on how to behave when they are camping in the wilderness. Dave firmly believed that there should be a separation of humans and carnivores: “[we] should not mix predator man-eating carnivores and people.” Co-existence also seemed unlikely to Pete, although he felt there was hope if the situation was actively managed:

So, yeah, of course why shouldn't we be able to co-exist? But there are a lot of caveats there. As long as they're [wolves] not comfortable around people, as long as people aren't feeding them... There's always people who don't care, who don't follow the rules, don't know the language, so they're not probably educated and they just do stupid things which ruin it for everyone else. So, it's a concerted and constant effort that I think you need [if you want] to engender this co-existence thing.

There were three stipulations that Pete explained would have to be overcome for co-existence to become a reality: stop people feeding wolves; discourage wolves from losing their fear of people; and people who visited the area must be informed about wolves.

Bill and other participants also argued that people need to be educated in order for visitors to the BGI to co-exist with wolves: “I think that people leave food out... And I think that's bad and... I think it's a case of people not being informed properly.” Education continually emerged as a recommendation that participants made for ensuring that visitors could successfully co-exist with wolves. Education did not need to be the only strategy as Pete articulated,

However you wanna do it. If you wanna coax people nicely with education or you wanna beat it into their heads with lots of signs and public service announcements and things like that and I think that the media can help a lot.

Suggestions from participants to increase the visitor awareness and education in the area included using the fee collectors who arrive at each campsite every morning to also act as roving interpreters, passing on information about the wolves in the area by handing out pamphlets and answering questions. Improving the signage in the area by making the signs more easily readable in the dark outhouses was also suggested as a management strategy to increase visitor awareness. For example, Pete felt it important to make suggestions to improve existing signage with the intent to “engender” co-existence between paddlers and wolves in the area:

... it's a concerted and constant effort that I think you need to engender this co-existence thing...whether it be personal stuff from your guides or whether pamphleting or posting signs, putting information in the outhouses in the Broken Islands...I think the outhouses are great and there's stuff in there. But there's not enough of it and it's not even in big enough print, because you can't see, because it's relatively dark and a lot of them are getting old and wrinkled. So you should post nice new fresh laminated larger print, easier to read, clearer. (Pete)

Interview participants demonstrated a strong interest and a willingness to learn about wolves if the information were readily available and easily accessible. The following is a compiled list of specific information that participants wanted to see incorporated in the educational material:

1. How many wolves are in the area?

2. What islands are the wolves on?
3. Can the wolves swim?
4. Do these wolves travel as a pack or individuals?
5. How many distinct pack groups are in the area?
6. Are they all one big family unit or is there a larger gene pool?
7. What do they eat?
8. How do they hunt?
9. Did they come here on their own or were they re-introduced like in Yellowstone?
10. What are their habitat needs?
11. What size are their territories?
12. Is the park currently monitoring the wolf numbers in the islands?
13. Is the wolf population growing and by how much?
14. What do you do if you encounter a wolf?
15. How can you make an encounter unpleasant for the wolf without causing undue aggression toward you?
16. Explain that wolves are intelligent, family oriented and social animals.

All participants (except Dave) believed that educating visitors and increasing awareness of wolves should be a top management priority.

### *Management*

As mentioned, the current management strategy in the BGI when dealing with a food-conditioned wolf that has become aggressive toward people is to destroy the animal. This is the worst-case scenario and is employed only if the wolf does not respond to hazing.

Currently, the BGI wardens haze the wolves by shooting them with paintballs; the reasoning for this management action is well documented and has been discussed in the literature review. By hazing the wolves, the wardens are essentially re-enforcing that humans are meant to be feared and should not be approached. The wardens have also asked people to personally haze a wolf if one is encountered, by yelling, looking bigger and throwing rocks or sticks in its general direction to scare the animal away (not to hit it).

A number of participants supported wardens hazing the wolves if it caused the animals to maintain or re-gain their fear of humans (Kelly, Andy, Bill, Pete, Gus, Sally). The perception was that both wolf and human safety would increase as a result of hazing. Interestingly, however, there was a change in attitude when participants considered personally hazing the animals themselves. Some were not supportive of the idea that they should personally be hazing the wolves (Kelly, Mona, Sheryl). For example, Kelly felt that if she were face to face with a wolf, she would not actively haze it for fear of causing an aggressive reaction from the animal:

You know, I think I'd be afraid that by doing that it would cause the animal to kinda be angry at me... maybe create aggression. So I mean, even though I understand that they're saying that that's the good thing to do...instinctively to me, if I get angry, I would think that would cause a negative response back to harm me.

Others, like Shelly, Gus and Robert were unsure about hazing wolves that were not acting aggressively because they would want to watch the animal for as long as possible.

The responses were mixed when the issue of destroying aggressive wolves was discussed. Some participants, like Andy, Dave and Gus supported destroying an aggressive wolf as a final option to maintain visitor safety. For example, Gus said,

I think it's terrible that an animal has to die. But the interest [of] public safety has to be foremost, because if somebody gets seriously hurt in the Broken Islands Group or dies because of a wolf, the wolves will be no better off.

Others felt very strongly that no wolf should be destroyed, especially if its aggressive behaviour was brought on by human actions. Beatrice, James, Bill, Sheryl and Shelly all voiced this opinion, but Roger said it most eloquently: "I still don't really condone killing something because somebody fed it. It just doesn't seem right, it doesn't seem fair and it doesn't seem moral."

Other ways to help wolves in the park remain wild were discussed. Bill, for example, thought the park should provide bear-proof containers or bear-hangs for people to use and that this would also enhance the perception of being in a wilderness area. Such containers and hangs could help people to realize that they were in large carnivore country and that the park was willing to take the necessary steps to help maintain visitor safety. Bill felt that by seeing food containers in the park, people would realize that they needed to actively participate in personal food and garbage management.

When discussing the warden-led orientation at Sechart, Gus perceived a notable increase in interest when the topic of wolves was discussed: "but when they mentioned wolves on the outer islands, everybody's interests piqued, eh? Did you see that? Everybody just kinda went 'wolves!?' And my interest piqued too."

Conversely, most of the other participants who entered the park via Sechart Lodge could not clearly remember the warden's talk (Sally, Mona, Sheryl). Some remembered that the warden had met them at Sechart, but could not remember what was said:

Gus: They mentioned it [wolves in the park] at Sechart when we left.

Sally: So how much did he mention, I can't remember what he said.

Gus: He just mentioned that there were wolves...and it was done in a nonchalant [way].

Other interview participants remembered a female warden presenting the visitor information at Sechart. There is, however, no female BGI warden on staff at Pacific Rim National Park Reserve. Mona also mentioned that when arriving at the ferry, the focus was on packing and getting the boats into the water without much attention paid to the messages available to visitors at that time.

