Bear-Viewing Ecotourism in British Columbia: Ecological, Economic, and Social Perspectives Using a Case-Study Analysis of Knight Inlet Lodge, BC

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BEAR-VIEWING ECOTOURISM IN BRITISH COLUMBIA: ECOLOGICAL, ECONOMIC, AND SOCIAL PERSPECTIVES USING A CASE-STUDY ANALYSIS OF KNIGHT INLET LODGE, BC

by

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A report submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Fisheries and Wildlife

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ABSTRACT

Bear-viewing Ecotourism in British Columbia: Ecological, Economic, and Social Perspectives Using a Case-Study Analysis of Knight Inlet Lodge, BC

by

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Utah State University, 2001

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Following a worldwide pattern of rapid ecotourism growth, British Columbia’s wildlife-viewing industry is poised to expand in the near future. Using a case study example of Knight Inlet Lodge, the province’s first and to date only destination for viewing grizzly bears (Ursus arctos) in the wild, I examine three criteria for sustainability that may help determine the short- and long-term direction and success of this industry: economic viability, ecological sensitivity, and cultural appropriateness.

A high demand for ecotourism and wildlife viewing, both worldwide and in British Columbia in particular, is tempered by the potential economic pitfalls of ecotourism and the difficulties of calculating the value of viewed species and habitats. Nonetheless, an economic analysis of Knight Inlet Lodge and comparable locations in Alaska reveals a high demand and income potential for bear viewing in British Columbia.
Numerous studies have demonstrated the potential for ecotourism and wildlife viewing to have an adverse effect on the species and habitats on which they depend. A literature review reveals the numerous ways in which this can occur on different types of targets, including bears, but also suggests ways to minimize this impact.

Ecotourism’s challenge of satisfying the needs and desires of both visitors and local communities, and ultimately enriching both in economic and cultural ways, begins with assembling baseline socioeconomic data. A survey of Knight Inlet Lodge guests, when compared to similar data on North American ecotourists and residents, indicates that visitors tend to be well-educated, financially secure, older, and concerned with the well-being of their natural surroundings and the animals they travel to view—both of which local communities tend to value highly as well.
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CHAPTER 1
INTRODUCTION

Ecotourism has grown substantially in recent years, and wildlife viewing is one of its most common forms (Edington and Edington 1986, Honey 1999). “Charismatic megafauna” (large, attractive species) such as grizzly bears (*Ursus arctos*) are typically the most popular animals to view (Swanson et al. 1992, McCollum et al. 1998). Tourists from around the world pay large amounts to travel to places such as the northern Rocky Mountains, Alaska, and coastal British Columbia (BC) to view grizzlies in their natural environment.

Properly structured, ecotourism, and wildlife viewing specifically, stand to benefit the wildlife and wildlands on which they depend in terms of conservation and protection, as well as providing socioeconomic benefits to surrounding local communities (Payne 1991, Barnes et al. 1992, Honey 1999). The reverse, however, is also true: ill-managed ecotourism can provide nothing or even have a negative effect on its target ecosystems and nearby cultures (Boo 1990, Barnes et al. 1992, Knight and Cole 1995).

In order to address the balance between resource protection and ecotourism’s significant economic potential, I structured this report following three criteria identified by Wall (1997) as critical to sustainable wildlife-viewing programs: economic viability, ecological sensitivity, and cultural appropriateness. These three points provide a starting framework to assess the potential long-term sustainability of wildlife viewing in the form of grizzly bear viewing on the coast of BC.
At the turn of the millennium, BC finds itself in an opportune position in regards to wildlife-viewing ecotourism. As demand for ecotourism rises worldwide, a significant untapped potential for wildlife-viewing ecotourism exists in the province, particularly focused on grizzly bears. With only one organized bear-viewing location in operation (Knight Inlet Lodge, described below), BC seems ripe for an expansion of its bear-viewing industry.

The income from such an expansion stands to offset income lost due to the displacement or ongoing decline of traditional provincial industries such as mining, logging, and development. In 1999, for example, BC’s mining industry saw all key indicators fall “substantially,” with after-tax losses of $133 million and exploration and development spending down to $19 million from $268 million in 1990. The biggest factor in this decline, according to industry officials, is the government’s land-use planning policy, which is alleged to set aside close to half the potential exploration territory as parkland or special management zones (Nutt 2000).

The declaration in April 2001 of logging deferrals on over 48,000 km² of the central coast region of BC, the result of an agreement between the provincial government, the forestry industry, and First Nations native groups, also suggests the future direction of extractive industries in the province. The plan includes the adoption of an innovative ecosystem-based management framework to guide ongoing planning and forest management activities in the region, but is predicted by members of the forestry industry to cost over $40 million and 500 jobs province-wide (Sullivan 2001).
Any such expansion, however, must be carefully planned in order to avoid a range of possible negative effects. In this report, I examine the economic, social, and ecological considerations that should be factored into any decisions regarding bear viewing in BC, and on a larger scale the expansion and regulation of wildlife viewing in general.

North America’s slowest reproducing land mammals, grizzly bears have seen their historic range, which once stretched across the western half of the continent from Alaska to Mexico, shrink to Alaska, western Canada, and isolated fragments in the northern U.S. Rocky Mountains. Population figures vary greatly, in part because of the difficulty of estimating populations whose members range so widely, and in part because of intense feelings and political pressures that typically surround the management of grizzlies and the lands they inhabit.

Grizzlies currently are listed as threatened south of Canada, where fewer than 1,000 bears live on less than 2% of their original habitat in parts of Idaho, Montana, Wyoming, and Washington (USFWS 2001a). Population estimates in Alaska range from 30-40,000, with densities ranging from 550 per 1,000 km² in Katmai National Park to less than 5 per 1,000 km² in the eastern Brooks Range (USFWS 2001b, McCollum and Miller 1997).

Canada’s total grizzly population is estimated at close to 20,000 (Environment Canada 2001, USFWS 2001b). Approximately 80% of these are found in BC and the Yukon, with the remainder found in Alberta and the Northwest Territories (Environment Canada 2001).

Estimates of BC’s grizzly population vary the most, from less than 4,000 to over 13,000. Grizzlies are considered “vulnerable” in BC, defined as “either because [a
species is] very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction” (MELP 2000a).

BC’s bears face a variety of threats, from habitat encroachment and fragmentation caused by logging, mining, and development to population-level impacts of sport and trophy hunting. Grizzly trophy hunting, long a contentious issue in North America, is affected by a pronounced shift in public attitudes toward conservation (McCollum et al. 1998). In spite of widely varying provincial population estimates, 1,710 legal grizzly kills were recorded from 1990-1999 under guidelines that no more than 4% of the provincial bear population could be killed through contact with humans, including hunting and accidents (MELP 2000b). The threat of a worldwide tourist boycott resulted in the declaration in February 2001 of a three-year moratorium on grizzly hunting to allow a panel of government and non-government scientists to assess information on grizzly numbers in the province, comment on management practices, and report back to the government (MELP 2001a). This blanket suspension, however, was replaced almost immediately with regional moratoriums, thus reinstating hunting in portions of five of nine management regions, including Vancouver Island (MELP 2001b).

STUDY SITE

Coastal BC is characterized by long, narrow fjords laced with low elevation river valleys. A mild, hypermarine climate supports forests of Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophyla*) and a diverse array of fauna. Relatively large
populations of grizzly and black bears (*U. americanus*) feed on seasonal vegetation and five species of migratory salmon (*Onchorhynchus* spp.) that return to natal streams to spawn in late summer and fall.

Knight Inlet Lodge is a floating collection of buildings anchored in Glendale Cove approximately 60 km up Knight Inlet, the longest inlet on the BC coast. Originally the Hoeyo Sound Fishing Lodge, Knight Inlet Lodge was converted in 1996 to a bear-viewing lodge to take advantage of the large numbers of bears that congregate to feed at an artificial salmon-spawning channel built by the BC Department of Fisheries and Oceans at the mouth of the Glendale River. The Glendale Spawning channel is considered one of the most successful of its type on the BC coast, with 750,000 salmon reported in 2000.

Visitors arrive by floatplane after a 30-minute flight from Campbell River on Vancouver Island, the closest town to the lodge. During stays of 1-7 nights, guests can view grizzlies up to three times daily from two elevated wooden stands built between the spawning channel and the natural riverbed. Guests are taken by boat to a mooring dock on the opposite side of Glendale Cove from Knight Inlet Lodge, and driven in buses approximately 6 km along logging roads to the spawning channel and stands. Trained interpretive guides accompany groups during two-hour viewing sessions that occur twice in the morning and once in the afternoon. Two other viewing stands—a two-story elevated platform downriver from the spawning channel, and a stand near a bridge over the Glendale River—are used less frequently.
During their stay guests can choose from a range of other activities, including full-day marine tours to Johnstone Straight, between Vancouver Island and the mainland, to view killer whales (*Orcinus orca*); sea kayaking around Glendale Cove; visits to a Tanktauuk First Nation village (often combined with the marine tour); bear tracking and track casting; hiking through the rainforest along the Klinaklini River, and boat tours of the estuary at the mouth of the Glendale River to observe bears and bald eagles (*Haliaeetus leucocephalus*) feeding at low tide. Lectures by guides or visiting researchers are offered nightly.

Most of the land used by Knight Inlet Lodge is Crown (public) land, with a small portion leased from First Nations. Hunting has been prohibited in a 17.5 km² area around the spawning channel since 1995, but outside that limit the fall (1 October–15 November) and spring (1 April–31 May) grizzly hunting seasons—both of which overlap the bear-viewing period—are in effect.

**METHODOLOGY**

In order to address a lack of baseline data on the socioeconomics and preferences of ecotourists—specifically bear viewers—in BC, the Knight Inlet Lodge guest survey (see Appendix) was designed following the guidelines of Bailey (1987), Babbie (1990), and Henderson (1991). Since quality case studies are difficult to carry out, questions were worded carefully to minimize ambiguity, sensitivity, and leading respondents toward particular answers (Yin 1984, Bailey 1987). Closed-ended questions and Likert scales were used whenever possible for answer clarity and ease of analysis (Bailey 1987). For
ease of completion the length of the survey was limited to three pages, which when combined with a cover sheet resulted in two double-sided pages. The survey’s 32 questions focused on three primary types of information:

1. Guest demographics, including age, gender, country of origin, education, income, and travel costs.

2. Guests’ previous wildlife experience, including location and experience quality, wildlife viewing, and hunting.

3. Guest satisfaction and preferences, including experience quality and value, desire to return, and the effect of hypothetical situations on the above.

The survey was distributed from August 26, 2001 to the end of the guest season on October 21, 2001. One survey was left in every guest room along with an envelope. Guests were informed of the survey and its general purpose during orientation tours given upon arrival at the lodge.

Further information on the survey’s background and goals was provided by a one-page cover sheet. Guests were asked to fill in the surveys near the end of their stay, to seal the completed forms in the envelope for privacy, if desired, and to leave them behind in the rooms when they left.

Of 146 surveys distributed, 136 surveys were filled out and returned, resulting in a response rate of 93.2%. This response rate provided a margin of error of plus or minus 4.2% at the 95% confidence interval (Sheskin 1985).

Statistical analysis was performed using SPSS Version 10. Percentages may not add up to 100% because of rounding and, unless otherwise stated, all are valid percentages,
with 100% corresponding to the total number of responses to the question (n), rather than total surveys returned (N). All surveys, whether filled out completely or not, were used in statistical analyses.

When necessary, prices were converted to U.S. dollars at conversion rates as of September 1, 2000 using the OANDA online currency converter (www.oanda.com/converter/classic). When no currency was indicated, guest country of origin was used to determine currency. Unless otherwise noted, all references to currency in this report are in U.S. dollars.

In addition, I obtained economic and visitor data from Knight Inlet Lodge and bear-viewing operations at McNeil River State Game Sanctuary and Katmai National Park in Alaska to compare demand and income potential. Literature reviews addressing the ecological effects and socioeconomic aspects of ecotourism and wildlife viewing completed the data gathered for this report.
CHAPTER 2

ECONOMIC CONSIDERATIONS

Wildlife viewing ecotourism, to be viable as a business or an industry, must be profitable. This in turn depends on a sufficient ecotourist demand, as well as a supply of viewing sites and viewed species. In this chapter I will provide a working definition for ecotourism and then examine the industry’s demand worldwide and in British Columbia in particular, and its consequent income potential.

I will discuss some economic pitfalls of ecotourism and challenges involved in the economic valuation of viewed wildlife and wildlands, and give examples of this valuation for bears and other species. I summarize and discuss data from popular bear-viewing locations in Alaska, and present an economic analysis of Knight Inlet Lodge as a model of bear-viewing ecotourism, using economic and visitor data and results from a volunteer visitor survey.

ECOTOURISM DEFINED

The clearest definition of ecotourism comes from The Ecotourism Society (TES): “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (Honey 1999).

Ecotourism is considered a subcategory of nature tourism, which has been defined as “domestic or foreign travel activities that are associated with viewing or enjoying natural ecosystems and wildlife for educational or recreational purposes” (Haysmith and Hunt 1995).
Further subcategories occasionally distinguish the various activities possible within the definition of ecotourism, such as wildlife viewing and “adventure travel” activities or other forms of physical recreation. And it is important to note that, as the economic value of ecotourism (and the term itself) has become clear to business owners and industry planners, not all activities referred to as “ecotourism” satisfy the TES definition. Many, in fact, fall far short. (Oram 1995)

For the purposes of this paper, however, I will draw the line for what I will call “wildlife-viewing ecotourism,” or simply “wildlife viewing,” where TES does for ecotourism as a whole, with an emphasis on the idea of environmentally and socially responsible travel which has enjoying the natural world as its ultimate goal.

