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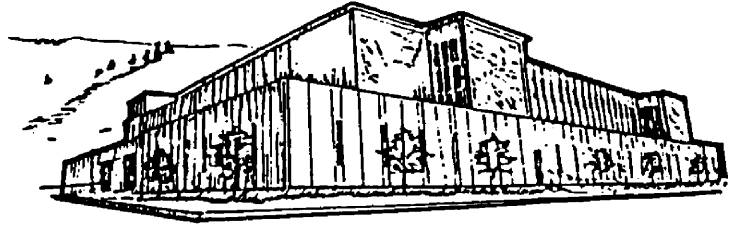
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WESTERN INFLUENCES ON THE MANAGEMENT
OF BROWN BEARS IN HOKKAIDO, JAPAN

By

Joseph Patrick Moll

B.S., Transylvania University, 1988

Presented in partial fulfillment of the requirements

for the degree of

Master of Science

University of Montana

1994

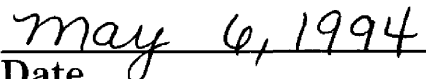
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Western Influences on the Management of Brown Bears in Hokkaido, Japan (76 pp.)

Stephen F. Siebert, Committee Chair SFI

Western observers interested in the Japanese sense of nature confront a frustrating paradox. While Japanese artistic and cultural traditions have been cited as examples of a special affinity for the natural world, the scale of negative environmental impacts associated with Japanese natural resource consumption draws international ire. At the same time that doubt is cast on Japanese government environmental policies and Japanese business practices, Westerners continue to be attracted to the philosophical traditions that gave birth to many of the nature-centered artistic and cultural practices. Given the recent increased awareness of environmental conservation issues in Japan, one might wonder if the Japanese natural resource managers themselves are returning to Japan's nature-oriented philosophical traditions for inspiration and guidance, just as researchers from the West are exploring them for their own inspiration.

To approach that larger question, this study focuses on the history of contact between brown bears, *Ursus arctos yesoensis*, and the human inhabitants of the island of Hokkaido. By reviewing historical documents, working and conversing with present-day wildlife researchers, and examining proposed guidelines for brown bear management in Hokkaido, I searched for indications that traditional Japanese and Ainu conceptions of the natural world affected the development of brown bear conservation policies and practices today.

From the results of my work in Hokkaido, I argue that such indications are lacking. Instead, just as when in the Meiji period Japan's leaders were influenced by Western examples of economic development, new leaders of the wildlife conservation movement in Japan are turning to the established Western models of wildlife management for similar inspiration.

Rather than demonstrating any particularly "Japanese" closeness to nature or even the legacy of a culture as dependent on the bear as were the indigenous Ainu, the current interest in brown bear conservation in Hokkaido reflects the adoption of modern Western concerns for the loss of wildlife species as well as the faith in Western scientific research and management systems to address that loss.

ACKNOWLEDGEMENTS

Living and working in a foreign country can be both exciting and challenging. Successful and enjoyable experiences are always the result of good support and friendship from good people.

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Tsutomu Mano, Koichi Kaji, and the rest of the staff of the Wildlife Section of the Nature Conservation Department in the Hokkaido Institute of Environmental Science were especially patient in helping me understand Hokkaido's system of natural resource conservation. Being able to work with Mano, Masami Yamanaka and others in the field grounded this study of people in some first-hand contact with the bears.

To all of the people who helped me in Hokkaido and whose ears probably still ring from my spoken Japanese, I thank you for your tolerance.

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CHAPTER 1

INTRODUCTION

Western observers interested in the Japanese sense of nature confront a frustrating paradox. Outwardly, the Japanese people maintain many of the artistic and cultural traditions that have been cited as examples of a particularly Japanese affinity for the natural world. Zen gardens, temple architecture, haiku poetry, and the rituals of seasonal change all are the legacy of a culture whose people, it is argued, once "...considered themselves so intimately integrated with nature that they could not identify it objectively as a separate entity" (Murota, 1985: 105). Despite the Western admiration for those cultural traditions, however, the scale of negative environmental impacts of Japanese consumption of marine products, tropical hardwood forest timber, and wildlife products has earned the country a variety of disparaging titles from the international environmental activist community. One might wonder how a country so rich in traditions thematically incorporating the natural environment could become such an environmentally destructive economic agent.

The Japanese government has responded to the international pressure by contributing more financial support to environmental causes and pledging to be a world leader in environmental protection. That pledge has met with polite skepticism toward underlying motives and fundamental abilities of Japan to play such a role. In a consideration of the absence of national

environmental impact legislation in Japan today, Barret and Therivel (1991: 71) write, "Although we should be grateful that Japan recognizes the seriousness of the environmental problem, we should also cautiously consider whether it is in a position to take a lead on environmental issues."

At the same time that doubt is cast on Japanese government policies and business practices, Westerners continue to be attracted to the philosophical traditions that gave birth to many of the artistic and cultural practices mentioned earlier. Many agree that whatever Japanese sensitivity to nature existed in the past, the Meiji Restoration and Japan's subsequent modernization alienated the Japanese people today from that closeness (Grapard, 1985; Murota, 1985). But there is still interest in reconsidering earlier philosophies and practices. Buddhist scholar Allan Grapard (1985:241) argues, "The Japanese cultural tradition hides in its deepest recesses a vast storehouse of notions and practices which may be helpful in establishing a culturally-grounded ecophilosophy."

Given the increased attention to environmental issues in Japan, one might wonder if Japanese natural resource managers are turning to this "storehouse of notions" for inspiration and guidance applicable to conservation efforts, just as researchers from the West are exploring them for their own inspiration. From the results of my work and research in wildlife management in Hokkaido, Japan, I argue that they are not. Instead, just as when in the Meiji period Japan's leaders turned to Western industrial models for the development of their economy, new leaders of the wildlife conservation movement in Japan are turning to the established Western models of wildlife

management for similar guidance. By examining the influence of the West in the development of Hokkaido's wildlife conservation movement, and considering how traditional conceptions of nature might be adapted within the application of those Western models to specific management issues in Hokkaido, one might be a step closer to resolving the initial paradox.

This study describes the history of contact between brown bears (*Ursus arctos yesoensis*) and the human inhabitants of the island of Hokkaido. I have chosen to focus on brown bears and Hokkaido to address the larger question of Japan's wildlife conservation practices for three reasons:

First, Hokkaido is recognized throughout Japan as a leader in wildlife and environmental conservation. As such, management policies developed there have great potential for influencing wildlife conservation practices throughout the country;

Second, the brown bear of Hokkaido presents management dilemmas similar to those posed by its North American cousin, the Grizzly bear : how to protect and manage a species that is more than simply "in the way," one whose appetites and curiosity bring it into direct contact and conflict with humans. Resolutions of these management challenges can have far-reaching implications on the management of more benign species as well as on larger questions of land and resource management. As well, consideration of the interaction between Japanese people and a species with which we are familiar will make comparisons in attitudes and actions more accessible and significant;

Finally, the precedent of the indigenous Ainu peoples' coexistence with

the brown bear before Japanese colonization of Hokkaido offers an additional “storehouse of notions” regarding the natural environment particularly toward the brown bear. That such a precedent plays only a secondary role in the current development of management programs further demonstrates the influence of the West over the last century and a half.