Mona: We did have some talks [but] they didn't talk about the wolves...they talked about lots of things.

Sheryl: Oh, she mentioned it...You can [also] get that information from the visitor centre, by the Sir Francis Barkley.

Mona: I think we might [have] been getting ready and not have [had] time to look at it.

Although Mona's comment about being too busy to pay attention to the available educational material, she went on to say that she would support more educational initiatives within the BGI and suggested that the fee collectors who visit the islands each morning would be a good source of information, especially if they handed out pamphlets with the user permits.

Another suggestion that arose in discussions about how to prevent wolf habituation and aggressiveness caused by food-conditioning was controlling visitor behaviour. Some of the specific methods that were recommended included: limiting tourist numbers in the park; closing off areas or whole islands if wolves needed those areas for pupping or rendez-vous

sites; fining people who kept messy campsites or intentionally fed wolves; and increasing visitor awareness.

### *Summary*

Wolves meant many different things to the different participants, and simultaneously meant different things to the same people depending on the situation and the context. Diverse emotions such as excitement, fear, caution, awe and curiosity were elicited in discussions of a range of situations (seeing a wolf from the water or from land) and contexts (being told that wolves were in the area versus believing that wolves were on the same island).

In certain situations, some people felt threatened by the presence of wolves on the islands. The idea of being prey threatened the satisfaction of one person's wilderness experience, while for the others it was accepted as part of that experience. The perceived risks involved in wilderness camping also varied among the participants. Most were willing to accept those risks, recognizing that the presence of wildlife is also part of their desired experience.

Unacceptable risk was closely linked to human behaviours such as feeding wolves, keeping untidy campsites and cooking with aromatic foods that would attract animals. These risks were acknowledged as avoidable if awareness were increased regarding the consequences of each action. Participants consequently supported the implementation of educational programs and materials to increase awareness of human impacts on the environment.

Various management strategies to reduce risk were discussed as well. Maintaining visitor safety, while ensuring a healthy wolf population, was a high priority among the vast

majority of paddlers who participated in the interview. Management techniques that focused on controlling the behaviour of both wolves and people were also encouraged with the goal of co-existence in the BGI.

Co-existence was also a prevalent theme in the interviews. Other major themes were dynamically tied to this concept: for example, human impacts and management strategies were both closely related to maintaining positive relationships between humans and wolves. Co-existence was considered possible by most participants if visitor awareness was increased, food-conditioning of wolves was decreased and a balance was maintained between wolves and the ecosystem that supports them.

## CHAPTER 6

### Discussion

In this chapter, the qualitative and quantitative data have been linked where appropriate; the two phenomena of attitudes and meanings have been integrated to provide a rich and contextual understanding of paddlers' attitudes toward and perceptions of wolves in the BGI. In some situations, the qualitative interviews complemented and supported the quantitative findings, in others the results from the different methods contradicted each other, while still in others the two data sets were incompatible and were therefore not linked.

### *Attitudes*

Results from the weighted data showed that attitude scales testing for differences between genders illustrated that females tended to have higher scores on the ecologicistic and negativistic attitude scales than males, while males reported having higher scores on the naturalistic and doministic attitude scales than females. The unweighted data, however, showed that significant differences between the genders existed only within the negativistic attitude where females reported higher scores than males. These findings are congruent with Kellert's (1985) study that found higher negative attitudes were reported more frequently and to a greater degree by females than males. Kellert's (1990) study also found that males were more likely to report a greater degree of interest in mastering and dominating the wolf in a sporting context, similar to this study's results. Females were more likely to report negativistic attitudes, such as fear, dislike or indifference toward wolves. These results suggest that the management of human-wolf interactions will likely require a variety of measures to address the varying attitudes that were revealed. For those who wish to master

and dominate over the wolf, and for those who fear wolves, educational programs would be most beneficial if they focused on creating positive perceptions of wolves.

Using the weighted data, commercial paddlers presented higher scores on the ecologicistic, naturalistic and doministic attitude scales than recreational paddlers, while recreational paddlers reported having higher negativistic scores than commercial paddlers. Conversely, within the unweighted data, only the naturalistic attitude scale yielded significant difference between paddler types, with commercial paddlers scoring higher than recreational paddlers.

Results from the weighted data suggest that the park should continue to provide commercial outfitters with current information about wolves in the BGI so that they can share this information with their clients and promote positive attitudes towards wolves and avoidance of wolf-human interactions. Furthermore, these results suggest that educational programs should be targeted toward recreational paddlers in an attempt to decrease their fear and dislike of the wolf. As paddlers appear to be preoccupied at the beginning of their trip while getting gear ready for their paddle to the islands, on-island information about wolves may be a more effective point of message delivery. Suggestions, provided by paddlers, include having the fee collectors provide information to visitors about wolves, reflective messaging on the inside of outhouse doors at the island campsites, and signs about wolves at both major put-in locations.

Within the weighted data, international paddlers were more likely to score higher on the ecologicistic and naturalistic attitude scales than were Canadian paddlers. International paddlers, therefore, felt stronger interest in the ecological value of the wolf and in direct outdoor recreational contact with the wolf than Canadian paddlers. Using the unweighted

data, significant differences were illustrated within the ecologicistic and naturalistic attitude scales where international paddlers reported having higher scores than Canadians in both cases. Therefore, if management's goal is to increase paddlers' interest in the ecological value of wolves (ecologicistic attitudes) they should focus on targeting Canadian visitors with educational and messaging strategies. Furthermore, if management were to focus on decreasing paddlers' interest in recreational contact with the wolf, strategies would be most successful if international paddlers were targeted. However, it would be beneficial to reinforce ecologicistic attitudes in both of these groups.

Weighted data illustrated that paddlers living in rural settings tended to have higher scores on the ecologicistic, naturalistic and doministic attitude scales than those living in urban areas. Conversely, paddlers living in urban areas reported higher scores on the humanistic and negativistic attitude scales. The unweighted data yielded significance only within the negativistic attitude scale, where urban paddlers scored higher than rural. These findings are contrary to Williams, Ericsson and Heberlein's (2002) report which stated that rural residents presented more negative attitudes toward wolves. Their study, however, focused on public attitudes in Scandinavia and Western Europe. The results of my study better correspond to Kellert's (1990) report on public attitudes toward wolves in the state of Michigan: "Residents of the more urban areas tended to express greater fear of the wolf, while rural residents revealed substantially more interest in the mastery and control of this animal" (p. 80). This finding suggests that managers should therefore target paddlers from urban settings with messages intended to reduce fear, dislike and indifference toward the wolf, and target paddlers from rural settings with messages related to the ecological values of wolves and the importance of discouraging human-wolf interactions.