ECOTOURISM DEMAND

Worldwide

The upward trend in ecotourism as a whole is substantial, as is the industry’s earning potential, and wildlife viewing accounts for a significant percentage of this (Boo 1990, HaySmith and Hunt 1995, Honey 1999). Even though vague, often conflicting definitions of ecotourism can result in widely divergent statistics, the growing ranks of ecotourists are increasingly being targeted by the tourist industry as a promising market segment (Pearce and Wilson 1995). Since ecotourism occurs predominantly in rural areas, the economic impact of even small sums can be substantial (Payne 1991).

Ecotourism is central to many developing nations’ conservation effort and economic development strategies (MacKay et al. 1996). Estimates for the industry’s overall
economic impact in developing countries reach up to $30 billion per year, and it is the largest foreign exchange earner in countries such as Costa Rica, India, Kenya, and Tanzania (Honey 1999).

Costa Rica, one of the most popular ecotourism destinations in the world, received almost twice as many visitors in 1992 as it did three years earlier (HaySmith and Hunt 1995). Visitation at the country’s Monteverde Cloud Forest Preserve rose from 450 in 1975 to over 50,000 in the late 1990s (Honey 1999). In Africa, wildlife tourism brings in nearly $350 million per year in tourist receipts (Whelan 1991).

North America

In more affluent countries the numbers are even greater. The 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, performed every five years by the U.S. Fish and Wildlife Service, showed that almost 100 million Americans 16 years and older—about half of the adult population—participated in some form of recreation related to fish and wildlife in 1991 and spent $59.5 billion in the process. Of these, some 76 million participated in non-consumptive wildlife recreation, including feeding, observing and photographing wildlife (USFWS 1992).

A 1992 survey by the U.S. Travel Data Center showed that 7% of U.S. travelers (eight million people) had taken at least one trip they considered “ecotourism,” and that 30% (35 million) planned to in the next three years (Boo 1990). By the early 1990s, ecotourism in the U.S. was experiencing a 30% annual increase, compared to 4% in the travel industry as a whole (Honey 1999). Non-consumptive wildlife-related recreation on
the Pacific coast of the U.S. (California, Oregon, Washington, and Alaska) shows a recent short-term decline in participation but is predicted to increase 77% by the year 2050 (Flather et al. 1999).

Even an activity as specific as birdwatching can generate significant revenue. In 1991 birdwatching’s growing popularity injected over $100 million into the economies of sixteen U.S. states, including over $200 million into the economies of six of these and $622.6 million into the economy of California alone (Dickinson and Edmondson 1996).

In a survey of the whale-watching industry, Hoyt (2001) describes how the number of whale-watching tours (described as tours with at least some commercial aspect to encounter whales, dolphins and porpoises) has almost tripled in the 1990s. This annual rate of growth (12.1%) is almost three times that of international tourism as a whole. Whale-watching tourist numbers have risen from 4 million in 1991 to 9 million in 1998, with expenditures rising to match ($504 million in 1994 to $1,049 million in 1998).

These numbers are particularly significant to Canada’s western coast, where whale watching is an important industry in cities such as Vancouver and Victoria. In 1999, Canada as a whole received 662.9 million tourists, up from 327.1 million in 1985, and ranked seventh out of the world’s top tourism destinations in terms of tourist arrivals (Canada Tourism 2000). That same year, tourist industries, including transportation, accommodation, food services, recreation and entertainment, and travel agencies, brought in over $50 billion in revenue and employed 411,800 Canadians (Statistics Canada 2000).

Nature tourism provided a large portion of this income. In 1996, Canadians spent a total of $11 billion in their own country on nature-related activities, including fishing,
hunting, camping, and donating to maintain or set aside lands for conservation.

Wildlife viewing ranked fifth in the list of activities in the average amount spent per person annually ($297), adding $1.28 million to the country’s GDP and sustaining 22,300 jobs (FPTTFINC 2000).

This demand is poised to clash—and in some cases already has—with a lack of supply. In their profile of North American wildlife agencies’ viewing programs, Pierce and Manfredo (1997) found that, although such programs are in high public demand, approximately 97% of them are understaffed and under-funded, and 55% suffered from lack of agency support and credibility. Compared to funding for extractive uses on public land, funding for wildlife-viewing opportunities is miniscule: the average budget per viewing program in 1994-5 ($346,000 in the U.S. and US$85,000 in Canada) was equivalent to 3% of the average annual budget for hunting ($11.7 million) and 4% of the average budget for fishing ($8.3 million).

British Columbia

In 1997 tourism was British Columbia’s second-largest land-based industry behind forestry, bringing in $8.5 billion in revenue and employing over 235,000 provincial residents (Tourism BC 2000). The number of tourism-related businesses in the province grew from less than 10,000 in 1990 to over 15,700 in 1996 (BCSN 2001).

British Columbia’s relative abundance of wilderness and opportunities for outdoor activities makes it a popular destination for visitors in search of experiences involving wildlife and wildlands. Ecotourism is the fastest-growing segment of the B.C. tourism
sector, and predicted opportunities for expansion are substantial (The Randolph Group 1997, BCSN 2001).

On a per-capita basis, B.C. is the number one bird and wildlife-viewing destination in the country, since almost three-quarters of bird and mammal species known to breed in Canada can be found in the province, resulting in the most biologically diverse assemblage of such species in the country (Smith 2000).

Over 2,300,000 British Columbians spent almost $2 billion on nature-related activities in 1996, ranking second only to the Yukon in average per capita expenditures on all outdoor pursuits ($902 and $1,298, respectively, versus a countrywide average of $704). Wildlife viewing in B.C. ranked third in average yearly expenditures by participants, behind the Yukon and Alberta (Reid 1998, FPTTFINC 2000). (High variability in reports from the Yukon suggests figures from that province are less reliable).

Thanks to British Columbia’s growing demand and large natural areas yet untapped for ecotourism, the opportunities to expand the province’s ecotourism sector are considered “substantial” (BCSN, 2001).

**POTENTIAL ECONOMIC PITFALLS OF ECOTOURISM**

By its nature as a luxury industry, tourism tends to experience unpredictable cycles of demand (Honey 1999). Local economies and small companies (as many ecotour businesses are) that depend on such a fluctuating external source of income may suffer
during periods of low demand, when discriminating tourists travel to less expensive destinations or stay home altogether (Boo 1990, Honey 1999).

Not all income generated by ecotourism ends up in local pockets. Local residents can end up in menial service jobs while more highly trained and educated workers from abroad are brought in and paid substantially more. Foreign-owned businesses can siphon funds abroad, sparking local resentment and undermining motivations to conserve the ecosystems in question (Matthieson & Wall 1982). In its trend toward increasing expense and exclusivity, ecotourism threatens to marginalize local communities in favor of rich foreign visitors (Honey 1999).

Ecotourism opportunities are often undervalued, especially in developing countries, where entrance fees are often small. While small fees may encourage local usage of a resource, the money lost due to consumer surpluses—a situation in which visitors would have been willing to pay more than what they actually paid (discussed below)—is often an important concern in terms of the economic viability of ecotourism operations.

This is significant in light of the fact that non-resident visitors, especially those from other countries, typically spend more than resident visitors to visit ecotourism sites. This difference is often due to higher travel costs to arrive at the site, but can also result from higher prices paid for amenities while at the site, due to a desire for a higher level of comfort or simply higher prices charged to non-residents (Barnes et al. 1992, Eubanks et al. 1993). The higher the proportion of foreign visitors, therefore, the more income is possible for an ecotourism destination to draw and distribute into surrounding
communities—provided the ecotourism businesses are locally owned and run (see Chapter 4).

At High Island, a popular birding spot in Texas, a 1992 survey found that local visitors spend an average of $46 pp on travel and lodging per visit, compared to $693 pp for nonresident American visitors and $1,881 pp for foreign visitors. Of the $2.5 million total estimated economic impact of birding, only $120,000 was generated by local residents (Eubanks et al. 1993). Barnes et al. (1992) reported that foreign visitors to Thailand’s Khao Yai National Park spent 133-142% more on average per day than Thai visitors.

In developing countries and poor areas, therefore, a balance must be struck between the high fees that foreign travelers can and will pay and fees that are low enough for locals to afford, suggesting a direct relationship between fee levels and exclusivity. In some cases, such as Kenya’s national parks, a two-tier system with lower fees for locals and higher fees for foreign visitors attempts to achieve this balance.

Wells (1993) found that, of the $27 million generated by tourism expenditures in Nepal’s protected areas (some of the country’s most popular tourism draws) in 1988, only $1 million of that came from direct fees charged to visit parks. Maille and Mendelsohn (1993) found an average consumer surplus of $276-360 per foreign visitor in visits to Madagascar’s tropical biological reserves. They conclude that the entrance fee could be raised substantially, and that local interest in conservation could be raised by directing the increased income to local communities.
Barnes et al. (1999) described a similar situation in Namibia, where wildlife viewing contributed an estimated N$250.3 million to the national income in 1995, or N$907 per tourist. Domestic tourists were found to be willing to pay an average of N$362 pp more for wildlife viewing than was actually paid, or N$30 million in total. Foreign tourists experienced a consumer surplus of N$627 pp, or N$121 million in total. The authors suggested that this foreign consumer surplus could be extracted by the introduction of higher park admission fees or the introduction of wildlife conservation and community trust funds. The resulting capture—estimated at N$35.9 million per year for both types of tourists—could be invested in the wildlife sector and rural development.

Navrud & Mungatana (1994) use various economic models to estimate the recreational use value of wildlife viewing in Lake Nakuru National Park in Kenya, populated by world-famous flocks of flamingos (f. Phoenicopteraidae). A survey of a random sample of visitors to the park during peak tourist season in 1991 revealed an average recreational value of $1,672 per trip to Kenya. Since viewing is only part of the usual overall recreational experience, this was considered a very conservative estimate of the total economic value of the park’s wildlife, and reflected an estimated recreational value 10-20 times greater than the total revenue fees collected at the time.

A similar set of questions posed to visitors at the McNeil River State Game Sanctuary in Alaska, one of the world’s foremost areas for viewing grizzly bears, revealed that visitors would be willing to pay at least $150 more than the current $50 permit fee to visit the area (Clayton & Mendelsohn 1993).
One of ecotourism’s greatest challenges arises when it comes into conflict with other resource uses, often traditional and/or extractive in nature, such as timber harvest, agriculture, development, or hunting. Despite the multiple-use mandates of some governmental agencies, certain resources cannot be used in multiple ways—for example, the same bear cannot be both hunted (successfully) and viewed. At its most extreme, the conflict can be seen as one of indulgence (the luxury pursuit of ecotourism) versus livelihood (resource uses that may help ensure survival, such as subsistence hunting and agriculture).

Economic analyses, however, often find that the income potential from non-consumptive wildlife-oriented recreation is as great or greater than that from direct consumptive uses. Grossman and Koch (1995) reported that the estimated income from a ranch in Zimbabwe used as a base for wildlife tourism (including hunting) was three times greater than if the ranch were used only to raise cattle, and that wildlife tourism in South Africa generated ten times more net income than cattle ranching and fifteen times as many jobs.

An economic model developed for Kenya’s Amboseli National Park estimated the net value for wildlife viewing to be $40 per hectare compared to $0.80 per hectare for potential agriculture, even using “the most optimistic results” (Western 1982). Another study in 1972 predicted that the park’s wildlife could produce eighteen times as much annual income when viewed by tourists than if the park were instead used to raise beef cattle (Western and Henry 1979).
In British Columbia this conflict is particularly divisive. The traditionally resource-based B.C. economy, drawing on an abundance of timber, fish, and minerals, has found itself struggling in recent years due to rising costs, decreased access to resources, and competition from foreign producers (Hamilton 2000, Nutt 2000, BCSN 2001). Despite the instability of this situation, and the mounting evidence of nature tourism’s income potential, this “resource commodity mentality” is proving difficult to uproot (BCSN 2001), even though studies find positive correlations between environmental regulation and economic development (Goodstein 1994, Hutton 1995).

CALCULATING THE VALUE OF VIEWED WILDLIFE AND WILDLANDS

To demonstrate the income potential of ecotourism and wildlife viewing in comparison to other resource uses, it is necessary to determine a value for wildlife, or at least the wildlife-viewing experience as a whole. This type of economic valuation is a relatively recent phenomenon, due to both a lack of data—particularly in developing countries—and the challenges inherent in calculating the value of nonmarket goods (Davis and Lim 1987, Barnes et al. 1992, Matz 2000).

In a typical market situation, specific prices are dictated by a system of supply and demand based on private ownership. Wildlife, however, is often considered a public good, which means it is non-exclusive—it can not be exclusively “owned” in the traditional sense, since use by one individual does not interfere with simultaneous use by another (Aylward 1992).
Still, it is possible to assign certain types of values to wildlife and wildlands. These values can be divided into two main classes. The first, use values, are incurred through direct interaction with the resource. These can include the consumptive values of one-time uses such as hunting or cutting trees, as well as non-consumptive values in which the target is not “consumed” (i.e. killed or removed). Also found under this heading (though occasionally categorized as non-use values) are option values: the price an individual or society would be willing to pay to ensure the resource exists for future generations (Randall 1992). Since payment is often involved in these uses, whether through travel, fees, or equipment, these kinds of values are more straightforward to measure, although they cannot always be consistently measured and are not always positive (Davis and Lim 1987).