Perhaps it is precisely Hokkaido’s relative remoteness and independent development history that laid fertile ground for the growth of wildlife management strategies occurring there. Much of that development history has been heavily influenced by direct contact and even participation by Western partners; it is that contact, as much as direction from Japanese or even Ainu tradition, that has governed the interaction between human and ursine inhabitants of Hokkaido since Japan first actively colonized and developed the island in the 1870’s. Rather than demonstrating any particularly “Japanese” closeness to nature or even the legacy of a culture as dependent on the bear as were the indigenous Ainu, the current interest in brown bear conservation in Hokkaido reflects the adoption of modern Western concerns for the loss of wildlife species as well as the faith in Western scientific research and management systems to address that loss.

Research Approach

The base from which I conducted my study was the Nature Conservation Section of the Hokkaido Institute of Environmental Sciences. Consulting with the wildlife researchers there, and using primarily Japanese language documents and materials from their library for initial references, I identified the individuals and groups active in bear ecology research, field observations, the study of the history of conflicts, and the management of forested lands and recreation areas. Through both informal conversation and more formal interviews conducted in the Japanese language, I identified the main actors in the movement toward conservation of the brown bear and wildlife species in general. I was able to participate in bear trapping and radio tracking studies, high altitude observation studies, recreation management programs, public forums, and government policy meetings. In addition, I tried to identify attitudes underlying these efforts that might reflect a sense of the legacy of traditional Japanese or Ainu conceptions of the natural world.

What follows, then, is a qualitative description and analysis of the history of interactions between the bears and human inhabitants of Hokkaido. By identifying the key forces driving current attempts to develop bear and other wildlife conservation programs, I will demonstrate the influence of the West in that history, as well as identify factors specific to the Hokkaido situation that will necessitate significant adaptations of the Western wildlife management model now being pursued.

I have made no attempts to quantify any level of influence on attitudes or policy direction. Even so, this qualitative analysis offers insights, I believe, into the continuing development of wildlife management policies in Japan.

CHAPTER 2

HOKKAIDO BROWN BEARS IN THEIR NATURAL SETTING

People in North America are often surprised to hear that a country as heavily populated as Japan can be called home by a large number of brown bears. “Brown bears? The same species as our Grizzly? In Japan? You’ve got to be kidding!?!?” they respond, incredulously. But to the Japanese people, brown bears and Hokkaido are as nearly inseparable an image as are the Grizzly bear and Alaska in the United States. Currently, the brown bear population continues to occur at high densities throughout the island, but shows signs of decline in number as well as increased isolation of subpopulations.

The extent and productivity of Hokkaido’s forests support a wide variety of wildlife, including dense populations of brown bears. Approximately 5.6 million hectares of forested lands (22% Japan’s total) constitute approximately 70% of Hokkaido’s total 8 million hectare land base. Approximately 70% of the forest is classified as broad-leaved deciduous, reflecting the average 1000+ mm annual precipitation the island receives (Hokkaido Government, 1993c) . Uemura (1993) describes four general forest zones on the island: Boreal Coniferous forests, dominated by *Picea jezoensis* and *Abies sachalinensis* ; Summer-green forests, divided into those dominated by beech (*Fagus crenata*) and those dominated by an oak-maple-basswood (*Quercus mongolica*, *Acer mono*, *Tilia japonica*) mix; and the Mixed Conifer-Hardwood Forests, exhibiting

mixtures of the previous two types. An understory of *Sasa* bamboo species occurs throughout the three forest types, as well as a rich array of woody shrubs, vines, and herbs and grasses including *Hydrangea*, *Actinidia*, *Viburnum*, *Daphniphyllum*, *Rhododendron*, *Angelica*, *Petasites*, and *Heracleum* species. Because of Hokkaido's high level of annual precipitation, forest plant distribution tends to be limited more by thermal conditions, often reflecting altitudinal and latitudinal gradients (Uemura, 1993).

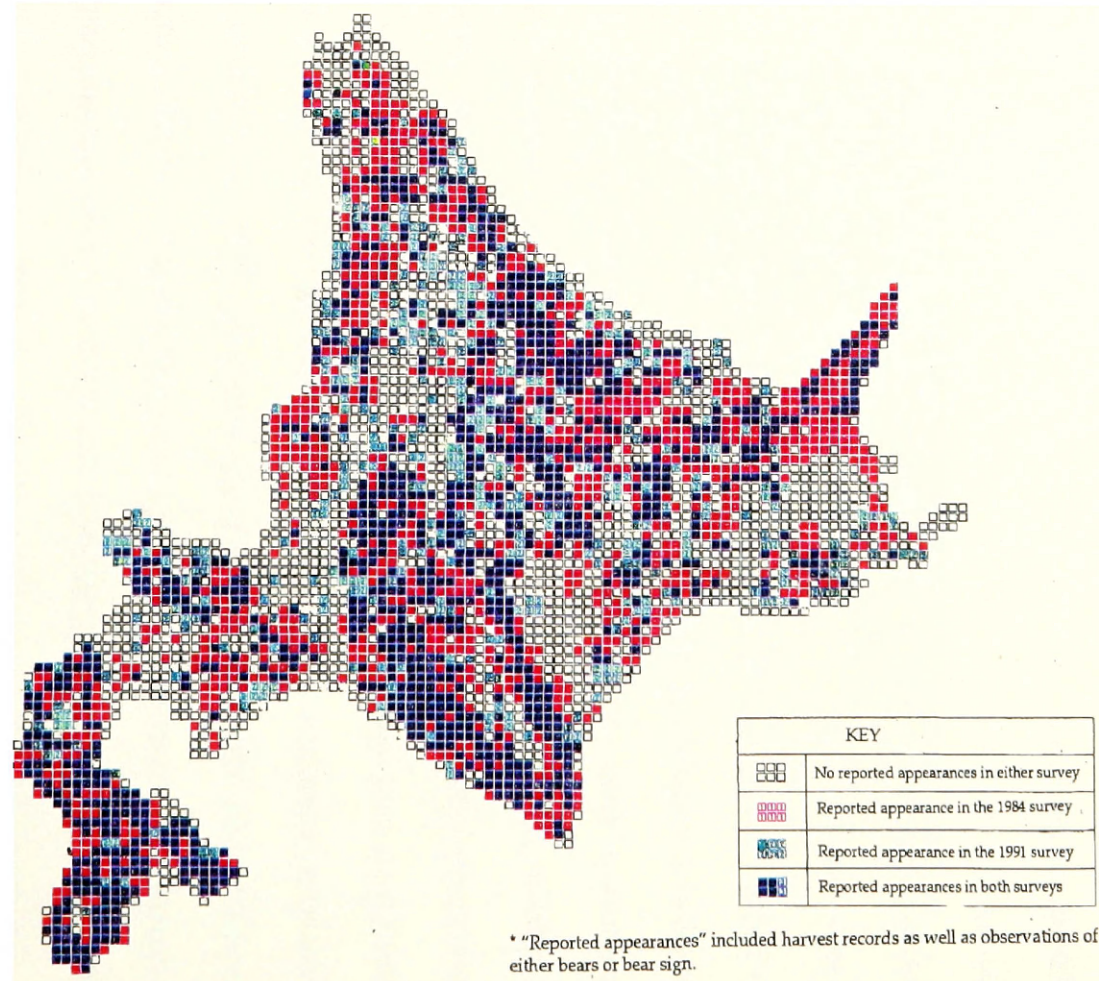
With such a rich, productive flora, Hokkaido supports an equally wealthy variety of mammalian species. In addition to the brown bear (*Ursus arctos*), there are healthy populations of Sika deer (*Cervus nippon*) Red fox (*Vulpes vulpes*), Raccoon dogs (*Nycteroides procyonoides*), weasels (*Mustela spp.*) and stoats (*Martes spp.*), rabbits (*Lepus timidus*), squirrels (*Sciurius vulgaris*) and flying squirrels (*Pteromys volans*), numerous species of shrews, voles, and mice, and 11 species of bats (Odajima, 1991). After travelling and collecting wildlife specimens throughout Hokkaido between 1862 and 1882, Thomas W. Blakiston (1883) put forward the theory that as evident in the similar flora and fauna, Hokkaido shared more geologic and historical connections with the Asian continent than with the rest of the Japanese archipelago. Even today, geographers refer to the "Blakiston Line" that runs between the northernmost parts of Japan's main island, Honshu, and the southern-most tip of Hokkaido, to demarcate the floral and faunal differences that Hokkaido exhibits.