As illustrated when using the weighted data, paddlers who had previously encountered wolves tended to have higher scores on the ecologicistic, naturalistic and doministic attitude scales than paddlers who had never encountered a wolf. Paddlers who had not previously encountered wolves were more likely to present higher negativistic attitudes. The only difference when using weighted data was illustrated within the ecologicistic attitude scale where no significance was found. This finding is congruent with Shelly's story and the email provided by the two women who were stranded on Wouwer Island. In both situations, the women's attitudes became more positive after their experiences. Both scenarios resulted in an increased interest in wolves. This finding suggests to management that paddlers who have had previous encounters with wolves are more likely to perceive them in a positive light. Therefore, messages related to the ecological value of wolves and what to do in the event of an encounter with a wolf that target paddlers who have not previously encountered a wolf would likely be effective in reducing fear, dislike or indifference toward this animal.

The weighted data illustrated that younger paddlers (18 to 25 years old) generally reported lower scores on the ecologicistic, naturalistic and humanistic scales and scored higher on the negativistic attitude scale than paddlers who were 26 or older. This finding is contrary to Kellert's (1985) study on public perceptions in the United States of wolves and coyotes, where it was reported that "older respondents indicated far more dislike of wolves than persons under 25" (p. 176; see also Kellert, 1990). The unweighted data showed no significant difference between ages within any attitude scale. For the purpose of Parks Canada management teams, the weighted data suggests that younger paddlers require more education about the presence of wolves in the BGI and how to respond to a wolf-human

encounter. More research is needed to clarify the discrepancy between the unweighted and weighted data sets.

Using the weighted data, level of education was also a factor that influenced paddlers' attitudes. Paddlers who had an education of high school or less were more likely to fear, dislike or feel indifferent toward the wolf than paddlers with higher levels of education. Paddlers with technical school degrees tended to have higher scores on the humanistic, naturalistic and ecologicistic attitude scales. Finally, paddlers who had completed graduate school tended to have higher scores on both the negativistic and ecologicistic attitude scales. This finding is in part supported by Kellert's (1985; 1990) reports, stating that less educated respondents were more likely to present greater negative views of the wolf than those with a college education. However the findings for the completed graduate school respondents is an anomaly to this research.

The findings in my study suggest to management that education programs and materials would be most effective if they were targeted toward paddlers with an education level of high school or less and paddlers who had completed graduate school with messages that reduce fear, dislike and indifference towards wolves. This is a large spread for messaging comprehension to accommodate and could potentially pose logistical challenges. While the weighted data may imply that educational programs should be targeted to paddlers with high school education or less *and* paddlers who had completed graduate school, the unweighted data indicates no significance between different levels of education within any of the attitude scales. More research should be conducted to better understand this phenomenon.

The weighted data illustrated that paddlers who had visited the area only once scored significantly lower on the ecologicistic scale than those who had visited the area repeatedly.

Interestingly, paddlers who had visited the BGI more than ten times also scored significantly lower on the ecologicistic scale than paddlers who had visited the area between one and ten times. First time visitors to the BGI were therefore less likely to have a strong interest in the ecological value of the wolf. They were also less likely to feel strong affection for the wolf and its existence than paddlers who had visited the area more than once, but less than ten times. The unweighted data yielded results showing that paddlers who had visited the area more than ten times scored significantly higher than those who had been only once to the BGI. This finding suggests that special attention should be given to providing first time and long time repeat visitors to the BGI with messages that focus on the ecological value of wolves and how to avoid human-wolf interactions.

An important element in exploring the human dimensions of large carnivore conservation is to gain a better understanding of how visitors, who can directly influence the area and the wildlife, feel about large carnivores and being in large carnivore habitat. This dimension was explored both quantitatively and qualitatively. Both the qualitative and quantitative results complemented each other. Both weighted and unweighted data illustrated that paddlers indicated their interest in the area increased by 34% when they found out that wolves were in the BGI. This finding was also supported by Gus' statement in the qualitative interviews where he perceived a notable increase in people's interest when the topic of wolves was discussed during the warden-led orientation at Sechart lodge.

An interesting contradiction, however, was apparent between the questionnaire respondents and the interviewees regarding wolves in the park. The reason most of the interview participants came out to the wilderness was to experience wildlife. An increased awareness in the types of wildlife, especially charismatic megafauna (Lynn, 1998), was

therefore likely to increase these paddlers' interest in the BGI. Although wolves tended to increase paddlers' interest in the area among the interviewees, the results from the questionnaire (weighted and unweighted) revealed that 95% of paddlers who knew wolves were in the area before arriving in the BGI did not come specifically to view these animals. This finding indicates that paddlers chose to visit the BGI almost exclusively for reasons other than viewing the wolf or hearing its howl.

It was also found that females were slightly more likely than males to indicate that their interest in the area dropped because of the presence of wolves. Similar findings (albeit to a greater degree) were reported in Roskaft, Bjerke, Kaltenborn, Linnell and Andersen (2003). It should be noted, however, that Roskaft et al. surveyed the general public in Norway, whereas this research focussed exclusively on a specific recreational population within a Canadian National Park.

#### *What is a wolf?*

Part of the wilderness experience was getting away from the crowds and immersing oneself in nature. Becoming nature, as Plumwood (1999) explains, involves moving away from the dichotomous perception (Eurocentric worldview) of humans apart from nature and toward a more holistic approach of humans as part of nature (see also Fullager, 2000). Escaping the whirlwind of city life in hopes of rejuvenating the self in another world of wilderness becomes a primary goal of many visitors to parks. These experiences are closely tied to the presence of nature, where wild animals are part of the whole wilderness experience (Deruiter, 2002), including wolves as an embodiment of wilderness.

### *Being Prey*

As noted in the literature review a major cause for the increase in negative interactions between people and large carnivores is the loss of fear exhibited by carnivores that have been habituated or food-conditioned by people. The literature also provides another possible reason for this problem: people may also be losing their fear of large carnivores. Some researchers have found that people living in concrete jungles have become so removed from wild places that they no longer know how to behave when in areas where large carnivores live (Gillis, 2005; Linnell, et al., 2002). This was reflected in my research findings where urbanites exhibited more fear, dislike and indifference towards wolves than paddlers from rural settings. Paquet articulated the importance of maintaining a mutual respect between humans and wolves: “[there] is a long-overdue respect for an animal we’ve only recently learned not to loathe. ‘To have wild wolves living in wild areas is important’, he says. ‘But let’s not forget they are large, capable carnivores. They are predators that can kill, and we should avoid intruding on them as much as possible’” (Paquet in Gillis, 2005, p. 48).