Nonuse values do not involve direct interaction with the resource. Although they can be of significant when compared to use values (Aylward 1992), by their nature they can be difficult, if not impossible, to measure (Matz 2000). A resource’s nonuse value may include: indirect use value, in which the resource is experienced vicariously through various forms of media; existence value, reflecting the personal benefit received from knowing that a resource exists (often high in rare species such as bears); bequest value, the benefit derived from leaving a resource for future generations to enjoy; cultural value, in which a resource has a specific value in a cultural setting; ecosystem service value, such as the ability of living forests to store atmospheric carbon; and genetic resource value, exemplified by a plant species used to manufacture medicine (Swanson et al. 1992, Aylward 1992, Randall 1992).
While some nonuse values can be directly measured in economic terms—a food crop, for instance, or a patch of wetlands's ability to filter a water supply versus the cost of a water treatment plant—the subjectivity and hypothetical nature of others can cause problems to arise in calculating the net economic value of wildlife or wildlands. Nonmarket values may be ignored altogether, as they are in some environmental impact assessments or statements. In addition, in common cases in which negative monetary values (costs) of these public goods fall on private individuals (as in deer-automobile collisions), the result is an economic externality in which the marketplace cannot act efficiently to establish an optimal price for the good. This in turn causes a market failure and a distorted price for the resource, if one is produced at all (Matz 2000).

One common outcome of this kind of market failure is a consumer surplus, in which consumers would be willing to pay more for the resource or experience than they are made to (Conover 1997). The result is that much of the value of wildlife—particularly with rare species popular with the public such as bears—is not accurately reflected in value calculations (Matz 2000). The value of a viewed wildlife species may therefore be underestimated in using the price of a viewing or hunting trip as a measurement (Navrud and Mungatana 1994). Nonetheless, it is often easier to measure the value of an experience involving wildlife or wildlands than it is to attach a value to a specific species (individual or population) or landscape.
METHODS OF WILDLIFE/WILDLAND VALUE CALCULATION

A straightforward way to estimate a resource's value is to measure how much individuals spend to acquire it or participate in an activity involving it (Conover 1997). The Travel Cost Method (TCM) takes travel costs, food, lodging, entrance fees, and the value of wages lost during travel into account (Navrud and Mungatana 1994). For reasons stated above, this method often results in underestimations of value, since it does not factor in the possibly nonmonetary value of the experience itself, just what it cost to get to the location and/or participate in the activity.

Other, more subjective types of nonuse values such as bequest and existence values can be measured using the Contingent Valuation Method (CVM), which most often uses surveys to determine respondents' "Willingness-To-Pay" (WTP) for specific goods and services in hypothetical situations (Navrud and Mungatana 1994).

Methods such as the TCM and CVM are indirect by nature, since they are calculated outside of actual market systems. The accuracy of their results as an approximation of the market, therefore, has been called into question by economists and policymakers (Davis and Lim 1987). However, although subject to biases due to the hypothetical nature of the questions, the CVM has been judged reliable enough to produce data useful in judicial or administrative decisions regarding natural resource damages (Navrud and Mungatana 1994). The TCM provides a reasonable approximation of the value of experiences themselves, even if the values of their individual components, such as the viewed wildlife itself, are indistinguishable (Loomis 1993).
EXAMPLES OF WILDLIFE/WILDLAND VALUE CALCULATION

Conover (1997) provides a good example of the difficulty of attaching an accurate net value to a species. He estimated the net annual monetary value of deer (*Oedocolius* spp.) in the United States in 1991 at over $12 billion. While some components of this figure were accurate—for example, hunters’ travel and equipment—others were crude estimates, such as the damage to agricultural productivity caused by deer, and what percentage of the $18 billion spent annually for non-consumptive wildlife-related activities were specific to deer. This calculation also did not attempt to estimate values for lives lost due to Lyme disease spread by deer or deer-vehicle collisions.

Tourism in Africa, with its wealth of large, charismatic mammal species, presents many opportunities to calculate the recreational use values of wildlife viewing. Brown and Henry (1989) used TCM and CVM calculations to determine the value of viewing elephants (*Loxodonta africana*) in Kenya was $25 million per year (1988 US$). Using an economic model developed for Kenya’s Amboseli National Park, Western (1982) computed a gross annual value of $27,000 per lion (*Panthera leo*) and $610,000 per elephant herd due to non-consumptive viewing activities.

Navrud and Mungatana (1994) used both TCM and CVM calculations to estimate the recreational use value of wildlife viewing in Kenya’s Lake Nakuru National Park, popular for its large flocks of flamingoes. A survey of a random sample of visitors during peak tourist season revealed a total value of $7.5-15 million, or an average recreational value of $1,672 (1991 US$) per person per visit to Kenya. (One-third of this value is estimated to stem specifically from the park’s flamingoes.) Since the total revenue fees
collected that same year were at least ten times less than this total value figure, these results suggest that the park has a largely unrecognized economic potential.

Numerous studies have attempted to calculate both consumptive and non-consumptive use values for bears (*Ursus* spp.). These figures are almost universally high compared to other species, due to bears’ popularity as the target of viewing and hunting.

The final Environmental Impact Statement prepared for the grizzly bear recovery effort in Idaho’s Bitterroot Ecosystem determined the overall existence value of grizzly bears in the area in question at $40.5-50.6$ million per year. This figure was calculated by discounting the net economic existence value as determined by a phone survey by $70\%$, to reflect the difference between expressed desire and actual action, then annualizing over a perpetual time horizon at a $7\%$ rate (USDOI and USFWS 2000).

Bear-viewing values are among the highest of any species yet calculated, and often reveal not only high demand but also a consumer surplus. Neary (1995) reported that the estimate gross economic value (GEV) for bear viewing in North America was $485$ million in the mid-1990s. A set of CVM questions posed to visitors to Alaska’s McNeil River bear-watching sanctuary revealed that visitors would be willing to pay $217-248$ per person to visit the area, which is significantly greater than the then-current fee of $50$ per permit (Clayton and Mendelsohn 1993). In Churchill, Manitoba, the most popular polar bear-viewing destination in North America, MacKay (1998) used exit surveys to determine that non-resident tourists paid $797$, $803$, and $2,103$ per person to visit during spring, summer, and autumn, respectively.
The most comprehensive valuation survey on wildlife viewing of large mammals in North America comes from a mail survey of Alaskan resident voters, resident hunters, and nonresident hunters performed in 1992 by McCollum et al. (1998). Both Alaskan residents and visitors were willing to pay more to view grizzly bears, in a hypothetical day-trip scenario, than any other type of animal, including wolves (Canis lupus), moose (Alces alces), caribou (Rangifer spp.), and bighorn sheep (Ovis spp.). The GEV of bear-viewing trips ($485) was higher than for any other species, even when bear viewing was incidental to the trip. Trips on which viewing bears (both grizzly and black) was the primary successful objective had a higher Total Social Benefit (actual expenditures plus WTP) than for any other wildlife species.

Total expenditures on trips in which grizzly bears were seen were higher ($582) than for any other type of animal seen besides wolves ($611). When WTP figures were factored in, however, trips in which grizzlies were seen had the highest GEV of any type of target animal. In addition, trips in which grizzly bears were the specific viewing target had the highest GEV. Whale (O. Cetacea) watching trips were second in value with survey respondents—an important consideration for coastal British Columbia, where killer whale (Orcinus orca) viewing is already an important tourist industry.

It is interesting to compare these figures from repeatable non-consumptive bear uses to those from bear hunting, a one-time consumptive use. A survey of businesses who advertise bear hunting trips on the Internet reveal prices ranging from $5,995 to $13,500 for 7- to 14-day grizzly hunting trips in Alaska and British Columbia, not including licenses, tag fees and trophy fees, which can add almost $4,000 more to the price.
The B.C. Environment Ministry reported that the grizzly hunting industry generated $700,000 in revenue in 1998 (Brooke 1999).

**ALASKAN BEAR-VIEWING PROGRAMS**

Due to the similarities in wildlife and ecosystems between Alaska and British Columbia, an analysis of successful Alaskan bear-viewing programs may provide insight into the future of B.C.’s bear-viewing industry.

In their comprehensive analysis of Alaska’s visitor industry, McCollum and Miller (1999) draw on the results of earlier surveys (McCollum and Miller 1994a, 1994b, McCollum et al. 1998) to conclude that wildlife in the state is an “underutilized asset” and that the statewide demand for wildlife viewing is “significant” and “expected to increase.” Wildlife’s income potential is also deemed to be high, since visitors and Alaskans alike expressed high WTP levels to view wildlife, and the average in-state economic impact of wildlife-viewing trips in Alaska was greater than for other kinds of trips. Grizzly bears stood out significantly as having the highest WTP value of any species (McCollum et al. 1998, McCollum and Miller 1999).

The McNeil River State Game Sanctuary, approximately 250 miles southwest of Anchorage on Kamishak Bay, is a well-known bear-viewing location. Groups of 40 or more grizzlies are seen regularly from July to August feeding on abundant spawning
salmon that congregate near McNeil Falls. This remote location offers no visitor
amenities and is only accessible by floatplane. Hunting was allowed in the sanctuary until
1967, and is still allowed in the surrounding lands (Rue 2000).

In 1973, the Alaska Department of Fish and Game instituted a permit system to
regulate visitor numbers, making the sanctuary the first of its kind to establish a formal
viewing program with limited visitor entry. Today, as then, a permit system permits a
maximum of ten visitors per day at the viewing area between early June and late August.
Applicants pay a non-refundable fee of $25 to enter a lottery system that distributes 185
regular permits. Lottery winners must pay $150 (Alaska resident) or $350 (non-resident)
for each permit, which allows up to three people to stay for four days of viewing. Fifty­
seven standby permits are offered to replace “no-shows,” for a cost of $75 for residents
and $175 for non-residents, and fifteen permits are reserved for scientific, educational,
and administrative purposes.

McNeil River visitation statistics (Figure 1-1) show that far more potential visitors
have applied for these permits than there were permits available since at least 1984. In
economic terms, this means that the price for the limited number of permits is probably
much lower than it could be. Demand has grown from the early 1980s to hover in the
1990s at around six times the number of allowed visitors, meaning that only 10-15% of
applicants receive permits (Anonymous 2001).

Brooks River Falls in Katmai National Park and Preserve in southwestern Alaska is
one of the most popular places to view grizzly bears in the state (NPS 2001). Dozens of
the approximately 2,000 bears that live in the park congregate at the falls and adjoining river from late June to October to feed on migrating salmon.

A large percentage of the park's annual visitors go to Brooks Falls and stay at Brooks Camp, where they are informed of bear viewing etiquette before mounting viewing platforms near the falls. A $10 fee is charged per person per day for access to the Brooks Camp area (NPS 2001).

Katmai visitation statistics (Figure 1-2) show a trend of slowly but steadily rising demand. The fact that a one-hour viewing limit must be imposed during peak seasons in July and September, and that the 60-person campground regularly fills up in July, suggest that demand outstrips supply at least during these periods (K. Bergeron, USNPS, pers. comm.).
Figure 1-1: McNeil River State Game Sanctuary Visitation


Figure 1-2: Katmai National Park and Preserve: Total Annual Visits

Sources: (1) Katmai National Park, Brooks Camp Arrival Logs, Activity Reports and Field Notes

(2) National Park Service, Monthly Public Use Reports and Field Logs
KNIGHT INLET LODGE: AN ECONOMIC CASE ANALYSIS

An analysis of an established private bear-viewing lodge in British Columbia may provide useful data to assess the current market and demand for wilderness bear-viewing experiences in the province. Knight Inlet Lodge is the only business of its kind in British Columbia, and one of the few bear-viewing lodges in the world.

Lodge Rates

Knight Inlet average retail prices for 1999, 2000, and 2001 are shown in Figure 1-3. Various visitation packages of 1-8 nights were offered during those three seasons. For ease of analysis, I averaged rates to calculate one overall fee per double room night per season, and assumed an equal number of guests choosing each package length (the average stay as determined by Question 12 was three nights).

Prices include transport to the lodge from Campbell River, Vancouver Island, and all meals, guide services, and excursions. (Those for 1999 and 2001 include one night in a hotel in Campbell River.) Prices were converted to US$ as of January 1 of each respective year, and do not include a 7% Canadian Goods and Services Tax (GST), which foreign visitors can have refunded for their accommodations expenses upon leaving the country.

Visitation

Bear-viewing guest visitation to Knight Inlet Lodge is shown in Figure 1-4. A steeply sloping curve, and the fact that the lodge’s rooms have been reserved months in
advance during peak seasons since 1999 (D. Wyatt, Knight Inlet Lodge, pers. comm.),
indicates a high demand for the lodge’s viewing programs.

Cash Flow

Revenue, expenses, and earnings (loss) before income tax (less amortization, loss on
disposition of capital assets, and management fees), as shown in annual lodge financial
statements, are shown in Figure 1-5. It should be noted that some revenue for 1996
includes income from guests booked previously by a former owner, and that a decrease in
revenue in 1998 reflects the lodge’s shifting in public perceptions from a fishing
destination to one concentrating on bear viewing (D. Wyatt, pers. comm.).

Evident from these figures are steadily climbing revenue, visitation and earnings
(despite a drop in 1998), costs that are high relative to income but remaining roughly the
same year to year, and a profit first shown in 1999.
Figure 1-3: Knight Inlet Lodge Guest Rates

(Average per double room per night, US$)

<table>
<thead>
<tr>
<th>Season</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Season (late June-late Aug.)</td>
<td>$297.52</td>
<td>$408.79</td>
<td>$297.60</td>
</tr>
<tr>
<td>Shoulder Season (early May-late June)</td>
<td>$320.15</td>
<td>$455.10</td>
<td>$330.01</td>
</tr>
<tr>
<td>High Season (late Aug.-mid Oct.)</td>
<td>$349.46</td>
<td>$506.52</td>
<td>$363.97</td>
</tr>
<tr>
<td>Overall</td>
<td>$322.27</td>
<td>$458.22</td>
<td>$330.53</td>
</tr>
</tbody>
</table>

Source: Knight Inlet Lodge

Figure 1-4: Knight Inlet Lodge Visitation
(Bear-Viewing Guests)

Source: Knight Inlet Lodge
Price Value

In answer to question 15, a majority of respondents (77.2%) considered the price they paid for their visit to Knight Inlet Lodge was “fair” (“the experience was worth exactly what I paid for it”). Only two respondents (1.5%) reported that the price they paid was “too low” (“the experience was worth more than I actually paid”), and of these only one indicated by how much ($380).