Brown bears are distributed at high densities throughout the island. Researchers at Shiretoko National Park found female home range sizes from

4-21 square kilometers on the Shiretoko Peninsula (Yamanaka and Kanagawa, 1993). Female brown bears in the Oshima peninsula, southern Hokkaido, exhibit seasonal home range sizes between 30 and 40 square kilometers (T. Mano, pers. comm). In contrast, Servheen and Lee (1979) reported average home range size for brown bears in an area of the northern Rocky mountains as 315 square kilometers for females and 705 square kilometers for males. Despite the claim that since colonization and development, bears have lost upwards of 50% of their original habitat (Kadosaki and Inukai, 1992) , recent studies by the Hokkaido government show a wide but increasingly isolated distribution of subpopulations throughout the island (Figure 1) .

Studies of food habits and reproductive activity in Hokkaido brown bears are consistent with studies of brown bears throughout the world. Although bears of the Shiretoko peninsula take advantage of the protected upriver anadromous fish runs as well as sea mammal carcasses found on shore (M. Yamanaka, pers. comm.), and there is clear evidence of occasional predation on Shika deer (Kadosaki et al, 1991), food habit studies have shown bears to depend primarily upon seasonally available succulent herbs, fruits, and nuts (Ohdachi and Aoi, 1987). While females may weigh from 100-130 kg, and males may weigh from 150-300 kg on the Shiretoko peninsula (Yamanaka, 1993a), these are said to be larger than averages for the entire island (T. Mano, pers. comm.).

Figure 1:
Changes in the Distribution of Brown Bears in Hokkaido, Japan
(A comparison of results from surveys conducted in 1984 and 1991)



Hokkaido Government, 1994 (in press)

Sexual maturity is achieved at between 2-5 years of age for males, and 3-4 years of age for females, and average litter size is approximately 1.7 cubs (Tsubota et al, 1991). Aoi (1987) reported an adult female reproductive rate of .67 cubs /adult female/year.

Despite the productivity of the natural environment of Hokkaido and the consequent high density of the bear population, research indicates declines in both population numbers and distributions. Based on early harvest figures, Inukai supposed approximately 5000 bears lived on the island at the turn of the twentieth century, but based on harvest figures for the six year period between 1978 and 1983, the estimated bear population had dropped to between 1880 and 2280 (Kadosaki and Inukai, 1992). The Hokkaido Government has made no official estimation of total bear numbers, but note the declines in harvest numbers (Table 1). Toshiki Aoi (1985, 1990) documented the rapid decline in bear numbers in Northern Hokkaido, and Mano (1993, in press) describes similarly high mortalities in the Oshima peninsula. Much of the attention to declining bear numbers is a reflection of decreased harvest numbers as reported by the Hokkaido government. Total harvest numbers have decreased from an average of over 400 bears per year throughout most of the century to less than 250 per year in the last decade (Table 1). This decline reflects both the loss of natural habitat and the consequent increased contact with humans that have resulted from the development of Hokkaido since Japanese colonization in the late 19th century.

Table 1: Annual Brown Bear Harvest in Hokkaido, Japan (1957-1993)

Year	Sport Hunt	Control Kills	Total #
1957	261	258	517
1958	138	160	298
1959	242	198	440
1960	185	242	427
1961	164	216	380
1962	458	410	868
1963	121	260	381
1964	411	383	794
1965	157	354	511
1966	194	325	519
1967	160	319	479
1968	137	357	494
1969	179	344	523
1970	138	500	636
1971	184	451	635
1972	136	225	361
1973	112	351	463
1974	196	453	649
1975	123	265	388
1976	109	255	364
1977	74	335	409
1978	84	312	396
1979	142	295	437
1980	128	280	408
1981	103	267	370
1982	155	264	419
1983	167	231	398
1984	89	226	315
1985	97	180	277
1986	156	289	445
1987	78	139	217
1988	146	143	289
1989	76	108	184
1990	132	89	221
1991	173	94	267
1992	98	124	222
1993	85	162	247

(source: Hokkaido Government, Wildlife Preservation Division, 1993)

CHAPTER 3

THE AINU PRECEDENT FOR COEXISTENCE

Many of the descriptions of a unique Japanese sense of nature cite the central place of the natural world in traditional Japanese art, literature, and architecture. The idealized representation of the natural world in Zen gardens, and the legacy of natural themes in *tanka* and *haiku* poetry are probably the best known in the West. As has been noted, while these traditions evolved over centuries on the main island of Honshu, the island of Hokkaido (known as “Yezo” until the latter part of the 19th century), was an undeveloped wildland, with a race of “hairy men” sometimes willing to trade with Japanese fishermen and merchants. But in terms of real coexistence, even interdependence with the natural world, the indigenous Ainu of Hokkaido offer in many ways a better model for consideration.