Conversely, my research findings showed that interviewees had a healthy fear of and respect for wolves. Although fear was not the primary emotion for any of the interview participants, with one exception, it did emerge as a common theme throughout the interviews as a secondary, benign emotion that was highly contextual and situational. Many of the interview participants did not forget that wolves were carnivores that could pose a threat to human safety. They all valued having “wild wolves living in wild places” and the wilderness experience that they were part of in the BGI. This finding is most likely different from the aforementioned research because of the specialized population of paddlers in a wilderness

setting who were interviewed and surveyed as opposed to the general public in North America.

Within the interviews, wild animals elicited a variety of emotions among which was fear. One participant was concerned that people feared the wolf because of childhood stories and mythology that originated from social norms in western society. Wallner (1998) acknowledges this phenomenon in her Swiss research: “The role animals play in mythology might be one reason why people seem to be more frightened of the wolf” (p. 31). Oftentimes, people tend to be afraid of what they don’t openly see or what they do not understand, leading to perpetuated fear and misconceptions (George, 1974).

Dave’s perception of wolves as killing machines was recognized by Algonquin wolf researchers, Rutter and Pimlott in 1968. They contend that “a belief that wolves kill wantonly for the love of killing is well established in wolf mythology, but examples of wasteful killing are lacking in modern research” (p. 118; see also Wallner, 1998). Biological research and anecdotal reports have shown that nearly all wolf attacks on humans in North America have been the result of habituation, food-conditioning, rabies or starvation (McNay, 2002b) and that attacks are significantly less frequent here than in other areas of the world (Linnell, et al., 2002; Wilson, 2004).

### *Risk*

Many studies have shown that wild wolves will naturally avoid encounters with people, but that they are also a curious and social animal (Mech, 1988; Darimont & Paquet, 2002). For example, in the encounters of wolves by the two women on Wouwer Island and by Shelly, the result of the interaction was the same. After the initial contact, each wolf

turned and disappeared, consistent with wild wolf behaviour (Mech, 1970; McNay, 2002b; Theberge, 1998; Rutter & Pimlott, 1968). Wolves do not always avoid people, as was the case on Vargas Island (in Clayoquot Sound) in 2000, when a food-conditioned wolf bit a camper after food was withheld (Streetly, 2000). The major difference between this scenario and the encounters that occurred in the BGI was that the Clayoquot Sound wolf had been food-conditioned over a long period of time (roughly 3 years), whereas the BGI wolves were mostly likely conditioned to a lesser degree and a shorter time period.

### *Human Impacts*

Attracting a wolf into camp is not always intentional and can easily be done unintentionally through improper food and garbage management (Pacific Rim National Park Reserve, 2004; Parks Canada, 2003). The implications of feeding a wild animal (either intentionally or unintentionally) are wide ranging and include, but are not limited to altering their hunting behaviour and endangering their lives (see also Loe & Röskaft, 2004; McNay, 2002b; Olson, Gilbert, & Squibb, 1997). Human impacts on wolves in the BGI consist primarily, but not exclusively, of poor food and garbage management. This suggests to management that food storage and garbage management practices within the BGI need to be reviewed and possibly updated in the BGI. Also, providing information to help increase visitor awareness of food choices that minimize encounters with wolves before arriving can allow paddlers to make appropriate food choices and to begin mentally preparing for a camping experience in wolf country.

## *Management*

Upon arrival at Sechart lodge, guests and visitors generally receive a brief orientation from a warden before entering the park. Interestingly, 63% of paddlers accessing the BGI from Sechart and receiving the orientation before entering the park stated that they were unaware that wolves were present in the islands. This finding suggests that for some reason the verbal messages provided by the warden about wolves is not being heard by over half the people who receive the orientation. Further research would need to be conducted to determine exactly why this messaging is not as effective as possible.

The qualitative interviews provided some insight into this phenomenon. Some of the participants who entered the park via Sechart Lodge could not clearly remember the warden's talk, some remembered that the warden had met them at Sechart, but could not remember exactly what was said. It is likely that the timing of the presentation is the key factor. As illustrated by Howard, Lipscombe and Porter (2001) in their research regarding messaging to tourists about dingoes on Fraser Island, Australia; even though all visitors received information pamphlets with their permits,

forty percent of visitors stated they had not obtained information about dingos and a further ten-percent admitted they did not read it...It may be that visitors to Fraser Island ignore the 'Be Dingo-Smart' message, prior to visiting the Island as it is not relevant to them at that stage of the trip cycle. However, once on the Island, they seek information immediately relevant. (p. 101)

This indicates that interpretation strategies, like education, must be repeated and enforced in various settings.

Both the qualitative stories and the quantitative data emphasized that visitors supported more educational strategies and materials for paddlers in the BGI. The majority (76%) of participants who completed the questionnaires reported that they would like to see increased visitor education as the top management priority for decreasing human-wolf interactions. Many references were also made in the qualitative interviews regarding the benefits of increased visitor education. Interview participants demonstrated a strong interest in and a willingness to learn about wolves if the information were readily available and easily accessible *within the islands*.

Creating education programs as a means of addressing environmental problems has been advocated as an effective management strategy for reducing inter-species conflicts. When researching issues that are complex and dynamic in nature, such as human-wildlife interactions, an eclectic approach is necessary. Rogers (1999) expressed

that environmental problems are ‘messy’ in ecological terms as well as in terms of the individuals and groups who are affected by these problems. Interdisciplinary research can respond to this ‘messiness’ by beginning with the recognition that there is no single approach that will address the complexity of environmental issues. (p. 5)

In response to Rogers, Russell (2001) points out that one technique commonly cited as having significant value in working toward solving these “messy” problems is education.

Environmental education’s goals within management strategies of recreational areas, according to Orams (1996), are to “firstly, control visitor interaction with wildlife; secondly, increase tourist enjoyment and understanding of the experience; and, thirdly, foster a change in tourists’ attitudes and behaviour” (p. 44; see also Lemelin, 2004). Russell and Hodson (2002) support environmental education as a means of increasing information flow to and

from the visitor or tourist, while cautioning that effective environmental education must focus on a variety of dynamic, often deeply rooted, social structures and norms. Effective environmental education therefore cannot merely focus on the superficial elements and surface causes, but must focus instead on more complex attitudes, emotions and beliefs (Pooley & O'Connor, 2000).