Fifteen respondents (11%) indicated that the price they paid to come to Knight Inlet Lodge was “too high” (“the experience was worth less than I actually paid”). Of these, twelve indicated how much less they would rather have paid for their visit, with an average amount of $565.75 (n = 12). This value should be used as only a rough
approximation for dissatisfaction, however, since response range varied widely ($120-$1,216, sd = $379.80), and some answers were as much or more than the respondents actually paid for their trip.

These results are subject to various interpretations; the respondent who gave the second-highest “price-too-high” amount ($1,000) also rated his or her overall experience as a 2 out of 10, which could indicate complete dissatisfaction with the experience and the desire for reimbursement. On the other hand, since the respondent who gave the highest answer ($1,216) rated his or her overall experience quality as a 9 out of 10, these values could also indicate impulsive, inaccurate answers. Another possibility is that, since this was one of the most complicated questions on the survey, some respondents might have rated their experience price as “Fair” partly because that was the easiest answer to check off.

Income, education, and country of origin had no significant effect on whether respondents rated the price as fair or not, but respondents in “Managerial/Administrative” professions were more likely to think the price was too high (6 vs. an expected 25) and less likely to think it was fair (14 vs. an expected 18.1) ($\chi^2 = 0.026$, df = 8, p < 0.05).

Visitor Origin

Taking into account that foreign visitors tend to spend more on ecotourism trips (see above), question 23 indicated that approximately 94.7% of survey respondents were from other countries besides Canada (n = 133).
Travel Costs

The survey’s most complicated question (24) asked guests to give their travel costs to arrive at Knight Inlet Lodge, broken down into blanks provided for car costs, car rental, airplane tickets, lodging, food, and other. Respondents were also asked to indicate currency and whether the amount was for a one-way or round-trip fare. Values were converted into US$ and were doubled if “one-way” was indicated.

The average travel cost was $1,949.36. A number of factors must be considered when interpreting this value. Many respondents either gave only one amount, or indicated that, since they were visiting Knight Inlet as part of a larger package tour, they did not know how much they paid to get there per se. Some respondents may also have included the price for Knight Inlet itself in their figures.

These complexities are reflected in a low rate of response for this question (51%), and the wide range of values given ($180-18,012, sd = $2,687.79). Dropping the most likely erroneous outlier ($18,102) gives an average of $1,713.15 and a standard deviation of $1,850.54.

CONCLUSIONS

Demand for ecotourism is high, both worldwide and in Canada and British Columbia in particular. Despite the potential economic pitfalls of ecotourism and difficulties in calculating the value of viewing wildlife and wildlands, a high demonstrated value attached to ecotourism experiences promises significant income potential. Examples of wildlife-viewing programs in Alaska support these findings in the case of grizzly bears.
An analysis of the finances of Knight Inlet Lodge in the four years since its conversion to a bear-viewing destination indicates an increasing demand for its bear-viewing opportunities. Guests, most of whom are foreign, are willing to pay large amounts to visit such a lodge, but according to satisfaction questions that will be addressed in Chapter 4, the experience is considered to be, on the whole, well worth the price. A consumer surplus does not seem to exist, since most guests rated the price they paid as fair or too high. Generally rising revenue and earnings and stable expenses suggest a profitable future for the business.
CHAPTER 3
SOCIAL CONSIDERATIONS

For a nature-viewing business or industry to be socially sustainable, it must satisfy the needs and desires of both visitors and local residents. Information on typical guest characteristics and motivations, usually acquired through surveys, is useful in helping planners and business owners structure nature-viewing programs and attendant marketing strategies to attract the most visitors, to give them as enjoyable an experience as possible—and to find the conditions under which those goals can be made compatible without sacrificing the well-being of local residents.

The support of local residents stems from the original definition of ecotourism from The Ecotourism Society: “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (Honey 1999, emphasis added). Residents who receive monetary or cultural benefits from ecotourism ventures will tend to support them and uphold their conservationist goals, while businesses that are seen as taking more from local communities than they return are often the victims of legal opposition or outright sabotage, as has occurred with the Molokai Ranch on the Hawaiian island of the same name (Kane 2001).

Tourism is a double-edge sword: while it can be a means of sustaining the economies and cultural heritage of surrounding communities, both in developed and developing countries, when improperly structured it can also offer little or nothing in exchange for environmental and social degradation (Boo 1990, Barnes et al. 1992, Gertler 1993).
In this chapter I will summarize the profiles of typical ecotourists and their desires in the current literature—both bear-viewing tourists and other ecotourists, in British Columbia, Canada, and elsewhere—and how they compare to the results of a survey of Knight Inlet Lodge guests I conducted in the summer of 2000.

**NATURE TOURISTS: GENERAL PROFILES**

Although little empirical research has been conducted on the socioeconomic characteristics of ecotourists, they have been found to differ significantly from participants in “mass” tourism in a number of attributes, some of which are related to destination settings (Pearce and Wilson 1995, MacKay et al. 1996). Participation in ecotourism has been found related to income, gender, race, and environmental attitude (Luzar et al. 1995).

In a summary of ecotourist research, McKay et al. (1996) reported that experienced ecotourists tend to be older (between 45 and 65 years old), from the industrialized nations of the northern hemisphere (Europe, North America, and Japan), college educated, and possessing a high discretionary household income. Honey (1990) reported that most ecotourists are well-educated, older, often physically active professionals or businesspeople with combined annual household incomes of $50,000 or more and a sincere interest in learning about nature. In general, Honey concluded, they are typically “better informed, more experienced, and more adventuresome travelers than the conventional tourist,” in following with the strenuous nature of many ecotourism
activities. Both McKay and Honey reported that in most cases both genders tend to be equally represented among ecotourists.

Birdwatchers, the largest subclass of wildlife viewers, share many of these characteristics. At High Island, Texas, the “typical” avitourist was found to be a “middle-aged, well-educated, financially successful male” (Eubanks et al. 1993). Dickinson and Edmondson (1996) describe birdwatchers as typically older (over 45), well educated, suburban, and relatively affluent (in 1996, 58% of Audubon readers earned over $50,000 per year, as compared to 31% nationally). Their numbers are predicted to grow in the U.S. as baby-boomers age (Dickinson and Edmondson 1996).

Ecotourism trips tend to be longer than typical mass tourist trips, involve smaller groups, and have a significant percentage (one-third in one study) of repeat customers (Whelan 1991, Crossley and Lee 1994). Honey (1999) described a “bipolar vacation disorder” among ecotourists, who tend to prefer strenuous activities during the day and comfort at night.

Partridge and MacKay (1998) found the travel motivations of birdwatchers to parallel those of most ecotourists closely. Most important were wild and undisturbed settings and their ability to provide opportunities to increase knowledge. Local cultural and historic features, shopping, quality restaurants and hotels, and opportunities for fishing and hunting all rated low in importance, in accordance with previous nature-based tourist studies. Difference between birdwatchers and other nature-based tourists included the importance of guides and organized tours (birders tended to desire independence) and
the availability of a range of other activities and experiences to incorporate into a total trip (birders tended to be more focused on birding alone).

In a series of surveys of Alaska residents and visitors, Miller and McCollum (1994a, 1994b) and McCollum and Miller (1994) amassed an impressive body of data concerning respondents’ socioeconomic profiles and their attitudes regarding wildlife and conservation. Alaska voters and resident and nonresident hunters all demonstrated a concern for wildlife and wildlife-viewing opportunities. In response to the statement “wildlife adds a great deal to my enjoyment of living in Alaska,” 80.8% of respondents “strongly agree[d]” and 15.3% “moderately agree[d],” for a total of 96% in agreement.

Statements concerning conservation and wildlife viewing, on the whole, received positive responses as well: “I think more concern should be given to protecting the land and water where wildlife live” (46.9% “strongly agree,” 29.2% “moderately agree”); “I think more areas in the state should be managed and developed for wildlife viewing” (20.1%, 36%); and “I think more areas in the state should be managed and developed for wildlife viewing, even if that means closing some areas to hunting” (16.7%, 23.3%) (Miller and McCollum 1994a).

Visitors to Alaska tended to be moderately affluent and well educated. The largest category of pre-tax household income (20.9%) was $50-75,000 per year, followed by $35-50,000 (14.8%) and $75-100,000 (14.4%). Graduate school was the highest level of education completed for the largest segment of visitors (26.3%), followed by college graduates (24.3%) and people who had completed “some college” (20.1%) (McCollum and Miller 1997).
NATURE TOURISTS IN CANADA

The 1998 Canadian Travel Survey by Statistics Canada found that Canadian wildlife viewers traveling in Canada tended to be well educated: 61% of respondents had university degrees or post-secondary certificates or diplomas. Canadian wildlife viewers were not necessarily wealthy, however, with household incomes distributed evenly across all income ranges examined in the survey (under CA$20,000; $20-40,000, $40-60,000, $60-80,000, and over $80,000), with the exception that few earned less than CA$20,000 per year. This may reflect the fact that traveling in-country is less expensive for residents or that wildlife viewing often does not require participants to purchase expensive equipment or pay high fees for entrance or participation. Canadian wildlife viewers also participate in a range of outdoor activities, including swimming (64%), water sports such as kayaking, boating, and scuba diving (46%), fishing (40%), and bicycling (23%) (Smith 2000).

In surveys of visitors to Churchill, Manitoba—probably the most well known location for viewing polar bears (*Thalarctos maritimus*) in North America—MacKay (1998; see also MacKay et al. 1996) found similar results. The largest categories of respondents earned over CA$80,000 per year (28.1%); possessed a university degree (57%); and were 55-64 years old (21.7%), with 62.8% between 45 and 74 years old. Most were also first-time visitors (86.4%), with an average travel party size of 1.9 (n = 617).

The survey also found a high value placed on scenery and environmental quality, education, personal interactions, and safety, and a relatively low importance attached to typical tourist amenities such as hotels and restaurants. When asked to rate fourteen
destination attributes on a scale from 1 ("not important") to 4 ("very important"),
respondents reported "wilderness and undisturbed nature" as most important, with a mean
erating of 3.57. This was followed by a tie for second between "interesting scenery" and
"opportunities to increase knowledge" (mean = 3.40). "Interesting/friendly local people"
ranked third (3.20), "environmental quality" ranked fourth (3.15), a "safe environment
for locals/visitors" ranked fifth (3.06), and a "variety of short guided tours" ranked sixth
(3.06). Quality hotels and restaurants ranked ninth and tenth, respectively.

An overwhelming majority of travelers in Canada are Canadian, while most foreign
visitors to Canada come from the United States and the United Kingdom, which
consistently rank first and second, respectively, in foreign visitor origins by country.
From 1988-1999, U.S. visitation increased 19% from 12,763,000 to 15,180,000, and
visitation from the United Kingdom increased 48% from 527,000 to 780,000. Overseas
visitation as a whole increased 54% during the same period. Foreign overnight person
trips increased 21.5% during the same period, from 15,485,000 to 18,828,000, while
domestic overnights fell 6.4%, from 79,460,000 to 74,409,000 (Statistics Canada 2001).

Using on-site interviews, intercept surveys and mail questionnaires, MacKay and
McIlraith (1998) found that overseas visitors to Churchill were equally likely to visit in
spring, summer, and fall. Americans were most liable to visit in the fall, when Canadians
were least likely to visit.

Nature tourism in British Columbia is consistent with the province’s wealth of sights
and activities and an overall provincial attitude favoring conservation and participation in
wildlife-related activities. In a 1991 survey on the importance of wildlife to Canadians,
Environment Canada (2000) found that residents of British Columbia responded more positively than residents of almost all other Canadian provinces. British Columbians ranked first among provinces in positive response rates to questions assessing their opinions on the following statements: “great or some interest in joining or contributing to a wildlife-related organization” (33.6%); “great or some interest in participating in direct non-consumptive wildlife-related activities” (80%); “maintaining abundant wildlife is very or fairly important” (90.9% in agreement); and “preserving declining or endangered wildlife is very or fairly important” (88.6% in agreement).

Residents of British Columbia ranked second in their responses to being “willing to help pay to protect habitat for abundant wildlife through increases of 1-5% in taxes or prices on four selected items” (69.2%) and “willing to help pay to protect declining or endangered wildlife from pollution through increases of 1-5% in taxes or prices on five selected items” (60.1%).

**KNIGHT INLET LODGE: GUEST DATA AND ATTITUDES**

**Demographics**

Questions 23, 26-29, 31, and 32 requested respondents’ ages, professions, education levels, countries and cities of origin, and incomes. Guest ages ranged from 27 to 81, with an average age of 53.8. This high average age is reflected in the fact that 30% of respondents were retired (see below). Approximately 21.1% of respondents were 65 years of age or older, compared to the U.S. national average in 1999 of 12.7% (USBC
Slightly over half of respondents (59.2%) were male, and a majority of respondents (78.3%) were indicated their marital status as “married/partner.”