Up until the time of Japanese colonization, the Hokkaido brown bear had been subject only to the stresses of natural conditions and the dispersed hunting threat of the indigenous Ainu people. The Ainu were a wildlife dependent people. While contact with Japanese trade merchants as early as the 17th century introduced limited agricultural techniques to the island, deer and salmon were the primary food sources, supplemented with wild vegetables and other seafood and terrestrial wildlife . Bear meat was eaten, but not to the extent commensurate with the place the bear occupied in the social and belief systems of the people.

Organisms in the Ainu world were considered manifestations of beings that also had a different existence and form in another world. The more prominent of these manifestations they called *kamui*, a term often translated as *kami* in Japanese and *gods* in English. But in his 1926 paper, "Bear ceremonialism in the Northern Hemisphere," Irving Hallowell argues that the term *kamui* simply described the wildlife that had human-like traits: individuality, volition, rationality. Some specific animals were recognized for the status they held in the "other" world, and it was to them that songs of thanks and offerings were made to ensure the return of the other "visitors" upon which the Ainu depended (Watanabe, 1973). As *kamin kamui*, or "Master of the Mountain," the brown bear occupied a favored position in the Ainu mind.

The Ainu explicitly recognized the bear as one of the sources of all that sustained them. As such, the bear was accorded special treatment, even as its life was taken. To the Ainu, the bear was a source of food, a subject of folklore, and a visitor from the world of the gods.

The most immediate interaction between the Ainu and the brown bear was, understandably, in hunting. Watanabe (1973) describes the hunting traditions as a reflection of the familiarity of the Ainu with their immediate environment. The recognition of seasonal movements of wildlife, and particular knowledge of preferred denning areas reflects the intimate knowledge the Ainu had of the bear. Organized group hunts occurred in both the fall and early spring; and throughout the other seasons a bear that wandered near a deer hunting or fishing party might also be taken. The fall hunts were carried out in

the upper reaches of the watersheds that defined the boundaries for a particular association of Ainu households. Member households of these river groups shared a common ancestor that was reflected in a one of their *itoppa* or markings, used to identify their lineage. Territories were defined, held, and even defended along known watershed lines, and permission to enter and hunt or gather were granted only after tribute was made to group family heads and ritual procedures notified the local *kamui*. Apparently the Ainu were aware that the bears of their own river systems maintained a territoriality similar to that enforced among the Ainu themselves.

During the fall hunting season the Ainu men spent most of their time setting and maintaining spring-loaded bows, *amappo*, along ridgelines and known bear travelways in the mountain interiors. A bow was fixed alongside a pathway, and a trip-wire released an aconite (wolfsbane, monk's hood) tipped arrow into the passing game. As these areas were usually far-removed from the Ainu settlements, small huts were erected for the hunters to use while checking the circuit of *amappo*. During this season hunters also carried their own bows and could take free-ranging bears when the opportunity arose.

Batchelor (1901) notes that in addition to regular bows and *amappo*, the Ainu used pitfall traps, spears, and even knives in their pursuit of the bear. Recognizing the agility of the bear, the Ainu hunter would not attack with a spear but would wait until the last second before a charging bear was upon him, then crouching low and extending the spear, watch as the bear impaled itself. Stories also told of hunters rushing in to a bear's embrace and thrusting a knife into the exposed chest. Hallowell (1926:38) notes the saying, "He who

undertakes to catch a bear must not cry over his wounds.“

Spring hunts were carried out while hard snowpack allowed relatively easy approach to the mountains where bears were still in winter dens, or were easily tracked after emergence (Kadosaki and Inukai, 1992). When a den was located, tree limbs were placed over the entrance to slow an emerging bear. Then, the bear was riled by either noise, smoke, dogs, or according to some, a brave knife-bearing hunter. As it emerged the bear was shot by the waiting hunters. Interviewing Ainu descendants in the mid-1960's, Hilger Inez (1971) was told that responsibility for the kill was determined by the *itoppa*, or family marking, on the head of the arrow. The Ainu recognized that dens are sometimes used in subsequent years and would therefore lay claim to known dens, or as described by Inukai (1967), to an environment whose conditions were conducive to denning activity and would therefore continue to attract bears in subsequent years.

Besides the adult bears killed upon emergence, the den hunts often produced orphan cubs. These cubs would be taken back to the settlement, or *kotan*, and cared for by the family of the responsible hunter or headman. Watanabe (1973) notes a cage for raising young bears his description of the general layout of the Ainu settlement. Hallowell (1926) cites descriptions of the families caring of the young bears as a family member, including allowing it to play with the young children , and although doubtful of what was a common story, John Batchelor (1901) was surprised to observe Ainu women taking turns nursing cubs with their own breast milk.

Not only in their hunting practices but also in the very construction and

arrangement of their living spaces, the Ainu maintained what Watanabe (1973:13) described as a “...social solidarity between man and nature.” Upon returning to the settlement with the spoils of the hunt, the Ainu men would pass the meats, hides, and even hunting equipment through the same sacred window through which the equipment was passed out upon departure. Ainu settlements were always close to running water, and houses had a regular door facing downstream while the sacred window faced upstream in recognition of the source of the river that was their lifeline, as well as toward the mountain realm of the bears. It was held that the fire god of the house, *kamui purera*, greeted the visitors from the other world at the sacred window when the latter came bearing gifts (the meat that made them recognizable) . For this reason, looking into a dwelling through the window was strictly taboo and could bring misfortune to the household (Hallowell, 1926) .

As with the traditions of many of the world’s indigenous forest peoples, the Ainu way of life reflected a complete dependence on the natural productivity of the land. This dependence influenced the development of their daily work as well as their interaction with each other. But the Ainu interaction with the bear was not limited to the material; as noted earlier, the bear transcended the material and spiritual worlds by being both a provider of goods as well as a visitor from the other world. This belief formed the centerpiece for much of the Ainu oral tradition.

In folklore the bear exhibited a variety of dispositions. Donald Phillip (1979) relates the clear recognition of both good bears and bad bears. In his translation of a traditional Ainu “Song of an evil bear ,” a bear is the form

given to a god of famine, whose well-stocked drying racks of meat and fish are the source of hunger for the Ainu. A cultural hero visits the bear and tells him to go to a place near the ocean where he will find others of his kind and will be glorified. When the bear leaves, the hero knocks down the drying racks and returns to his people. After being unable to satisfy his hunger among the kelp washed up on shore, the bear realizes that he has joined the other bears banished for stealing food from the humans.