### *Parting Thought*

The reader may have noticed that some of the participants contradicted themselves in the interviews. I would argue that participants were not consciously contradictory, but were expressing different layers of their understandings and interpretations of various questions, issues and scenarios. For example, some participants expressed fear, excitement, awe and respect for wolves all in the same interview. Wolves, therefore, not only elicited different reactions from different people, but also from the same people at different times. The meanings of wolves remain hard to pin down and feelings about wolves constantly oscillated, depending on the scenario, the person's background, the way they felt at that moment, their past experiences, etc. Their responses were situational and contextual; if the context changed, often the response did as well.

## CHAPTER 7

### Conclusions and Recommendations

The extensive impact that the human footprint has on the environment currently suggests that we as “humans are stewards of nature, whether we like it or not” (Sanderson et al., 2002, p. 903). One consequence of the human footprint is wildlife habitat loss and destruction which is pushing people and large predators into closer contact, thus increasing the likelihood and occasion for conflict (Musiani & Paquet, 2004; Quammen, 2003; Sanderson et al., 2002). There exists therefore, two choices: 1) learn to live with large carnivores; or 2) completely annihilate other beings that might threaten our existence. Unless we actively pursue the first choice, we will undoubtedly accomplish the second (Quammen, 2003). With the intention of pursuing the first choice, the following conclusions and recommendations are made based on the results of this study and the literature relating to the human dimensions of wildlife management.

The BGI presents a unique management challenge because the number of visitors cannot realistically be controlled due to the fact that the islands are so easily accessible from various locations. Unlike the West Coast Trail unit of Pacific Rim National Park Reserve, there is no start and finish point and no gate through which all visitors must pass to gain access. Limiting visitor numbers to the BGI is, therefore, not a viable option to maintain the ecological integrity of the area. Alternative methods must be explored if both ecological integrity and visitor satisfaction are to be maintained.

A possible solution for the present lack of awareness surrounding wolves and how to minimize negative human-wolf encounters would be to increase effective messaging and orientation programs by making them more readily available for paddlers on-site within the

BGI. Signs that are presently posted about wolves in the BGI and at Sechart Lodge have the potential to increase visitor awareness about wolves in the area, but further research should be pursued in order to determine the most effective education and messaging strategies as this is beyond the scope of this study. Moreover, because more than half of all paddlers surveyed accessed the BGI from Toquart Bay, effective messaging strategies should also be targeted for this put-in location, as was suggested by some of the interview participants.

Management should also take into consideration the recommendations of interview participants on page 113 in Chapter 5 regarding what participants would like to see added to the informational materials. Other suggestions from interview participants for minimizing human-wolf interactions include: limiting tourist numbers in the park; closing off areas or whole islands if wolves need those areas for pupping or rendez-vous sites; fining people who keep messy campsites or intentionally feed wolves; and increasing visitor awareness. Some of these recommendations are already in place (i.e., closing off areas of the park to visitors so that the wolves are relatively undisturbed), while others (i.e., implementing a form of punishment for keeping a messy campsite) would be beneficial for decreasing the likelihood that wolves will enter camping areas in search of food.

Once additional educational and messaging strategies are in place, further research should be undertaken to investigate the effectiveness of these new signs and to explore the option of creating virtual and hard copy information packages for visitors that would be available from the Pacific Rim National Park Reserve website and via mail request. Warden presentations at Sechart should also be studied with the intent to improve receptiveness and retention of the messages that are provided.

Further research is also recommended for determining the most effective timing within the trip cycle, and the most effective types of messaging, education programs and behaviour modification strategies, within the milieu of the BGI. As outlined, visitor education is a key factor in reducing human-wolf interactions, especially within recreational contexts. An interdisciplinary approach is therefore needed when exploring and investigating various forms of effective means to increase co-existence with wolves.

Natural and social environments are inherently “messy,” complex and dynamic (Rogers, 1999). One conflict mitigation strategy will therefore not be sufficient to address these issues. Management should continue to use multiple strategies, representing interdisciplinary approaches to address the wolf-human issue including: education programs and visitor behaviour modification strategies (Bath & Enck, 2003; Herrero & Higgins, 1999; Linnell, et al., 2002; Loe, & Röskaft, 2004; Orams, 1996); improved food and garbage management practices (Dalle-Molle & Van Horne, 1989; Herrero & Higgins, 1999); continuous monitoring of the wolf population to determine their nutritional levels and susceptibility to disease (Herrero & Higgins, 1999; ); aversive conditioning of “problem animals” (Bath & Enck, 2003; Dalle-Molle & Van Horne, 1989; McNay, 2002a, 2002b); less invasive conditioning strategies such as fencing and/or closing (Orams, 2002; Burns & Howard, 2003); and enforcement of park rules relating to feeding wildlife (Orams, 2002).

An historical perspective that investigates the history of *Homo sapiens* living with large carnivores is also recommended. For example, Quammen’s (2003) in-depth exploration of the lifestyles and historical contexts of various herding and nomadic cultures and their abilities to co-exist with large carnivores provided insight into the possibility of future endeavours to live with large predators. I would also recommend that future research include

integrating Nuu-chah-nulth First Nations' perspectives with current wolf management strategies. The deep and symbolic respect that is shown for animals by First Nation peoples (Kellert, 1996; Stumpff, 2003) is illustrated by the place of honour and prestige in which they hold the wolf (Wallner, 1998). First Nations may therefore have a unique and historical perspective that could potentially provide important insight into human and large carnivore co-existence.

Finally, I recommend that additional research be conducted to explore the discrepancy between what people say and what they actually do in regards to their behaviour while in the BGI as it relates to camping in wolf habitat. A suggested method for investigating this gap is to incorporate participant observations into future human-wolf and social science research. Such exploration would be critical in determining message effectiveness and if other forms of management interventions are required to achieve the desired paddler behaviour within the BGI.

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*In the end, we will conserve only what we love;*

*We will love only what we understand;*

*And we will understand only what we have been taught.*

Baba Dioum (1968)