When guest professions were grouped according to categories obtained from the U.S. Bureau of Labor Statistics (USBLS 2000), professional and technical occupations were most common (36.2%) (Figure 2-1). The next highest percentage of respondents (30%) indicated that they were retired, followed by managerial and administrative occupations with 19.2% of responses. About 8.5% of respondents fell within an additional “Other” category added to include occupations such as self-employment, homemaking, and students not included on the original USBLS list.

The least common professional categories indicated by Knight Inlet guests—“Sales and Related Occupations,” “Clerical and Administrative Support Occupations,” “Agricultural, Forestry, Fishing, and Related Occupations,” and “Production, Construction, Operating, Maintenance, and Material Handling Occupations”—each received 1.5% or less of responses, and the “Service Occupations” category received no responses. For statistical purposes, these five categories were grouped under a new “Support/Agriculture” category that represented 6.2% of respondents.

A majority of respondents (46.6%) indicated a college degree as their highest completed level of education (Figure 2-2), which is significantly higher than the 25.2% of the United States population that completed four or more years of college in 1999 (USBC 2001). High school and graduate degrees were approximately equally represented (24.1% and 26.3% of responses, respectively), while only a few post-doctorate degrees (3.0%) were indicated.
Slightly over half of respondents (50.8%) came from the United Kingdom (Figure 2-3). The United States was the next most common country of origin (27.3%), followed by Australia/New Zealand (11.4%), Canada (5.3%), and other countries (Italy, the Netherlands, South America, and Switzerland) (5.3%). For analytical purposes these countries of origin were combined into three categories: United Kingdom (still 50.8%), North America (32.6%), and “Other” (16.7%).

The preponderance of visitors from the United Kingdom reflects the lodge’s popularity among tour operators in that region who book visitors on package tours of Canada (D. Wyatt, pers. comm.). Statistical cross-tabulation showed that visitors from North America were more likely to have viewed bears before (17 vs. an expected 11.2) and visitors from the United Kingdom were less likely (12 vs. an expected 18.1) ($\chi^2 = 7.135$, df = 2, p = 0.028).

A majority of respondents (22.8%) indicated that they earned between $50,000 and $75,000 per year (Figure 2-4). In all, 53.5% respondents indicated they earned over $50,000 per year. Only 2.6% of respondents indicated they earned less than $10,000 per year. (Answers were assumed to be in U.S. dollars and to indicate respondent’s income only, not total household income). It is noteworthy to compare these amounts and percentages to the median U.S. household income in 1999 of $40,816 (USBC 2001).
Figure 2-1: Visitor Profession

- Managerial and Administrative Occupations (9%)
- Professional, Paraprofessional, and Technical Occupations (29%)
- Sales and Related Occupations (19%)
- Clerical and Administrative Support Occupations (36%)
- Agricultural, Forestry, Fishing, and Related Occupations (1%)
- Construction, Maintenance, and Material Handling Occupations (1%)
- Retired (2%)
- Other (including self-employed, homemaker, student) (1%)

Figure 2-2: Visitor Education (Highest Level Completed)

- High School (26%)
- College (3%)
- Graduate degree (24%)
- Post-doctorate degree (47%)
Figure 2-3: Visitor Country of Origin

- United Kingdom
- United States
- Australia/New Zealand
- Canada
- Other (Italy, Netherlands, South Africa, Switzerland)

Figure 2-4: Visitor Income

- Under $10,000
- $10-25,000
- $25-50,000
- $50-75,000
- $75-100,000
- $100-150,000
- Over $150,000
Previous Wildlife-Viewing Experience

In answer to questions 1-7, most survey respondents had taken wildlife-viewing trips before to a variety of locations, but few had traveled to see bears previously, and even fewer had ever been to Knight Inlet before. Knight Inlet compared favorably to guests’ previous wildlife-viewing experiences.

As expected, an overwhelming majority (93.4%) of respondents came to Knight Inlet to view grizzly bears. Approximately 14% came to “view other animals” such as bald eagles and killer whales (*Orcinus orca*), 8.1% came for “other reasons” (a small number of examples such as photography were noted), and 2.9% came to “relax.”

Nearly three-quarters (74.6%) of respondents indicated they had taken a wildlife-viewing trip before. Of these, 41.3% took such trips, on average, about once per year; 24.5% took them less than once a year but more than once every five years; 20.6% took wildlife-viewing trips more than once per year; and 11.8% took them less than once every five years. Whether or not respondents had taken a wildlife-viewing trip before had no significant effect on the quality of their experience at Knight Inlet, how that compared to their expectations, whether or not they thought the price was fair, or their desire to return.

Slightly over one quarter of respondents (27.9%) had taken a trip specifically to view bears before coming to Knight Inlet. Of those respondents who answered this question (Question 5), 28.7% had been to at least one bear-viewing location previous to Knight Inlet. (At least one respondent, then, indicated a location without indicating that he or she had taken a bear-viewing trip before). About 7.8% of respondents had been to two other
locations to view bears previously, and 3.1% had been to three. Country of origin had no significant effect on whether respondents had viewed bears or any other wildlife before, and whether or not respondents had viewed bears before had no significant effect on the quality of their experience at Knight Inlet, how that compared to their expectations, whether or not they though the price was fair, or their desire to return.

A total of twenty different bear-viewing locations were listed. Of these, Churchill, Manitoba was the most popular, with 35.1% of responses. Jasper National Park received 10.8% of responses, and Banff and Katmai National Park in Canada and Alaska, respectively, each received 8.1%. Alaska as a whole received 35.1% of responses.

Only 9.6% of respondents had been to Knight Inlet before. Of those, 6.6% had been once before and 1.5% had been twice. Whether or not respondents had been to Knight Inlet before had no significant effect on the quality of their experience, how that compared to their expectations, whether they thought the price was fair, or their desire to return.

Knight Inlet compared well to other destinations where viewing wildlife (not just bears) was the main focus. Respondents listed seventy-five other wildlife-viewing locations. Kenya and South Africa were the most popular, each receiving 11% of responses. Churchill, Manitoba was next (9.8%), followed by Yellowstone National Park (7.3%) and Zimbabwe (6.1%).

Of the 36 different viewed animals listed, whales were the most popular (22%), flowed closely by birds (species unspecified) and elephants, each receiving 20.7% of responses. Bears (all species) came next with 19.5% of responses, followed by three of
Africa's "Big Five" wildlife species: lions (*Panthera leo*) (18.3%), giraffes (*Giraffa camelopardalis*) (17.1%), and rhinoceroses (*Rhinoceros spp.*) (15.9%).

In comparison to these other wildlife-viewing locations, Knight Inlet Lodge received an average rating of 5.21 (n = 128, sd = 1.39) on a Likert scale ranging from 1 ("much worse") to 7 ("much better"). Guest experience at Knight Inlet Lodge, therefore, was somewhat better on average than guests' most recent wildlife-viewing experiences. However, many respondents commented on the difficulty of comparing very different wildlife-viewing experiences.

Hunting Experience and Attitudes

Questions 8-11 dealt with respondents' experience with and attitudes toward hunting. Few lodge guests participated in or supported hunting, particularly of bears. Only 7.4% of respondents had ever sport or trophy hunted, and only 2.9% reported hunting more than once per year, on average. No respondent reported ever having hunted bears. (The answers to the latter two questions were assumed to be "no" if the answer to the first was "no.")

Concerning guests' overall feelings toward sport/trophy hunting of bears, the average response on a seven-point Likert scale ranging from 1 ("very negative") to 7 ("very positive") was 1.36 (n = 132, sd = 1.06). Only four "neutral" responses (4) and three "positive" responses (5, 6, or 7) were recorded.
Visit Statistics

Questions 12, 24, and 30 asked respondents to indicate the length of their stay (in nights), whether or not they were part of a larger tour group, how many other people were in their group, and whether or not their visit to Knight Inlet Lodge was part of a larger trip. The most common visit was two to three people staying for three nights as part of a larger trip. The number of nights guests spent at Knight Inlet Lodge ranged from one to ten, with an average stay of three nights/four days \((n = 135, \text{ sd } = 2.2)\). Length of stay had no significant effect on guest quality of experience or desire to return.

Since the number of other persons reported in the respondents' travel group ranged from one to eleven, group size ranged from two to twelve, with an average of 1.82. A majority (69.7\%) of respondents indicated one other travel companion.

Approximately 74.2\% of respondents indicated their visit to Knight Inlet Lodge was part of a larger trip (i.e., that they visited other locations besides Knight Inlet Lodge on this particular vacation). Many guests, especially those from Europe, reported in person that they were visiting the lodge as part of a larger group package tour of Canada. Statistical cross-tabulation showed that visitors from the United Kingdom were more likely to be part of larger trip (61 vs. an expected 49.7) and that visitors from North America were less likely (13 vs. an expected 29.7) \(\chi^2 = 52.527, \text{ df } = 2, p < 0.001\).

Whether or not guests were part of a larger trip had no significant effect on their desire to return, but guests who were part of a larger trip had a lower average quality of experience (8.61) compared to those who came to Knight Inlet only (9.21) \(T = -2.427, \text{ df } = 75.389, p = 0.018\).
Guest Satisfaction

Questions 13 and 14 were used to determine guest satisfaction with their experience at Knight Inlet Lodge, how that compared to their expectations for their visit, and whether guests would like to return or have a similar experience again.

Overall experience quality was high. On a ten-point Likert scale ranging from 1 (“terrible”) to 10 (“outstanding”), the average response was 8.75 (n = 135, sd = 1.45). Responses were strongly skewed: no responses of 1 were reported, 97% of responses ranging from “positive” to “outstanding” (6 to 10), and 39.3% of respondents rated their experience at Knight Inlet Lodge as “outstanding” (10).

ANOVA analysis indicated that, when equal variances were assumed using Tukey’s Harmonic Standard Deviation, there was a significant difference between the quality of experience of respondents in the “Service/Agriculture” profession category and those of every other profession category. However, when equal variances were not assumed, the only significant difference in quality of experience that remained was between respondents in the “Service/Agriculture” profession category and those in the “Student/Other” category (T = -2.445, df = 8.205, p = 0.04), where the average responses of the former group was lower (2.45 steps on the 1-10 Likert scale) than those of the latter. Since these are the two smallest sets (n = 11 and 8, respectively), however, drawing any conclusion from this result—for example, that “Service/Agriculture” workers were less satisfied than students and homemakers—is debatable.

Not only were guests’ experiences overwhelmingly positive, but on average they were better than expected. A seven-point Likert scale, ranging from 1 (“fell far short”) to
7 ("far exceeded"), was used to determine how the respondent’s actual visit, in hindsight, compared to his or her expectations. The average response was 5.52 (n = 125, sd = 1.25), with 76.8% of responses ranging from “exceeded” to “far exceeded” (5 to 7). Approximately 16.8% of respondents reported their actual experience “far exceeded” (7) their expectations.

Income, education, and country of origin had no significant effect on either guest quality of experience or how that compared to expectations. However, ANOVA analysis and independent samples T-tests indicated that respondents in “Managerial/Administration” professions rated the quality of their experience at Knight Inlet, on average, lower than respondents in the “Student/Other” category (T = -2.627, df = 32.87, p = 0.013, equal variances not assumed).

When responses of 1, 2, or 3 ("fell short” of expectations) were combined into one category (n = 7), ANOVA analysis and independent samples T-tests (equal variances not assumed) indicated that, as expected, guests who rated their Knight Inlet experience quality low tended to indicate that the experience also fell short of their expectations.

Guest Preferences

Questions 16 through 22 used hypothetical situations to determine the importance of the quality of surroundings, the numbers of viewed animals, and the effect of viewing on target animals to the guest experience. A seven-point Likert scale ranging from 1 (“no effect”) to 7 (“great effect”) was combined with two check boxes (“positive” and
“negative”) to determine the degree and type of effect. (Some respondents neglected to check “positive” or “negative.”)

Seeing more bears during their visit would have improved guests’ experience, but only somewhat. Average response to the hypothetical situation of seeing twice as many bears was 3.51 (n = 134, sd = 2.03), corresponding to “some effect,” and 94.3% indicated that this effect would have been “positive.”

Respondents indicated that significant visible clearcuts nearby (“Imagine...all the surrounding hillsides in Glendale Cove visible from the lodge had [had] all trees removed...for timber”) would have had a significant negative effect on their experience. Answers averaged 6.27 (n = 135, sd = 1.06, range = 3-7), and 95.7% of respondents indicated that this effect would have been “negative.” About 57.8% of respondents chose 7 (“great effect”), and 81.5% chose 6 or 7.

If they had known with certainty that their presence as viewers had an adverse effect on the bears they came to see, many guests would apparently have reconsidered their decision to come to Knight Inlet. Average response to this hypothetical situation was 5.48 (n = 134, sd = 146), between “some effect” and “great effect,” and 98.4% of respondents indicated this effect would have been “negative (less inclined to come).”

An overwhelming majority of respondents (97.8%) indicated that they would like to come to Knight Inlet Lodge or a similar lodge again. The same three hypothetical questions (clearcuts, more bears, and negative observer effect) were then posed in regard to their effect on guests’ desire to repeat their trip, using a seven-point Likert scale ranging from 1 (“less desire to go”) through 4 (“no effect”) to 7 (“more desire to go”).
Responses were similar to those described above. Seeing twice as many bears would have given respondents somewhat more desire to take a similar trip again, with an average response of 4.95 (n = 133, sd = 1.22). Visible clearcuts and a negative observer effect on the bears elicited more pronounced responses. Clearcuts would give guests significantly “less desire to go,” with an average response of 1.81 (n = 134, sd = 0.80, range 1-4). Almost all respondents (97%) indicated an effect of “less desire to go” (1-3).

Knowing their presence would have a negative effect on the bears would have decreased guests’ desires to repeat their experience. Responses averaged 1.90 (n = 133, sd = 0.83, range 1-4). Again, almost all (97.7%) respondents indicated they would have “less desire to go” (1-3), and 37.6% answered 1 (“least” desire to go).