Ainu descendent Kenichi Kawamura (1986) notes that bears that caused damages to Ainu food stores were believed to be evil beings in disguise. They were hunted down by the men of the settlement, and after being killed, were cut to pieces that were scattered about the forest. In addition, Batchelor (1901) noted that when an Ainu was killed by a bear and the bear was then captured, its severed head would be placed muzzle down in the mud and would be spat upon and cursed by grieving family members.

In "Song of a Bear," Phillippi (1979) presents the more common story of a bear's visit to the home of the humans. Intending to ravage them for taking away his wife, the bear finds himself visited midway in his journey by the God of Aconite poison (wolfsbane used to poison the arrows) and then the Resin god (spruce or fir resin used to hold the arrow head to the shaft). Then he is taken down to the settlement, where he finds his wife and is treated to a grand feast before being sent off with gifts to take back to the land of the bear spirits.

This folktale is a description of the Ainu bear ceremony, *Iyomante*, told through the eyes of the bear. Translated literally, *Iyomante* means simply, "sending it," and is as an explicit recognition by the Ainu of the other world.

Forms of *Iyomante* were conducted for Blakiston's fish owl, swordfish, and other animals prominent in the Ainu belief system (Kawamura, 1986; Watanabe, 1973). Hallowell (1926) notes the theories of Torii (1919) who proposed that the *Iyomante* ceremony was a relatively recent elaboration of simpler hunting rituals performed and dispersed south to Hokkaido by the Gilyak people of Sakhalin.

The *Iyomante* for the bears was generally carried out in January or early February. Preparation before the ceremony included the carving of *inau*, or prayer symbols recognizing the relevant spirits. These *inau* would be placed prominently on an altar and would be addressed and offered food and drink throughout the ceremony. As well, food would be prepared for the visitors from other *kotan*.

Following a number of dances and songs celebrating the generosity of the "Master of the Mountain" and reminding him of the kind treatment he'd received as a visitor to the Ainu, a bear was ceremoniously killed, its head and hide were removed and placed at the most honored seat in the dwelling of the host, and it was offered food and drink to share with the Ainu in feasting upon the "gift" of its body. After the feast, at the height of the celebration, the skull was completely cleaned of its hide, signifying the release of the spirit from its physical manifestation, and arrows were shot toward the mountains to show the spirit its most direct way home (Batchelor, 1901; Hallowell, 1926) .

There could be any number of reasons for the prominence of the bear in the Ainu world. Hallowell (1926) considers the physical and behavioral similarities to human beings as a probable cause. It is clear that for centuries

the Ainu lived in close contact with the bears on Hokkaido, and expressed great reverence for its spirit. According to Batchelor (1901:496), that physical and spiritual essence was inseparable in the Ainu mind:

The Ainu emphatically declare to me that they really do think that the spirits of the animals they worship reside in the skulls.... They actually address the spirits therein contained, offer them libations of *sake* or millet beer, and make their requests known to them.

The lack of a writing system and the only recent anthropological interest in the culture limits what can be derived of the daily Ainu interactions with their living environments. But it is not inconceivable that social and material habits they maintained minimized the conflict between them and the bears.

The Japanese that arrived as colonists of Hokkaido after the Meiji Restoration would have come into contact with an Ainu people that, although interested and rapidly incorporating Japanese ways of living, still maintained some of these primary connections with the land and with the bear. Had the arriving Japanese not been intent on developing the natural resource wealth of the island, perhaps the subsequent history of conflict between bears and humans on Hokkaido would not have reached the level it did. The Ainu dependence on the natural productivity of the forests and rivers was plowed under by agriculture and paved over by the roads that ushered in the modern industrial era for Hokkaido.

The Ainu today are recognized as an independent culture, but were subject for years to assimilation by the colonizing Japanese. Part of the Ainu legacy persists in the scattered remnants of prayers and recognition of the spirit of the bear by a handful of old hunters (Kadosaki and Inukai, 1992). In

recent years there has been a renewed interest in the Ainu language and culture, but I was unable identify any significant participation of the Ainu community in the current development of brown bear management policies in Hokkaido.

CHAPTER 4

COLONIZATION AND DEVELOPMENT PRESSURES ON THE BEAR

Though still blanketed in a mixture of deciduous hardwood and evergreen forests, Hokkaido today is not the wild land that greeted colonists in the late 19th century. The population has grown from just over 58,000 at that time (Harrison, 1949) to more than 5.6 million people today. The capital city of Sapporo has expanded to fill much of the Ishikari Plain with more than 1.6 million people. Most low lying areas have been developed for residence (1.2%) or agriculture (15.9%.) Of the 5.6 million hectares of forest on the island, about 3.6 million hectares are composed of native species while 1.5 million hectares are “man-made” (Hokkaido Government, 1993d).

In 1875, an American advisor to the Japanese government on the development of Hokkaido wrote, “ The greatest obstacle to the development of this region is the want of a good road leading to it“ (Capron et al, 1875:223). Today, paved highways encircle nearly all of the island’s perimeter and criss-cross its interior, constituting 1.9% of the total area (Hokkaido Government, 1993d). Throughout Hokkaido, electric signs promise that “Roads are Hokkaido’s future.” The contrast with the relatively simple lifestyle of the Ainu is dramatic, and took little more than a century to create.

Ainu culture was quickly overrun by the influence of Japanese colonization of Hokkaido. Fishing settlements and trading posts of the 17th and 18th centuries gave way to full scale colonial settlement operations in the

late 19th century. The introduction of Japanese and later Western technologies and lifestyles forever changed the nature of land use in Hokkaido, and therefore of Ainu culture. Use of *amappo* and the *Iyomante* ceremony were both prohibited by the Japanese government, and the introduction of Western firearms changed the nature of the bear hunt. The Japanese looked to Hokkaido as both a source of material resources as well as a foothold against the Russian Empire to the north and west (Harrison, 1949). As such they were determined to open the forests for settlement and agricultural development. Both the nature and scale of their plans brought them into immediate conflict with the ubiquitous bears. With Japanese colonization and the development of Hokkaido, the bear was perceived as a dangerous impediment to Western style agricultural and regional development.

Until the Meiji Restoration of 1868, Japanese interest in Hokkaido had been limited to the animal products trade with the Ainu and exploitation of the coastal fisheries. From the 17th century the *Matsumae*, a *samurai* clan, had received approval from the *shogun* for a castle and administrative center in southern Hokkaido (Takakura 1960). Over the course of the next two centuries the Tokugawa court policy was one of general tolerance for the native Ainu, with intermittent attempts at Japanization, hoping to take advantage of the profitable trade in natural resources. Late 18th century trade records indicate that bear hide and “liver” (most likely gall bladder) were high value trade goods (Takakura, 1960:39).