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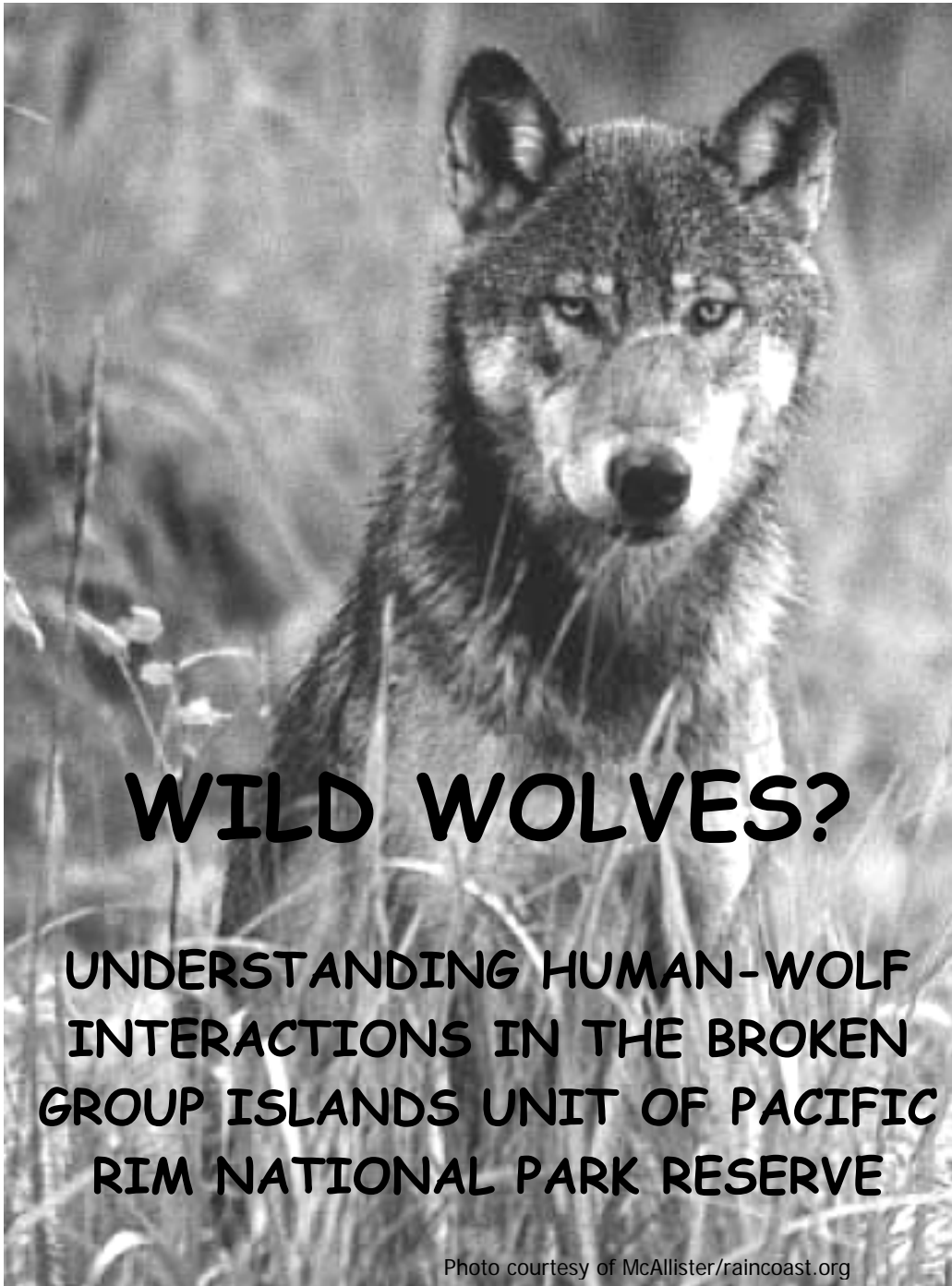
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# Appendix A

## Questionnaire

- Reformatted from booklet format into 8 1/2 x 11



# WILD WOLVES?

UNDERSTANDING HUMAN-WOLF  
INTERACTIONS IN THE BROKEN  
GROUP ISLANDS UNIT OF PACIFIC  
RIM NATIONAL PARK RESERVE

Photo courtesy of McAllister/raincoast.org



## **Human-Wolf Interactions within the Broken Group Islands of Pacific Rim National Park Reserve**

**Aussi disponible en français**

Dear Participant:

Thank you for volunteering to take part in a study concerning kayakers and wolves in the Broken Group Unit of Pacific Rim National Park Reserve.

For the Pacific Rim National Park Reserve management teams to create effective and acceptable wolf and visitor management strategies, they will need to know how you feel about wolves. This study will provide Parks Canada with information that they will use to improve visitor educational programs that are designed to address negative human-wolf conflicts.

The success of this study depends on discovering paddlers' attitudes and opinions of wolves within the Broken Group Islands. Through your participation in this study, you will contribute to research aimed at reducing the possibility of human-wolf conflicts in this area. Therefore, your honest and frank responses are very important.

All information will be kept in separate files during the study in order to maintain complete confidentiality and anonymity. You may withdraw from the study at any time with no questions asked. All information will be coded, analyzed and securely stored at Lakehead University for seven years, after which it will be destroyed.

The results of this study will be shared with Lakehead University and Pacific Rim National Park Reserve. If you are interested you can obtain a copy of the research results in early 2006 by providing your address, on a paper that will be detached and stored separately from the questionnaire. I look forward to your participation in this exciting research endeavour. If you have any questions concerning this study, I can be reached at [jbsmith@lakeheadu.ca](mailto:jbsmith@lakeheadu.ca).

Sincerely,

Jen Smith  
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# Wolves in the Broken Group Islands Research Questionnaire

## A. GENERAL INFORMATION ABOUT YOU

**A1.** How many times have you visited the Broken Group Islands of Pacific Rim National Park Reserve in your lifetime? (Please check ONE box)

- Never**       **More than once** → About how many times have you  
 **Once**      visited this area? (fill in the blank) \_\_\_\_\_ **Times**

**A2.** On this trip, are you paddling:

- Alone**                               **With a commercially guided group**  
 **With a non-guided**       **Other** \_\_\_\_\_  
**group**

**A3.** Have you ever encountered or seen what you would consider to be a wolf in its natural habitat?

- Yes**                               **No**

**A4.** Before arriving on this trip, did you know that wolves currently live in the Broken Group Islands?

- Yes**                               **No** → if no, please go to **QUESTION B1**

**A5.** The possibility of seeing or hearing wolves in the Broken Group Islands (Please check ONE box)

- Had nothing to do with my decision to visit the park  
 Somewhat influenced my decision to visit the park  
 Strongly influenced my decision to visit the park  
 Was my main reason for visiting the park

**A6.** Before arriving on this trip to the Broken Group Islands, did you inform yourself about wolves and what to do if you encountered a wolf?