Income, education, occupation, and country or origin had no significant effect on respondents’ desire to return.

CONCLUSIONS

Knight Inlet visitors fit the typical ecotourist profile in most criteria: they tend to be middle-aged, college-educated, moderately well-off professionals (or retired) from Europe or the U.S. The average stay was not particularly long (3 nights/4 days), but most visitors were traveling in small groups.

Most visitors had been wildlife viewing before, primarily whale watching, birdwatching, and African safaris. About a quarter of visitors had viewed bears before, mostly at Churchill, Manitoba and in national parks in Canada and Alaska, but almost all visitors indicated a high desire to return to Knight Inlet. This suggests that the relatively
high prices and remoteness of bear-viewing locations may discourage visitors who would otherwise repeat the experience.

Visitors from the U.S. were most likely to have viewed bears before (as would be expected among Canadians, if there had been more Canadian respondents), and visitors from the U.K. were less likely. This contrasts the fact that most respondents came from the U.K., suggesting that the relative lack of opportunities to view bears or other large mammals in that part of the world may provide an extra incentive to overcome the cost and inconvenience.

As a model bear-viewing operation, Knight Inlet Lodge seems to be doing well. It compared favorably to guests’ previous wildlife-viewing experiences and in large part fulfilled their expectations, which can be assumed to have been high considering the expense and effort required to reach the lodge. Knight Inlet appealed to guests equally, regardless of income, education, and country of origin, and a majority of respondents felt the rates were fair.

It is noteworthy that whale watching is so popular among Knight Inlet visitors, since it is already a significant source of tourist revenue for British Columbia. This, combined with the finding that most visitors came as part of a larger trip, suggests that package tours combining bear viewing and whale watching would be a successful approach.

The three hypothetical situations (Questions 16-22) shed light on the importance of bear numbers, the surrounding viewscape, and the potential negative effects of viewing on guests’ quality of experience and desire to return. Seeing more bears would improve the quality of experience, but only somewhat, suggesting that the relationship between
bear numbers and experience quality is not directly correlated, but that there is instead an upper asymptote at which experience quality levels off; i.e., that beyond a certain number, more bears does not directly equal a better experience.

Viewscape, however, was very important to respondents, as evidenced by the fact that clearcuts would significantly detract from both experience quality and guests' desire to return. This point is therefore important to consider in the selection of viewing locations, as well as forest management practices on the landscape surrounding bear-viewing operations.

Guests were somewhat concerned with the idea of their presence having a detrimental effect on the bear they were watching. This suggests that pre-viewing education and explanations of the importance of following established bear-viewing guidelines (to avoid such negative effects) would alter viewer behavior, but only up to a certain point.

A detailed socioeconomic analysis of the effect of Knight Inlet Lodge on the surrounding local communities is beyond the scope of this report. It is important to note, however, that the owner of the lodge is Canadian and a resident of Black Creek, which is almost as close to the lodge as Glendale Cove. Lodge employees are all Canadian, and most if not all of the money spent to run and maintain the lodge stays within Vancouver Island, including food, float planes, gas, and other supplies.
CHAPTER 4
ECOLOGICAL CONSIDERATIONS

Dependent as it is on the well being of viewed species and their environment, nature viewing by definition should not have a deleterious effect on either, lest it undermine its own foundation. This is a particular challenge for the B.C. tourism industry (successfully marketed under the tag line “Super, Natural”), which is highly sensitive to environmental degradation from industry and development (BCSN 2001). A report prepared for Tourism British Columbia and the Council of Tourism Associations noted that the deteriorating quality of natural settings in B.C., primarily from visible logging clearcuts and mining development, threatened to undermine the province’s main tourism draw and put it at a disadvantage to other destinations with higher quality services and facilities (Price Waterhouse and the ARA Consulting Group 1996).

In an ideal situation, a balance between recreational activities and habitat and species protection allows recreationists to continue their activities without undue impact on the habitat or species with which they interact (Gutzwiller 1995). Unfortunately, the potential for ecotourism to have negative impacts on its natural targets exists, as many studies detailed below have demonstrated (Knight and Cole 1995, Boo 1990). These negative findings, while telling, should be interpreted with the caveat that an impact that is statistically significant is not necessarily biologically significant in terms of factors such as fitness and population growth.

This chapter begins with a review of the small but growing body of research on the ecological effects of wildlife viewing. This will be followed by descriptions of wildlife-
viewing situations in which this impact has been successfully minimized, and recommendations of ways to minimize this impact, particularly in bear-viewing scenarios.

GENERAL ECOLOGICAL CONSIDERATIONS OF WILDLIFE VIEWING

Relatively few quantitative studies have investigated the impacts of wildlife tourism on target species and their ecosystems, or particular species’ sensitivity to different human activities (HaySmith and Hunt 1995, Roe 1997). This deficiency can be explained in part by a lack of baseline data and the difficulty of isolating individual components of cause and effect, both spatial and temporal, from human and natural causes (Wall and Wright 1977).

In addition, much of the research on the ecological effects of tourism has been conducted in temperate areas, limiting the extent to which results can be extrapolated to other ecosystems (Jackobson and Lopez 1994). This lack of data is worrisome not only because of the high percentage of negative effects recorded, but also because it is thought that the increasing tourism demand detailed in Chapter 2 will likely lead to increased negative impacts on the natural resource bases in question (Mathieson and Wall 1982).

Most studies to date have found a high percentage of these effects to be negative (Boo 1990). In a survey of U.S. National Park superintendents, 84.1% reported negative impacts of visitors on native flora and fauna (Wang and Miko 1997). In one of a number of reviews attempting to categorize and summarize the growing body of literature on the subject, Boyle and Sampson (1985) found that, out of 536 references concerning the
impacts of recreational viewing on North American terrestrial vertebrates, 19 of 21 references concerning birds and 5 of 10 concerning mammals found negative effects. In all, 72% of the impacts were negative, compared to only 6% that were positive and 22% in which no affect occurred or the effect was undetermined. Negative effects exceeded positive effects for all three major animal taxa and all eight types of recreational activity investigated.

Nature tourism has the potential to degrade both abiotic qualities of the site itself, such as water and air quality, as well as the flora and fauna, whether they are the targets of viewing or not (Mathieson & Wall 1982). These effects can occur in both parks and protected areas, and in some forms, such as pollution, deforestation, and over-harvesting of species, can affect surrounding human communities (Boo 1990).

Despite its best intentions, nature tourism can seem fated by its very nature to affect its targets. Wildlife viewers and photographers tend to seek out and approach wildlife, especially rare and/or unusual species (Boyle and Samson 1985, Knight and Cole 1995). Viewing situations tend to be longer and more frequent than other types of encounters, and these encounters often occur during particularly sensitive times of year, such as breeding, when animals display unusual appearances or behavior (Boyle and Samson 1985, Knight and Cole 1995). Other causes of disturbance attendant to viewing situations include noise, overcrowding, feeding of animals, removal of natural features for souvenirs, trail development, pollution, and road construction (Boo 1990).

Negative impacts on target animals can be separated into direct and indirect effects, both of which can affect individuals, species, populations, and communities (HaySmith
and Hunt 1995). Direct effects range from the disturbance of activities such as feeding and breeding, stress, and transmission of diseases to the displacement or death of individual animals or populations. Secondary direct effects include increased vulnerability to competitors and predators and the disruption of parent-offspring bonds (HaySmith and Hunt 1995, Roe 1997).

The indirect effects of nature tourism begin with contamination or alteration on an ecosystem level by processes such as road building, solid-waste disposal, or the development of tourist facilities, including buildings, trails, and picnic areas. Impacts to biotic and abiotic systems may include the introduction of invasive species, altered soil chemistry or porosity, reduced plant density and/or cover, altered plant species competition, reduced nutrient availability, and increased sedimentation in aquatic systems (Cole and Landres 1995, HaySmith and Hunt 1995).

**POTENTIAL ECOLOGICAL BENEFITS OF ECOTOURISM**

It is important to keep in mind that ecotourism in its original definition is meant to help protect species and habitats, and in many instances it does. Despite its negative potential, ecotourism is still likely to be less damaging to the environment than alternative industries such as timber harvesting, agriculture, mining, and urban development (Poirier 1997).

Ecotourism proceeds can help fund conservation efforts and scientific research, and can help promote economic opportunities in developing countries (Honey 1999). Ecotourism has promoted and assisted the preservation of elephant habitat in Thailand,

In a properly managed ecotourism scenario, ecological benefits follow socioeconomic ones. The “stakeholders” theory, which says that people protect that which they receive benefits from, holds that local businesses and communities that benefit from ecotourism will be more likely to invest in the preservation and promotion of natural sites and related activities. Residents and visitors are made more aware of local environmental issues, and visitors leave with a heightened cultural and ecological sensitivity of the areas they have visited (Honey 1999).

Although no studies to date have demonstrated direct positive effects of ecotourism or wildlife viewing on viewed species or their environment, some evidence suggests that this may be occurring. Bear populations at McNeil River State Game Sanctuary and in Katmai National Park have been observed to increase since the institution of structured bear-viewing programs at those locations in 1973 and 1983, respectively (B. Gilbert, USU, pers. comm.), as have bear populations in Glendale Cove near Knight Inlet Lodge (D. Wyatt, pers. comm.).

The benefits of ecotourism to scientific research should not be forgotten; this report and other research would not be possible without the cooperation of Knight Inlet Lodge, and Hoyt (2001) reported the estimated value of using a whale-watching boat as a research platform in Stellwagen Bank, New England, as $1,000 per day.
MARINE IMPACTS

Indirect effects can carry over into marine systems, where sewage runoff from ecotourism operations can lead to algal blooms that damage sensitive coral reefs. Divers and snorkelers have been found to break corals and other sedentary marine organisms by touching them with hands, body and equipment, whether intentionally or not (Allison 1996). Pathlong et al. (2000) reported a six-fold increase in broken and damaged corals along underwater interpretive trails compared to areas with no trails.

The growing popularity of whale watching is raising questions of the effects of viewing boats on the whales. Noise and disturbance from boats approaching too closely are particular concerns, as is outright collision with the animals (Winning 1984). Changes in whale behavior and migration patterns have been attributed to large numbers of tour boats crowding the animals. In Glacier Bay National Park, Alaska, entered by up to two cruise ships per day, whales were found to increase their dive times when boats and ships were present, and would sometimes leave feeding grounds altogether when approached (Hierta 1991). (Whether there is a long-term effect on population viability is uncertain.)

Humpback whales in Hervey Bay, Queensland, Australia were found to dive (as opposed to slip under) more often when viewing vessels were within 300 meters. Since Hervey Bay is considered a whale breeding ground, pods with calves, even if only moving through the area, may be particularly susceptible to disturbance. Whether or not these short-term behavioral effects constitute a “sign of a whale becoming disturbed or alarmed,” as described in the Hervey Bay whale-watching regulations, remains to be determined (Corkeron 1995).
Obee (1998) reports growth in whale viewing trips sold in Victoria in southern British Columbia from 1,400 sold in 1987 to 8,000 sold in 1997. While four boats followed the killer whale pods regularly in 1990, 24 were reported in 1998, leading to the adoption by tour operators of voluntary guidelines to ensure the safety of the whales. (These are often ignored by private recreational boaters).

**IMPACTS ON AVIAN SPECIES**

Due to vulnerable reproductive phases (nests and nestlings) and relatively high metabolisms that make them susceptible to stress, birds are particularly at risk from recreational impacts (Boyle and Samson 1985). As a result, studies of birding and bird hunting provide much of the data on the negative impacts of nature tourism (Anderson 1995).

Nest visitation by birders or researchers may provoke nest abandonment resulting in a decrease in nestling survivorship and may discourage renesting (Götmark 1992). Lower hatching rates, retarded chick growth, higher nest predation rates, and changes in behavior of both adults and chicks have also been associated with human disturbance (Fowler 1999).

Burger et al. (1995) demonstrated how ecotourists can adversely affect the behavior, reproductive success, and population levels of breeding and migratory birds in New Jersey. They stressed the importance of identifying the maximum human use a sensitive avian resource can withstand before suffering population declines. Fowler (1999)
recorded not only behavioral changes but also significant stress responses (measured by elevated steroid levels) to tourist visitation among penguins.

A review paper on impacts by Knight and Cole (1995) listed a number of similar impacts, including altered nest placement after human visitation in black-billed magpies (Knight and Fitzner 1985); Cooper’s hawk nestlings that were handled by humans or studied from blinds suffering significantly higher mortality rates after fledging (Snyder and Snyder 1974); and predators following human scent trails to waterfowl nest sites (Strang 1980, MacIvor et al. 1990).

**IMPACTS ON REPTILES**

At Murchison Falls National Park, Uganda, female crocodiles abandoned riverbank nests while retreating from tourist boats, leaving nestlings and eggs vulnerable to predation by baboons and monitor lizards (Cott 1969, Edington and Edington 1986). In an evaluation of nature tourism at Tortugero National Park, Costa Rica, Jacobson and Lopez (1994) noted that green sea turtles nesting on beaches and their nestlings were disturbed by flashlights and flash cameras, physically blocked, touched, handled, and trampled. As a result, half as much nesting behavior was observed on weekend nights (with high tourism) as on weekday nights, and some female turtles were reported to turn around and return to the ocean rather than face human disturbance ashore. Edington and Edington (1986) also reported that artificial lights disoriented sea turtle hatchlings as they tried to navigate by moonlight toward the ocean.
IMPACTS ON MAMMALS

Tourism’s impact on mammals is demonstrated most clearly in African parks, where tourists are brought in buses to view animals in their natural habitats. Cheetahs (*Acinonyx jubatus*), whose diurnal activity pattern and relative timidity make them particularly vulnerable to disturbance, appear to avoid tourist vehicles and to delay hunting and become more crepuscular when they are near (Henry 1980, Roe 1997). Roe (1997) reported how cheetahs in Kenya’s Masai Mara National Park appear to have developed an immune system disorder similar to HIV from stress, possibly stemming from tourist traffic. Cheetahs frightened out of Kenyan preserves are exposed to danger and the risk of inbreeding (Isaacs 2000), and hyenas (*Hyena hyena*) may use buses as camouflage to sneak up on cheetahs and steal prey from them. Tour vehicles were seen to separate wildebeest (*Connochaetes taurinus*) and zebra (*Equus burchelli*) mothers from their young (Edington and Edington 1986).