With the Meiji Restoration the Tokyo government turned a new eye to the Northern Territories, including Hokkaido. An official of the new

government, Kuroda Kiyotaka, was dispatched in 1869 to determine the value of the island and the threat of Russian advance. His report called for the immediate development of the Ishikari plains of Hokkaido, as the Sakhalin peninsula could not be held for more than three years given Russian strength in the area. Kuroda was put in charge of the *Kaitakushi*, or Colonization Commission that was created in May, 1869 as the agency to encourage settlement of the island by Japanese citizens (Harrison, 1949).

Kuroda came from the southern region of *Satsuma*, which spawned many of the key figures of the Meiji Restoration and was among the first to adopt Western military and industrial practices. At the time many of Japan's new leaders believed that if the Japanese government and people did not learn and adopt some Western ways, it too would become subject to colonial rule. As a model for agricultural development, the United States was a logical source. As noted by Harrison (1949, 1951), the climate of the Northeastern U.S. was similar to that of Hokkaido; the U.S. was the world leader in agricultural equipment technology; and the U.S. was isolated from international controversy, particularly with Russia.

Knowing that there was little of the necessary technical expertise within Japan itself, Kuroda recommended that a mission be sent to the U.S. to recruit advisors for the *Kaitakushi*. He was dispatched with Imperial authority to the US in 1872, met with President Ulysses Grant, and signed a contract for the services of a team of agriculture, mining, and engineering experts organized by Secretary of Agriculture Horace Capron (Hokkaido government, 1968).

From 1873 the visits by the American delegation and others from the Western world left an indelible mark on the Hokkaido landscape. Capron particularly, took his work seriously, and was frustrated at the policies of the *Kaitakushi*. In a series of letters to Kuroda, Capron repeatedly criticized the lack of support given to colonists and urged the *Kaitakushi* to adopt more open land distribution policies similar to the homestead Acts in the U.S. (Capron et al, 1875). Harrison has remarked that the bureaucratic inefficiency, rather than being specific to Hokkaido's situation, simply reflected the larger reality of the favored-samurai turned-favored bureaucrat Meiji Restoration bureaucracy. Despite the perception of wasted time and money and the difficulties of pioneering in Hokkaido, the American advisors conducted the first systematic surveying and mapping of the island, assessed mineral and timber resources, established wood processing facilities, and introduced wheat, corn, grasses, and new breeds of cattle, sheep and horses to the island. Their presence set the precedent for the large-scale agricultural development that would both eat away at the forested home of the brown bear and introduce the damage control kill mechanisms that would govern interactions with the bear over the next century.

It is possible that the Western influence throughout Meiji Japan also contributed directly to the loss of a traditional connection with the natural environment. Buddhism scholar Allen Grafton (1985:245,246) notes that with the official separation of Buddhist and Shinto religions, ordered by the Restoration government in 1868, land ownership patterns changed significantly. In turn many of the cultural rituals recognizing the natural

environment that had been associated with the shrine/temple landholdings were lost.

As a consequence the contents of the relationship of people to nature changed drastically and followed other patterns of use that are not informed anymore by what goes on in the religious centers. This rearrangement of Japan may have cut the umbilical cord to ritual allowing people to deal with nature in a totally different way, which may have been what we call today: ecological.

While Buddhist and Shinto rituals maintained some forests and mountains as sacred areas in pre-Meiji Japan, by the time the Japanese government made colonization of Hokkaido an official policy, those traditions were weakening, and very few seem to have accompanied the colonists to Hokkaido. Instead of religious centers influencing patterns of land use, the role models in Hokkaido were advisors from the United States, to whom Hokkaido was a garden to be brought into cultivated production.

A 1968 Hokkaido government publication, Foreign Pioneers, describes the hardship endured by Edwin Dun, advisor for the establishment of animal husbandry, and matter-of-factly credits him with the elimination of wolves from the area with the introduction of strychnine poisoning. Dun had arrived in Japan in the summer of 1873, with over 100 select cattle and equal number of sheep, and was put in charge of an experimental farm near Tokyo. He moved to Hokkaido in 1875 and worked as an advisor on all aspects of animal husbandry until the demise of the *Kaitakushi* in 1883. Ironically, one of the strongest impressions Dun had of Tokyo before leaving for Hokkaido, was the wealth of wildlife apparent even in the city (Dun, 1991).

In referring to the number of non-target species killed by their wolf

poisoning attempts (“hundreds of foxes, crows, and an occasional Ainu stray dog”) Dun (1991:38) remarks on the unavailability of the situation. To him, the predators were a threat to his very reason for being in Hokkaido, and his response was the very one that was systematically exterminating similar predators in the U.S. He notes that the wolf, “...was not dangerous to man so long as other prey is to be had for the killing,” claiming that they fed on deer in the winter and horse meat in the summer (1991:36). The wolf was not alone, however, as a targeted impediment to successful stock operations in Hokkaido.

The introduction of large-scale cattle and sheep raising activities exacerbated the conflict between humans and bears as well. Benjamin Lyman, a geologist surveyor for the Capron mission wrote in 1875, “The presence of bears and wolves in the mountains ...will perhaps be some hindrance to the introduction of sheep and even larger cattle; and perhaps it will be necessary to encourage still further their extermination by offering bounties , as is done in other countries” (Capron et al, 1875:461). Similarly, Thomas W. Blakiston (1883:44) noted that bears were numerous in Hokkaido, and “often very destructive among horses,” while also occasionally attacking people.

Both the wolves and the bears were undoubtedly impacted by a severe drop in deer numbers due to a combination of climactic and human factors. Colonization by the Japanese offered new market opportunities for Ainu hunters. Dun reported that in one district alone more than 75,000 skeletons were found after the particularly harsh winter of 1878 (Dun, 1991). Although he attributes these losses to overzealous Ainu hunters, there was no doubt a good number of natural winterkill in those figures. At the same time, however,

the *Kaitakushi* opened a deer meat cannery in 1879 near Sapporo, and the demand for deer meat coupled with the harsh winters soon brought the Shika deer to the brink of extinction from Hokkaido. The cannery itself was only operative for two and a half years (Hokkaido Government, 1993a).

It is conceivable, then, that at this time when deer numbers were extremely low and the winters were harsh, that wolves and bears would be tempted to turn to the introduced stock animals for food. In response to the damages, from 1877, the Hokkaido government introduced a bounty on wolves and bears. It took only 11 years before wolves were essentially eliminated, so the bounty payments ended in 1888. The bounty for bears ended at the same time, because there was enough incentive to sell the gall bladders and hides (even the *Kaitakushi* itself was a buyer) that the bounty was no longer considered necessary. At the time, the combination of incentives increased harvests dramatically. Kadosaki and Inukai (1992) note that in the final two bounty years, a total of 2158 bears were reportedly taken. They point out that the 1892 "Hokkaido Gun Hunting Guide" reported that bear numbers were on the decline.