- Yes**                               **No** → if no, please go to **QUESTION B1**

**A7.** What sources did you use to access information about wolves and what to do if you encountered a wolf? (Please check ALL boxes that apply)

- Newspaper                       Travel Guide Books               Zoo  
 General                               Scientific literature               National Park  
magazine                               School                               Friends / Family  
 Television                               Club/Organization               Internet  
 Popular movie                       Biologist                               Other

**A8.** Of the information sources listed in A7, please **list** the **ONE** that provided you with the **BEST** information: \_\_\_\_\_

## B. YOUR ATTITUDE TOWARD WOLVES IN GENERAL

**B1. Below are some statements people might make about wolves. For each statement below, please indicate to what extent you agree or disagree with the following statements. (Please circle ONE number for each statement)**

<b>B1. Your General Attitudes Toward Wolves.</b>	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Neither Agree Nor Disagree
Wolves in the woods can be dangerous to people	1	2	3	4	5
Some animals like rattlesnakes and wolves are naturally cruel	1	2	3	4	5
My love for animals is among my strongest feelings	1	2	3	4	5
I admire the skill and courage of a person who can successfully hunt a non-endangered wolf in Alaska or Canada	1	2	3	4	5
I would very much like to visit an area where wolves can be found	1	2	3	4	5
I think love is an emotion people should feel for other people, not for animals	1	2	3	4	5
I would be far more likely to visit an area if wolves were found there	1	2	3	4	5
When walking in the woods, I like to look for strange and unusual insects	1	2	3	4	5
A wolf's howl is one of the most frightening sounds in nature	1	2	3	4	5
I have little desire to hike many km/miles just to hear or see a wolf in the wild	1	2	3	4	5
I have little interest in learning about the ecology or population dynamics of wolves	1	2	3	4	5
The wolf symbolizes to me the beauty and wonder of nature	1	2	3	4	5

<b>B1. Your General Attitudes Toward Wolves continued...</b>	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Neither Agree Nor Disagree
Seeing a wolf would be one of the greatest outdoor experiences of my life	1	2	3	4	5
I like furs because of their warmth and attractiveness	1	2	3	4	5
I generally get bored by scientific discussions of wolves	1	2	3	4	5
Trapping inflicts great suffering on animals	1	2	3	4	5
If I were in the woods and saw a wolf, I would be afraid it might attack me	1	2	3	4	5
I have great affection for individual animals, but I am not especially interested in learning about the ecological characteristics of wolves	1	2	3	4	5
I am opposed to recreational hunting	1	2	3	4	5
I generally like animals the most that have some practical value	1	2	3	4	5
I think it would be wonderful to hear a wolf howl in the wild	1	2	3	4	5
I see little reason to spend much money on trying to conserve animals that do not benefit people	1	2	3	4	5

## C. WOLVES IN THE BROKEN GROUP ISLANDS

**C1. How much do you agree or disagree with each of the following reasons for park management *keeping wolves in the Broken Group Islands*? (Please circle ONE number for each statement)**

<b>C1. Reasons for Keeping Wolves in the Broken Group Islands.</b>	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Neither Agree Nor Disagree
So future generations can enjoy wolves	1	2	3	4	5
To be able to harvest wolf pelts	1	2	3	4	5
Because wolves are important members of the ecological community	1	2	3	4	5
To photograph wolves	1	2	3	4	5
Because wolves are of value to science and research	1	2	3	4	5
Because wolves may attract tourists	1	2	3	4	5
Because wolves have a right to exist	1	2	3	4	5
So that some people will be able to hunt wolves outside the park boundaries	1	2	3	4	5
Because I am very fond of wolves	1	2	3	4	5
A wolf population in the Broken Group Islands should be protected by the park for as long as the animals choose to live in the area	1	2	3	4	5
The Broken Group Islands is first a place for people, and then a place for wolves	1	2	3	4	5
People visiting the Broken Group Islands have the right to feed wolves as part of their wilderness experience	1	2	3	4	5
Wolves create a serious problem for visitor safety within the Broken Group Islands	1	2	3	4	5

**C2.** How does the presence of wolves affect your interest in kayaking and camping in the Broken Group Islands? (Please check ONE box)

- It increases my interest in the area**
- It decreases my interest in the area**
- It does not affect my decision in any way**

**C3.** What do you believe is the probability of seeing a wolf during your visit to the Broken Group Islands? (Please check the MOST appropriate answer)

- 0 – 35%**
- 36 – 66%**
- 66 – 100%**

#### **D. YOUR ATTITUDES TOWARDS THE MANAGEMENT OF HUMAN-WOLF INTERACTIONS IN THE BROKEN GROUP ISLANDS**

**D1.** In general, how much do you support the park allowing wolves to remain in the Broken Group Islands when the islands are a popular kayaker destination? (Please check ONE box)

- Strongly support**
- Moderately support**
- Moderately oppose**
- Strongly oppose**
- Neither support nor oppose**

**D2.** The top priority for minimizing human-wolf interactions in the Broken Group Islands should be to: (Please check the ONE best answer).

- Maintain the number of wolves in the Broken Group Islands**
- Increase the education of visitors to the Broken Group Islands about wolves**
- Increase law enforcement efforts in the Broken Group Islands as they relate to human-wolf interactions**
- Decrease the number of people visiting the Broken Group Islands**
- Other** \_\_\_\_\_

**D3. Please indicate how strongly you agree or disagree with each statement related to the management of human-wolf interactions. (Please circle ONE number for each statement)**

<b>D3. Management of Human-Wolf Interactions</b>	<b>Strongly Agree</b>	<b>Moderately Agree</b>	<b>Moderately Disagree</b>	<b>Strongly Disagree</b>	<b>Neither Agree nor Disagree</b>
I support science-based management of wolves that maintains a balance between predators and prey.	1	2	3	4	5
I support the management of people in order to maintain a balance between wolves and park visitors.	1	2	3	4	5
It would be wrong to develop a wolf management policy that does not recognize and protect the interests of both visitors and wolves in the Broken Group Islands	1	2	3	4	5
The Broken Group Islands are capable of supporting a flourishing population of wolves <i>and</i> a healthy tourism industry	1	2	3	4	5
As a means of protecting people from wolves in the Broken Group Islands, wolves should be shot by park management once they have become a threat to people and accustomed to food handouts	1	2	3	4	5
As a means of protecting the wolves in the Broken Group Islands, people visiting the islands should be fined if they are seen feeding a wolf	1	2	3	4	5
Park managers should make the Broken Group Islands a refuge for the wolves and prohibit people from using the islands for recreation	1	2	3	4	5

**D4.** Does the safety of wolves within the Broken Group Islands concern you? Why or why not?

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### **E. BACKGROUND INFORMATION**

**The last section of the survey is designed to learn more about your background and personal demographics. You can be assured that all your answers will be kept confidential. This information will only be used to report comparisons among groups of people. We will never identify individuals with these responses.**

**E1.** In which Country do you currently live?

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**E2.** In which Province, Territory or State do you currently live?