In other parts of the world, harp seal (*Phoca groenlandica*) mothers in northern Canada have been reported to attend to pups less and spend more time scanning for threats when tourists are present (Kovacs and Innes 1990). A correlation has been noted between an increase in nature tourism and a decrease in primate density over a two-year period in Costa Rica’s Cabo Blanco Nature Reserve (Lippold 1990).

IMPACTS ON BEARS

Human interactions with bears differ from those with other wildlife in a number of important ways. Human presence most often causes displacement from essential habitat,
either temporarily or permanently, or the direct effects of the death of the animals through lethal conflict (Gilbert 1989).

Grizzly bears can be negatively affected by the construction of roads and attendant motorized recreation, with the effect increasing with the level of use. Vehicular traffic can displace grizzlies from 100-900 meters (Mattson et al. 1987, Kasworm 1990). This direct impact of road networks can be overshadowed by the indirect impacts of the attendant habitat fragmentation, including disrupted behavior and social structure, reduced availability of foraging habitats, and the creation of barriers to movement, which are generally agreed to be among the most serious threats facing grizzly populations in North America (Archibald et al. 1987, McLellan and Shackleton 1988, McLellan 1990), despite some evidence to the contrary (see McLellan 1989a, 1989b).

Roads—even those that are officially gated or closed—provide increased access to hunters and poachers, to such a degree that Powell (1997) concludes that habitat lacking roadless areas is insufficient to support black bears in the southern Appalachian Mountains, even if these areas provide adequate food and den sites.

At the same time, however, bears can also become habituated to people, especially in viewing scenarios when the encounter is predictable in location, timing, and form (Gilbert 1989, Wilker and Barnes 1998, MELP 1998). When patterns of human use are established in particular areas, bears generally respect those patterns (Aumiller and Matt 1994). In some situations, which will be examined below, this habituation can be seen as positive in regards to wildlife viewing, allowing the bears to continue their activities largely uninterrupted while being viewed. Rapid habituation may permit cubs and sub-
adults to maintain access to an important food source avoided by other bears (Gilbert 1989).

Without a well-regulated and guided viewing program, however, habituated bears can show altered behavior, such as food conditioning, that may become potentially dangerous to themselves and humans in areas without abundant food sources like migrating salmon (Warner 1987, Mattson et al. 1992, Olson 1993, MELP 1998). The probable outcomes of this type of situation—bear deaths through relocation handling and in defense of life and property—have been recognized as posing a greater threat to bear populations than habitat modification (Weaver et al. 1986).

Direct interactions between human viewers and grizzly bears on Alaska salmon streams have been well documented. The mere presence of human observers, regardless of their activity, has been demonstrated to cause significant disturbance to certain non-habituated bears (Warner 1987, Braaten 1988, Olson 1993, Fagen and Fagen 1994). The location, intensity, and timing of human activity explained the temporal and spatial distributions of non-habituated grizzly bears better than salmon availability in Katmai National Park, Alaska (Olson and Gilbert 1994, Olson et al. 1997).

In unexpected encounters with humans, a grizzly bear’s first response is often to flee, and bears will sometimes modify their behavior to reduce the chance of an undesirable encounter with humans. As large mammals, bears are more prone to flee at greater distances than smaller species, possibly because of a learned wariness to human activity or hunting experience (Cooke 1980). In an examination of 270 personal encounters with brown bears living in the Kamchatka region of Russia, Revenko (1994) showed that
avoidance was by far the most common reaction, occurring in 70% of all cases. Other reactions included approaching, identification as human, and moving away (14%); indifference (12%); threat demonstration (3%); and attack (1%). Aggressive behavior seemed related to sudden, close-quarter encounters, especially those in which the animals were hunted, surprised, or defending young. Fagen and Fagen (1994) reported that bears at Pack Creek, a popular viewing site on Admiralty Island in southeast Alaska, averted their gaze when in proximity to people, which the authors interpreted as an attempt to reduce the impression of an overt threat.

Flight has energetic costs, both in the action itself and the consequent loss of feeding time. White et al. (1999) calculated activity budgets for disturbed and non-disturbed bears in Glacier Bay National Park, Alaska, using a caloric analysis of army cutworm moths, the primary food at that time. Bears that were disturbed by mountain climbers spent less time foraging and more time moving around the foraging area and behaving aggressively than nondisturbed bears. Since winter survival and reproductive success of bears depends on the amount of fat they are able to store for hibernation, displacement from key foraging areas may affect individual fitness if other food is not available (Gilbert and Lanner 1992, Miller 1994).

If bears do not or cannot flee, as during periods of gorging (hyperphagia) to prepare for hibernation, they may still change their daily activity cycles to avoid human disturbance. In another study at Pack Creek, Warner (1987) noted that the activity of grizzly bears in viewed areas tended to be higher before dawn and after dusk—outside of the viewing period—than in areas without viewing. Bears habituated to human presence
or food, however, tended to use the viewed area by day more than unconditioned bears, and some showed potentially dangerous boldness levels when encountering people. However, no injuries were documented and aversive treatment caused bold bears to retreat.

Olson et al. (1998) found similar results in Katmai National Park. Bear activity tended to be more crepuscular near a salmon stream that was frequented by human viewers than near a similar stream with no viewers. Bears that were less tolerant of people (over two-thirds of the adult bears seen) showed the greatest depression in activity near midday, and as human activity increased over the years of the study, this activity lull increased for less tolerant bears while activity after dusk increased significantly. Even partially habituated bears can be affected by viewing: Chi (1999) reported that human-tolerant black bears fishing at Anan Creek, Alaska demonstrated sensitivity to larger groups sizes by fishing for shorter periods.

Viewed populations of bears are often seen to have skewed age and sex ratios, as a result of certain sex and/or age classes avoiding human viewers more than others. In Denali National Park, a higher percentage of females and family groups (females with cubs) have been observed along heavily used park roads, suggesting that single male bears may be more wary of people, and therefore underrepresented in viewed populations (Tracy 1977). Warner (1987) reported that over 80% of the bears observed at Pack Creek in 1983-84 were known for be female, as compared to 0.4% known to be male, and that 45% of observations were of family groups.
In a study of the bear-viewing program at Knight Inlet, Nevin and Gilbert (2000) discovered that viewed populations were similarly skewed toward females with cubs. Bears spent a smaller proportion of their time fishing when viewing tours were present, but fish capture rates and arrival and departure directions were unaffected by the presence of viewing tours. This suggests that large males and lone females avoid humans in bear-viewing scenarios, while females with cubs become habituated more easily. Females with cubs may use areas near viewers as “safety zones” from aggressive older males, who will otherwise kill cubs to bring the female into estrus again.

The reasons for skewed sex ratios are unclear, but several theories have been suggested. Single male bears are usually the targets of hunters, and as a result they may have learned to be more wary of humans as a whole. Their larger home ranges (as compared to family groups) may give them less opportunity to become accustomed to people, and less opportunity to be seen (Warner 1987, Mattson 1990).

Sub-adults are also disproportionately represented near human activity and in areas where other bears had already been displaced by humans (Mattson et al. 1987, Miller and Chihuly 1987, Mattson 1990). Females that frequent areas near human activity may become food-habituated, at least among food-stressed populations, although this is not universal (Mattson 1990).

Habituation to humans can be appropriate and even desirable in well organized encounter scenarios. At the same time, however, habituation may also lead to food-conditioning, unpredictable behavior, and possible danger to humans under some circumstances, the nature of which are not yet well understood. In addition, some bears
appear to demonstrate a resistance to habituation at all (Braaten 1998). Habituation is the result of predictable, nonthreatening encounters, which has only been achieved in structured viewing programs. Wilker and Barnes (1998) found that brown bears reacted more strongly to random human encounters during years of general public use than they did to consistent and predictable encounters during years of structured bear viewing.

In a study of grizzly bears at Brooks River in Katmai National Park and Preserve, Alaska, Olson (1993) reported that the overall rates of river use were higher for habituated bears (tolerant of people at under 50 meters) than for nonhabituated bears, and that all nonhabituated females with young favored use of the viewed zone nearest to Brooks Camp. Habituated bears (23-29% of the adults observed) showed nearly three times as much use of this observation zone overall as nonhabituated bears, who were consistently displaced by unrestricted human activity. A subsequent study at Brooks River in 1988-90 found that nonhabituated bears decreased their activity due to human presence—in this case by delaying use of the river by 17 days in response to an extended lodge season. During the same period, habituated bear activity remained the same, and sub-adult activity increased (Olson et al. 1997).

Under some circumstances, habituation may lead to a learned association between humans and available food (Olson et al. 1997). Food-conditioning is a serious problem in the area of bear-human interactions, and often leads to the removal or destruction of the offending animal (Mattson 1990).

Bears that feed on refuse can experience beneficial nutritional effects, including larger size, elevated reproductive rates, and longer lifespans (Rogers 1987, Follman and
Hechtel 1990). These, however, are almost universally outweighed by negative behavioral effects such as aggressive encounters with humans and dependence on a non-natural food source that can be withdraw at any moment, as when dumps are closed (Harper and Eastman 2000). Juveniles feeding at dumps are also particularly vulnerable to attack by other bears (Stringham 1989).

Where bear viewing and human camps are physically separated, however, as at the McNeil River State Game Sanctuary and Knight Inlet Lodge, food conditioning is not a problem. Warner (1987) suggests that the viewing situation at Pack Creek would be safer for both bears and people if the bears were never given the opportunity to access human food, and cites McNeil River as a successful example of this practice.

**STRUCTURING NATURE TOURISM TO MINIMIZE IMPACT**

Numerous factors have been identified as crucial in minimizing the impact of nature tourism as a whole and wildlife viewing specifically. Most involve exerting some level of control over visitors and their interaction with target species and habitats.

Direct controls include controlling the level of disturbance and the timing and proximity of the interaction. Animals typically show little response to disturbances that are regular and appear non-threatening, while disturbances that are threatening, unpredictable, or both have a much greater chance of causing stress and flight (Knight and Cole 1995). High levels of visitation may result in a stronger tendency toward habituation, while moderate levels may not, as demonstrated by Fowler (1999) among penguins.
Tourist zonation, both spatially and temporally, results in a more predictable environment for the target animals (HaySmith and Hunt 1995). Burger et al. (1995) concluded that situations with controllable visitor access are the most amenable to a minimal negative impact on viewed species—in this case, birds. Restricting tourist arrivals and departures to specific times can help target animals anticipate human presence and thus habituate more quickly, and can produce periods of no viewing in which very sensitive animals can obtain access not otherwise available, a process that has been referred to as “time sharing” (B. Gilbert, pers. comm.).

Restricting human use to specific hours and locations has proven effective in high-traffic nature tourism destinations such as Ecuador’s Galapagos Islands and established bear-viewing sites in Alaska (Roe 1997, Wilker and Barnes 1998). Restricting viewing points to fixed observation areas in carefully designed viewing facilities can focus impacts that would otherwise be dispersed through non-point viewing (Edington and Edington 1986, HaySmith and Hunt 1995).

The location of viewing sites can also be crucial in influencing the level of impact. Sites near key foraging and breeding grounds should be planned and regulated with particular care, even to the extent of possibly prohibiting certain activities (HaySmith and Hunt 1995).

Indirect strategies (cf. Roe 1997) attempt to minimize impacts by modifying visitors’ behavior through education and guidance. The company of a trained interpretive guide has been repeatedly demonstrated to enhance visitor experience while reducing impacts on the environment (Jacobson and Lopez 1994, HaySmith and Hunt 1995).
MINIMIZING THE IMPACT OF BEAR VIEWING

Most summaries of the impact of viewing in bears agree on a number of guidelines, with emphasis on certain key elements that particularly affect bears:

- Written management plans with details on program goals, specific protocols, and etiquette around bears.
- Controlled access, which is particularly important when dealing with sensitive and potentially dangerous species such as bears.
- The company of trained interpretive guides, preferably preceded by video instruction, as at Brooks Falls.
- Viewing stands located as far as possible from the animals while still allowing them to be viewed by visitors, possibly through spotting scopes.
- Blinds used to conceal visitor movement and arrival and departure.
- Encouraging habituation to people by means of consistent viewing behavior.
- Discouraging food conditioning by controlling food handling and storage and limiting access to food and garbage.

Among 27 total factors key to a successful bear-viewing program, Neary (1995) identified: consistent timing of viewing to increase habituation; the concentration of viewers on a pad or platform; the services of interpretive guides; alternative viewing areas to take pressure off overused sites; and the involvement of knowledgeable local residents, such as British Columbia’s native First Nations, to add an additional cultural aspect to the viewing experience (as well as provide a source of local income). In addition, he suggested that extended seasons are more successful, and (not noting a...
possible contradiction) that the closer the people are to the bears, the better the viewing experience will be. He concluded, “the bears must come first.”