Clearly, then, the operative attitude toward wildlife was primarily as a utilitarian contributor to economic growth. The boom in the deer meat market became a bust for the wolf and at least a knock for the bear, as they no doubt sought to make up for a lost natural food source. American advisors to the *Kaitakushi* no more recognized the value of a natural predator-prey balance than did their comrades in the United States at the same time. Ironically, Kiyotaka Kuroda requested information on the management of productive

wildlife populations in North America and Europe, and Capron obliged with a brief description of the history of game management in Europe and three insightful prescriptions:

- * limiting the hunting season to allow growth and maturation of the young;

- * forbid the use of “wasteful and barbaric” poisons (aconite)

- * set bag limits based upon “estimating the annual increase as it is done in seal fisheries in America (Capron et al, 1875:580-582) . Hunting of deer was completely stopped from 1889 through 1901, but the bear continued to be pursued as both a pest and a valuable commodity.

At the same time, the bear did represent a danger to many Japanese settlers in unfamiliar territory. A number of human fatalities, some on the scale that makes them historic legend even today, contributed to a widespread fear of the bear. The 1878 deaths of 4 people within the Sapporo and in December 1915 deaths of 7 people near Tomamae were both attributed to individual bears (Kadosaki and Inukai, 1992; Kimura, 1983). Today a small monument and museum at Tomamae attest to the lasting memory of the attacks. Between the years 1904 and 1933, 103 people were reportedly killed and another 277 injured by bears in Hokkaido (Inukai, Kadosaki, 1992). For the people of Hokkaido at the turn of the century, the bear was thought a threat to both livelihood and life.

By the turn of the century Hokkaido’s population had broken the 1 million mark (Kadosaki and Inukai, 1992). Lowland forests continued to be cleared and seeded for crops and pasture. The mountains produced timber and

a stream of coal and other ores that fired Japan's burgeoning economy, all based on the initial recommendations of Horace Capron and his assistants. There is little evidence that in the opening of the Hokkaido frontier, the Japanese worked with any more affinity for the natural environment than did the developers who were similarly opening the American West. As happened in the United States, the indigenous peoples were swept up in the rush to modernize, and their fundamental dependence on the produce of the natural environment was supplanted by a market economy. Wildlife became a valuable commodity, when it did not interfere with those more valuable. Ritual expressions of the connection to the wild were diluted, until all that remains today are occasional demonstrations of the form and anthropologists' notes on the function in earlier times.

In the 20th century the bear would continue to be pursued as both product and dangerous beast, but it would also find itself watched by a growing number of the awe-inspired or simply curious. Some would even begin to see it as possessing a spirit all its own, as the Ainu had earlier described, although the removal of its hide would be as much for the pursuit of knowledge as for material gain. From the 20th century scientific observations of the bear began. At first these observations led only to increased pressure on the bear; but in recent years, it has been science that has called for a reconsideration of its value.

CHAPTER 5

THE HUMAN RESPONSE: ORGANIZED BEAR HARVESTS

Because the current damages caused by the brown bear reflect both the (*productivity of*) the natural environment and the specific ecology of the bear itself, it will be impossible to completely eliminate the problem. However, without concerted efforts at minimizing the extent of the damage, Hokkaido's development cannot proceed as planned. As the first step toward damage prevention, we should strive to minimize bear population numbers; we certainly can't change Hokkaido's natural environment simply to exterminate the bear.

Tetsuo Inukai, (1967: 73)

The history of contact between bears and the Japanese residents of Hokkaido this century has been primarily adversarial. As reflected in Inukai's comments, with the influence of American advisors, the Japanese government set out a development path for the island, and the bear represented a threat to those plans. Four years later Inukai made a similar argument during the 1970 International Conference on Bear Research and Management in Calgary, Alberta, Canada. At a meeting in which most participants were addressing population declines and regional extinctions, Inukai (1972: 333) noted, "Up to now no effective method to diminish the number of bears has been found." It was soon after this statement, however, that research began to show that bear numbers were declining in particular regions of Hokkaido.

In the century that followed colonization of the island, the regional and local governments continued to encourage harvest of the bear, both as a game species and as a dangerous pest. To understand why bear populations show signs of decreased size and distribution on Hokkaido, one must first consider

the history and organization of the harvest pressure that continues today.

In 1993, 247 brown bears were harvested legally in Hokkaido. Of this total, 162 were taken in “damage control actions,” and 85 were taken in the sports hunting season that runs from October 31- January 31 (Table 1). Pest control permits are issued by the Hokkaido government to local members (one per person per year) of the *Ryouyuukai*, or Hunters’ Association. In private conversation, it was explained that the number of permits issued to any one locality are determined more by historical precedent than any measure of local population status. When a bear is discovered to have caused damage to agriculture, or to be near a human settlement, a request is made to the regional wildlife officer of the Hokkaido government, who upon determining that the bear does represent a threat, contacts the permit holders in the local area. Historically, it is said, permission has rarely been denied, but heated discussions at a public meeting regarding brown bears in November 1993 surrounded recent attempts by wildlife officers to look more carefully at the circumstances associated with the appearance of individual bears before granting permission. Currently, damage control actions can occur legally year round when a bear enters “human territory.” However, from 1966-1990 one official government damage control policy even allowed pursuit of the bear in its own realm; indeed into its very den.

In 1962 Mt. Tokachi, a high altitude active volcano in the center of Hokkaido erupted, limiting natural food production in the forests and contributing to an exodus of bears toward rural farms and towns. In that year alone, 126 horses, 160 cows, and 459 sheep were wounded or killed by bears.

Three hunters on patrol were killed by a bear that turned on them. As a result, the Hokkaido government again offered bounties from April 1963 to 1980, and three years later instituted an official spring damage control hunt (Kadosaki and Inukai, 1992). While snow remained in the mountains and forests, a newly emergent bear could be easily tracked and bears could similarly be found still in their dens. As an example of the fervor with which bears were being pursued, in Teshio, Northern Hokkaido over the course of 10 days in April of 1966, a literal army of 148 hunters with the support of 260 self defense force members 50 regular vehicles, 4 snow vehicles and 4 helicopters, killed 39 bears (Inukai, 1967:75).

In the 25 year history of the “Spring Hunt” (1966-1990), an average of 284 bears were killed each year in control actions, while an additional 149 per year were taken as a part of the “sport hunting” season (Table 1). Ironically, the spring hunt had been long advocated by a natural historian aware of the Ainu tradition of spring den hunting season. Had the Ainu resorted to similar man and firepower, perhaps they too would have faced the decline in bear numbers that appears evident today. Signs that the policy was having its intended effect on bear numbers and the recognition that the bear was completely disappearing in some local areas contributed to the cessation of the spring hunt in 1990.

In addition to the damage control actions, bear numbers are further limited by a three month sports hunting season. Between October 1 and January 31 of the following calendar year, for approximately \$150 in licensing and registration fees, sports hunters face no bag limit for brown bears.