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**E3.** Which category comes closest to the type of place where you mainly grew up (until the age of 16)? (Please check ONE box)

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| <input type="checkbox"/> Urban    | <input type="checkbox"/> Rural  |
| <input type="checkbox"/> Suburban | <input type="checkbox"/> Remote |

**E4.** Which category comes closest to the type of place you live now? (Please check ONE box)

- |                                   |                                 |
|-----------------------------------|---------------------------------|
| <input type="checkbox"/> Urban    | <input type="checkbox"/> Rural  |
| <input type="checkbox"/> Suburban | <input type="checkbox"/> Remote |

**E5.** What is the highest grade or year of school you have completed? (Please check ONE box)

- |  |  |
|--|--|
| <input type="checkbox"/> Some high school or less  | <input type="checkbox"/> College graduate  |
| <input type="checkbox"/> High school graduate      | <input type="checkbox"/> University graduate                                     |
| <input type="checkbox"/> Technical school graduate | <input type="checkbox"/> Graduate school graduate<br>(Masters, Ph.D., M.D. etc.) |



Please detach this page

**If you would like to receive a synopsis of these research findings, please provide your name and mailing address. Please note that even if you provide your name and address here, this piece of paper will be detached and stored in a separate place than the questionnaire. In no way will your name and address be connected to this questionnaire.**

Name: \_\_\_\_\_

Street Address \_\_\_\_\_

City/Town: \_\_\_\_\_

Postal Code: \_\_\_\_\_

E-mail: \_\_\_\_\_



# Lakehead

UNIVERSITY



Photo courtesy of McAllister/raincoast.org

## Appendix B

Guiding questions for interviews will include:

1. If you were going to describe your holiday experience within the Broken Group Islands to friends, what would you say?
2. What does a “wolf” mean to you?  
**PROBES:**
  - a) When you think about a wolf, what do you think of?
  - b) What words or images come to mind?
  - c) How would you describe a wolf?
  - d) Are there particular reasons that you think of a wolf in this way?
3. Have you seen any wolves on your trip yet?  
**PROBES:**
  - a) What was the experience like for you?
  - b) Has this experience changed the way that you think about a wolf? How?
  - c) Would you describe a wolf differently now that you have had this experience?
  - d) Was the way you thought about a wolf before you had this experience different that your thoughts now?
4. How familiar are you with the park’s current management strategies?  
**PROBES:**
  - a) About wolves
  - b) About kayakers
  - c) About kayakers and wolves
5. Tell participants what management strategies are currently being practiced...  
**PROBE:**
  - a) What do you think about these strategies? How do you think they might be improved?
6. Should anything be done about human –wolf interactions in the Broken Group Islands?  
Why?  
Why not?
7. Do you think people and wolves could co-exist in the Broken Group Islands?  
Why?  
Why not?
8. Hypothetically speaking...if you were to encounter a wolf in the islands while on this trip how do you think you’d react?  
  - a) What would be the first thing that might go through your mind upon this encounter?
  - b) What would be the first emotion you might feel upon this encounter?
  - c) Why might you react/think/feel this way?
9. Imagine if you saw someone feeding a wolf...  
  - a) How would you feel?
  - b) What do you think would happen if a wolf were fed in the park?
  - c) Would you give a wolf food if you encountered one on this trip?  
Why?  
Why not?

Appendix C



**Human-wolf interactions within the Broken Group Islands of Pacific Rim  
National Park Reserve**

My signature on this sheet indicates I agree to participate in a study by Jen Smith, on ATTITUDES TOWARD AND PERCEPTIONS OF WOLVES IN THE BROKEN GROUP ISLANDS and it also indicates that I understand the following:

1. I am a volunteer over 18 years of age and can withdraw at any time from the study.
2. There is no apparent risk of physical or psychological harm.
3. The data I provide will remain confidential and anonymous.
4. I can access a summary of the project, upon request, following the completion of the study.

I have received explanations about the nature of the study, its purpose and procedures.

---

Signature of Participant

Date

# Appendix D

Scale construction and scoring

Description of Ecologistic Scale

Items	Measurement	Cronbach's Alpha
I have little interest in learning about the ecology or population dynamics of wolves.	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	.735
I generally get bored by scientific discussions of wolves.	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
I have great affection for individual animals, but I am not especially interested in learning about the ecological characteristics of wolves.	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
I generally like animals the most that have some practical value	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
I see little reason to spend much money on trying to conserve animals that do not benefit people.	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
Because wolves are important members of the ecological community.	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
Because wolves are of value to science and research.	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	

Description of the Naturalistic Scale

Items	Measurement	Cronbach's Alpha
I would very much like to visit an area where wolves can be found	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	.797
I would be far more likely to visit an area if wolves were found there	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
When walking in the woods, I like to look for strange and unusual insects	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
I have little desire to hike many km/miles just to hear or see a wolf in the wild	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
The wolf symbolized to me the beauty and wonder of nature	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
Seeing a wolf would be one of the greatest outdoor experiences of my life	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
I think it would be wonderful to hear a wolf howl in the wild	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	

Description of Naturalistic Scale

Item	Measurement	Cronbach's Alpha
So future generations can enjoy wolves	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	.797
To photograph wolves	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
Because wolves may attract tourists	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
A wolf population in the Broken Group Islands should be protected by the park for as long as the animals choose to live in the area	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	

### Description of Humanistic Scale

Items	Measurement	Cronbach's Alpha
My love for animals is among my strongest feelings	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	.515*
I think love is an emotion people should feel for other people, not for animals	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
Because wolves have a right to exist	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	

Note. \* The low reliability score for the humanistic attitude is most likely due to the small amount of items within this scale.

Description of Negativistic Scale

Items	Measurement	Cronbach's Alpha
Wolves in the woods can be dangerous to people	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	.758
Some animals like rattlesnakes and wolves are naturally cruel	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
A wolf's howl is one of the most frightening sounds in nature	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
If I were in the woods and saw a wolf, I would be afraid it might attack me	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
Because I am very fond of wolves	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
Wolves create a serious problem for visitor safety within the Broken Group Islands	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	

Description of Doministic Scale

Items	Measurement	Cronbach's Alpha
I admire the skill and courage of a person who can successfully hunt a non-endangered wolf in Alaska or Canada	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	.764
I like furs because of their warmth and attractiveness	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
Trapping inflicts great suffering on animals	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
I am opposed to recreational hunting	1 = Strongly agree 2 = Moderately agree 3 = Neither agree nor disagree 4 = Moderately disagree 5 = Strongly disagree	
To be able to harvest wolf pelts	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
So that some people will be able to hunt wolves outside the park boundaries	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	
People visiting the Broken Group Islands have the right to feed wolves as part of their wilderness experience	5 = Strongly agree 4 = Moderately agree 3 = Neither agree nor disagree 2 = Moderately disagree 1 = Strongly disagree	