This last sentiment is shared by the British Columbia Ministry of Environment Land and Parks’ Bear Viewing Guidelines, which begins with the statement that the conservation of bears should be “the main objective” and “must take precedent over all other objectives.” It adds that viewing must not increase current impacts on bears or bear populations in the province (MELP 1998).

The B.C. Guidelines’ list of key points is similar to Neary’s: restrictions on visitor numbers, viewing distance, and viewing season (to minimize disturbance during key feeding times); access restrictions to give bears the option of feeding without observation; and the overriding importance of viewer safety, achieved through the company of a trained guide and education materials presented before the encounter.

The bear-viewing programs at McNeil River, Katmai National Park, and Knight Inlet Lodge have demonstrated the effectiveness of restricting viewer numbers, times, and location, with not a single serious injury reported in over 65 combined years of operation (B. Gilbert pers. comm., D. Wyatt pers. comm., O. Nevin, USU, unpublished data).

CONCLUSIONS

While most studies to date have demonstrated the potential negative effect wildlife viewing can have on target species and environments, there are proven ways in which this impact can be minimized or negated. Bears are particularly sensitive to disturbance, but can also habituate to human presence more easily than other species, allowing
viewing to occur with little impact if it is structured correctly. McNeil River, Katmai National Park, and Knight Inlet Lodge all serve as examples where efforts are being made to minimize these effects through proper visitor management, with varying—but more often positive—degrees of success.

The bear-viewing program at Knight Inlet Lodge adheres to many of the guidelines that have been formulated to minimize the impact of bear viewing. Viewer numbers, access, arrivals and departures, and location are all restricted and more or less consistent. At certain times of day, particularly early morning and late evening, the absence of viewers allows the bears to feed undisturbed. Trained guides accompany groups for safety, supervision, and education purposes, and food conditioning is not a problem since food supplies are located on an inaccessible floating platform.
CHAPTER 5
CONCLUSIONS

This report attempted to evaluate the potential for grizzly bear ecotourism on the B.C. coast, using Knight Inlet Lodge, the only bear-viewing facility currently in operation, as a model. In economic, social, and ecological terms, the lodge seems to serve as a good model for future expansion of the B.C. bear-viewing industry, provided certain guidelines are heeded.

A high demand and income potential for ecotourism and particular the viewing of wildlife such as grizzly bears, when combined with data from Knight Inlet Lodge and successful bear-viewing programs in Alaska, suggest that many visitors are and would be willing to pay significant amounts to view grizzly bears in the venues offered.

Knight Inlet Lodge visitors fit the typical ecotourist profile (which differs from the normal “mass” tourist profile) and report very favorably on their experiences. Importantly, bear viewing as structured in Alaska and at Knight Inlet seems to avoid most of the negative effects that wildlife viewing can and often does have on its targets.

In examining my results, one of the three organizing criteria emerges as paramount: if the ecological health of the viewed animals and the viewing site is not maintained, then all other considerations become moot. Without any bears to view—whether they were driven off by viewers, hunted out, or gone for other reasons—it does not matter if guests are satisfied or if a viewing operation is making a profit.

The delicate balance between short-term gain, from ecotourism or other businesses, and long-term ecosystem preservation is of particular concern in B.C., where ecotourism
ventures and conservation efforts often find themselves in opposition to traditional
extractive industries and their effects. Crashing salmon populations, clearcuts, and
development threaten to undermine the foundation of the system on which bear viewing
depends. Without migrating pinks and sockeyes, timbered slopes, and large areas
unoccupied by people, there will ultimately be little left of the wild spaces that define
B.C. today, much less grizzly bears to view.

This is not to say that these ecosystems must or even can remain untouched, to be viewed from afar as if through glass. In such management decisions, a false dichotomy is often implied between the complete preservation of a pristine past and complete
development in an industrialized future—a polarizing, black-and-white interpretation that makes any balance between different viewpoints nearly impossible to achieve.

There is no doubt that most if not all of B.C.’s grizzly bears will come into contact with humans at some point. The question is how this can be done with minimal impact on both the animals and the people who contact them. Options include wildlife viewing and other land uses that have been demonstrated to have comparably greater negative impacts on wildlife and wildlands, such as hunting, logging, mining, and development.

While wildlife viewing—if structured correctly—promises significant economic returns with minimal impact, these other uses will continue and thus must still be factored into management decisions. This does not necessarily have to be an either/or decision. A variety of potential uses may be compatible—and indeed, at least in the near future, they will have to be.
A full analysis of such compatibility issues is beyond the scope of this report, but there are already suitable models in the case of bear hunting and viewing. In the Kodiak Island National Wildlife Refuge in Alaska, guide-outfitters are increasingly turning to wildlife viewing between hunting seasons. They see wildlife viewing as a new business opportunity and an economic asset that does not conflict with their traditional livelihood as long as bears are not habituated to the point that they become too "tame" for quality sport hunting (Bill Pyle, USF&WS, to B. Gilbert, pers. comm.).

Larger, healthier bear populations are better for everyone concerned. These may be achieved through a source-sink population dynamic in which protected key habitat areas such as salmon spawning streams serves as "sources" for surrounding areas (Doak 1995). This management scenario has been demonstrated among hunted populations of black bears in North Carolina, where populations have declined in direct relationship with their contact with humans (Powell et al. 1997, Clark 1987). Since the U.S. Forest Service has designated the black bear as an indicator species in the forest management plan for that state, logging roads in certain districts have been closed as a result of the impact (Powell et al. 1997). Refuges can provide population-level "cushions" that would greatly facilitate monitoring in remote areas such as coastal B.C.

There is also growing evidence of potential ecological benefits of bear viewing. Increasing bear populations have been observed to coincide with visitor increases at viewing areas both with visitation limits (Brooks Falls in Katmai National Park, McNeil River State Game Sanctuary) and without visitor limits (Anan Wildlife Observatory near Wrangell, AK). This effect may be due to the tendency of older males bears to avoid
viewing areas, giving the reproductive segment of bear populations greater access to critical foraging habitat such as salmon spawning streams and falls during foraging periods and thus maximizing population recruitment (O. Nevin, pers. comm.).

Bear populations in Glendale Cove have been observed to increase overall since viewing began in 1996 (D. Wyatt, pers. comm.), aside from a drop from 38 identified individuals in 1999 to 31 in 2000. This drop coincided with a sudden disappearance of bears at the height of the salmon run, suggesting that poaching may have been occurring nearby (B. Gilbert, USU, pers. comm., O. Nevin, unpub. data). It is difficult to isolate the effect of rebuilt salmon spawning channels such as the one in Glendale Cove (which may also limit the applicability of Knight Inlet results to more natural locations in coastal B.C.), but it is still becoming increasingly evident that bear populations at the very least do not tend to decline with increasing visitation.

**SUGGESTIONS FOR FUTURE RESEARCH**

The research objectives of this report did not address the effects of Knight Inlet Lodge on local communities and the resulting attitudes toward such an operation. Surveys of residents could determine what such operations can do to fulfill ecotourism’s goal of improving the well being of local people.

More detailed economic analysis of wildlife-viewing operations, ideally over longer time periods, could provide more specific data on the long-term economic prospects for such businesses. Knight Inlet Lodge seems to be doing well so far, but more robust conclusions could and should be drawn after 10 or 15 years of operation.
There is much opportunity to collect data on wildlife-viewing ecotourists’ attitudes and satisfaction. Surveys of current ecotourists could clarify which parts of their experiences they did or did not enjoy and why, assisting in future site selection and operation management. Surveys of potential future ecotourists would provide willingness-to-pay figures to create economic demand curves and valuation estimates for both the bear-viewing experience (which would be easier with more detailed travel cost figures) but also, possibly, even the animals themselves.
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APPENDIX

KNIGHT INLET LODGE GUEST QUESTIONNAIRE
Dear Knight Inlet Guest:

As part of the ongoing efforts of Knight Inlet Lodge to protect the grizzly bear and its habitat, we ask that you take a moment to fill out this short survey.

It is part of an ongoing master’s degree project to study the attitudes and demographics of wildlife viewers such as yourself.

There are no right or wrong answers, and all your responses will be coded and kept strictly confidential.

As some answers depend on your experiences during your visit, please fill out the survey at or near the end of your stay.

Sometimes it is necessary to contact survey participants at a later date to gather more information or to clarify certain answers. If you would consent to being contacted again, please put your name, address, phone number, and email address on this page or at the end of the survey.

When you are finished, please place the form in the envelope provided and leave it in your room.

We thank you very much for your help.

Julian Smith
Barrie Gilbert
Utah State University

Dean Wyatt
Knight Inlet Lodge
Knight Inlet Lodge Guest Survey

• When blank spaces such as (_) are given, please put an X in the appropriate space.
• When possible answers or a range of number choices if given, please circle one.
• Please feel free to add comments on the back of the form.

1. Have you ever been to Knight Inlet before? Yes No
   If so, when? ____________________________________________

2. What was your most important reason for visiting Knight Inlet Lodge on this trip?
   (___) Viewing bears       (___) Fishing       (___) Other: ______________________________
   (___) Viewing other animals (___) Relaxing

3. Have you ever taken a trip before this with the primary purpose of seeing wildlife? Yes No

4. If so, how often do you travel to view wildlife, on average?
   (___) More than once a year
   (___) About once a year    
   (___) Less than once a year but more than once every five years
   (___) Less than once every five years

5. Have you ever visited another location specifically to view bears? Yes No

6. If so, when and where? ____________________________________________

7. How did your experience at Knight Inlet Lodge compare to your two most recent wildlife viewing experience(s)?
   Date/location: ____________________________________________
   Animals seen: ____________________________________________
   Comparison: 1 2 3 4 5 6 7
                 Knight Inlet was: much worse about the same much better
   Date/location: ____________________________________________
   Animals seen: ____________________________________________
   Comparison: 1 2 3 4 5 6 7
                 Knight Inlet was: much worse about the same much better

8. Have you ever hunted for sport and/or trophies? Yes No

9. If so, do you regularly hunt more than once per year, on average? Yes No

10. Have you ever hunted bears? Yes No

11. What are your overall feelings towards sport/trophy hunting of bears?
    1 2 3 4 5 6 7
        very negative negative neutral positive very positive

12. How many nights did you stay at Knight Inlet Lodge? ______________
13. How would you rate the overall quality of your experience at Knight Inlet Lodge?

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14. How did your actual visit compare to your expectations for your visit?

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15. Looking back on your stay at Knight Inlet Lodge, do you think the price you paid was a fair value for your experience, or was it too high or too low?

- (___) **Price was too low** - the experience was worth *more* than I actually paid.
  
  If so, how much *more* would you have been willing to pay for your visit to Knight Inlet Lodge, hypothetically, than what you actually paid?
  
  Amount: ____________  (Please indicate currency)

- (___) **Price was fair** - the experience was worth exactly what I paid for it.

- (___) **Price was too high** - the experience was worth *less* than I actually paid.
  
  If so, how much less would you have preferred to pay for your visit to Knight Inlet Lodge, hypothetically, than what you actually paid?
  
  Amount: ____________  (Please indicate currency)

16. Suppose that you could have seen twice as many bears during your visit to Knight Inlet Lodge as you actually did see. Would this have affected the quality of your experience?

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Please indicate whether this effect, if any, would have been (___) positive or (___) negative.

17. Imagine that all the surrounding hillsides in Glendale Cove visible from the lodge had been clear-cut for timber (all trees removed). Would this have affected the quality of your experience at Knight Inlet Lodge?

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Please indicate whether this effect, if any, would have been (___) positive or (___) negative.

18. Some studies of animal behavior have suggested that wildlife viewing has a negative effect on animals. Suppose you knew for a fact that your presence as an observer had a negative effect on the bears—for example, that it frightened them away from feeding sites. Would this have affected your desire to come to Knight Inlet Lodge to view bears?

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Please indicate whether this effect, if any, would have been (___) positive (i.e., made you *more* inclined to come to view bears), or (___) negative (i.e., made you *less* inclined to come to view bears).
19. Would you like to visit Knight Inlet or a similar type of wildlife viewing lodge again? Yes No

20. If so, suppose that on this next trip you could be guaranteed to see twice as many bears. Would this affect your desire to take the next trip?

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21. Imagine that the surrounding hillsides visible from the next lodge you visited were clear-cut for timber (all trees removed). Would this affect your desire to take the trip?

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22. Suppose you knew for a fact that your presence as an observer had a negative effect on the bears you viewed (for example, it would frighten them away from feeding sites). Would this affect your desire to take the trip?

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23. Where do you live? City: Country: 
State/province: ZIP/postal code: 

24. Did you come to Knight Inlet Lodge as part of a larger trip, or did you visit only Knight Inlet Lodge on this trip?

( ) Visited Knight Inlet Lodge as part of a larger trip. ( ) Visited Knight Inlet Lodge only on this trip

25. How much did you pay to travel to Knight Inlet? Please fill in the appropriate amounts below, and indicate for whether each amount is for one-way or round-trip travel.

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<td>( )</td>
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<tr>
<td>Car rental</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Airplane ticket(s)</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Lodging (hotels, camping)</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Food (restaurants, groceries)</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Other (special equipment, tips)</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>


29. What is your occupation? ___________________ 30. How many people are traveling with you? __

31. What is your highest level of education completed?

( ) High school (Secondary) ( ) Graduate degree (Masters' or Ph.D.)
( ) College (undergraduate - "University") ( ) Post-doctorate degree (beyond Ph.D.)

32. What is your approximate annual income?

( ) Under $10,000 ( ) $50,000 - 75,000 ( ) over $150,000
( ) $10,000 - 25,000 ( ) $75,000 - 100,000
( ) $25,000 - 50,000 ( ) $100,000 - 150,000