Similarly, there are no sex or age limitations for bears harvested at this time. Until 1983 box traps were allowed for use by sports hunters. Until 1992 foot-hold snares were allowed for use as well (Hokkaido Government, 1993a). “Baiting” an area with offal is allowed under current regulation, but there are signs that it too may be forbidden (T. Mano, pers. comm.) .

Despite the cessation of the Hokkaido Government’s bounty system, there are still strong economic incentives for killing brown bears. According to Kadosaki and Inukai (1992), as of 1991, 117 of the 212 local governments throughout the island still offer bounties of their own, the majority being between \$100-200, but ranging to as high as over \$900 per bear. In addition, hide and internal organs from bears taken in both control kill actions and during the sports hunting season can be freely sold by individual hunters. According to Mills and Servheen (1991), live cubs can be sold wholesale for more than \$2,000; hides are sold for \$400 wholesale and as much as \$3,000 retail; canned meat is sold retail for \$133/kg ; and gall bladder is sold wholesale for \$7.50 /gram and between \$12-\$84/gram retail. In private conversation, hunters and others aware of the bear parts trade in Japan claim that a large, healthy bear can be worth as much as \$9000 on the open market.

Given the negative attitudes associated with the bear and the substantial financial incentives for market hunting of bears, one might wonder why harvests are not even higher and the population of brown bears on Hokkaido persists. Again, although population data is limited, the productivity of the Hokkaido natural environment certainly enhances recruitment within the bear populations. In addition, at least two socio-cultural explanations are

plausible. The first is the possibility that despite the high harvest numbers reported in government statistics the actual number could be higher still. The second depends on several factors that limit the number of hunters on the land.

Because wildlife management personnel are few in number, only a limited amount of information can be gathered and monitored. There are no game check stations during Hokkaido's hunting season. There are no prefectural game wardens conducting patrols or license checks. There are some restricted areas, off limits for hunting, and permits are required to hunt on National Forest lands. Hunters are asked to report their success to the regional office of the Hokkaido government, and are encouraged, but not required, to send internal organs, a femur, and a tooth from each bear they kill to the Hokkaido Environmental Sciences Research Center (Hokkaido government, 1993b).

Poaching is not perceived as a big problem. The limited number of guns and the fact that hunting in Hokkaido is usually a group activity are said to explain its absence. Still, in 1993 alone, two separate bear poaching incidents were reported within restricted areas of Shiretoko National Park (Hokkaido Shinbun, 4/6/1993). But the lack of field personnel limits the information that can be gathered by the Hokkaido government either about poaching, or legal kills that simply aren't reported.

If government statistics do reflect actual harvest numbers, the relative restraint during the sports hunting season may reflect the impenetrability of the dominant undergrowth of Hokkaido, the strict regulation of guns, the

changing demographics of the hunting population. The sports hunting season itself offers only limited access for would-be bear hunters. At the start of the season the density of understory vegetation (dominated by *Sasa* bamboo spp) makes both tracking and spotting bears difficult (Aoi. 1985:24). As accumulating snow enhances access to the deeper mountains, it similarly sends bears to their winter dens.

Japanese gun ownership laws also influence the number of sports hunters. Application for ownership of a shotgun for sports hunting is first reviewed by the local police department. After approval the shotgun must be held without incident for ten years, and the bearer is subject to periodic review by the police, before an application can even be filed for possession of a more high-powered rifle. According to spokesman for the Hokkaido Hunter's Association, these tight regulations are one of the main factors behind a decline in the hunting population (Nakajima, 1993).

Hunter's Association membership is characterized by declining numbers and an increasing average age. From a high of 19,699 in 1978, membership decreased annually to just 8,992 in 1992. More than 54% of the current members are age 50 and above while another 34% are age 40 and above (*Hokkaido Ryouyuukai*, 1992). Because no big game hunting licenses do not discriminate among species, the Hokkaido Government has little data on the actual number of hunters pursuing bear. Hunting Association spokesman Nakajima (1993) estimates that active bear hunters account for little more than one hundred of their registered members.

Despite the declining numbers of the hunting group itself, even it as an

organization recognizes the decline in bear numbers. In 1992 the national Hunters' Association introduced a self-imposed quota system for bear harvest. Targets for the 1992 and 1993 seasons were set at approximately 70% of previous year's harvests. Despite the good intentions, the 1992 harvest in Hokkaido exceeded the target of 162 bears by another 60 (Hokkaido Shinbun, 8/11/1993). Self-imposed restrictions on total harvest numbers, while laudable, do not address either the demand for control kills by members of the rural community or the reasons that bears continue to be seen in developed areas

Building on the recent heightened concern for conservation and management of the bear, researchers and government officials in Hokkaido have begun to consider alternative ways of minimizing conflicts with bears. While both the economic and the social/psychological (fear factor) demand for bear harvest remains even more firmly entrenched in local government practice, the Hokkaido government has begun to take proactive steps toward a more systematic management of bear-human conflicts, to move beyond simply seeking to control bear numbers.

This interest in coexisting with the bear demonstrates few traits that could be described as growing out of any particularly Japanese affinity for nature. Rather, the interest parallels similar trends in conservation movements in North America and Europe. Just as the *Kaitakushi* called on technical advisors from the United States, to assist with the development of Hokkaido more than a century ago, those charged with the creation of wildlife management policy in Hokkaido today turn again to the West for models to

follow. Recent interest in proactive conservation and management of brown bears in Hokkaido reflects a growing interest in both Western wildlife management techniques and the philosophies that underlay them.

CHAPTER 6

FROM CONTROL TO CONSERVATION: INDIVIDUALS AND GROUPS

In the history of wildlife management in the United States there have been men of great foresight whose recommendations and activities formed the basis of many of the management practices that persist to this day. At the end of the 19th century Teddy Roosevelt and his comrades in the Boone and Crockett Club influenced not only the attitudes of the American public, but also the laws and management programs carried out by the U.S. government (Trefethen, 1961). With the publication of his text, Game Management in 1933, Aldo Leopold also established himself as one of the fathers of the conservation movement in the U.S. Both men recognized that in the rush to modernization, a great deal of wild country and wildlife had been lost. Both looked to scientific study and management as the means of ensuring the continued prosperity and productivity of that which remained.

Leopold (1949: 187) wrote,

Wildlife once fed us and shaped our culture. It still yields us pleasure for leisure hours, but we try to reap that pleasure by modern machinery and thus destroy some of its value. Reaping it by modern mentality would yield not only pleasure, but wisdom as well.

Individual efforts in defense of wild country like those by Leopold and Roosevelt, articulate for the public and government agencies the specific

actions deemed necessary to correct a perceived problem. In Hokkaido as well, individual and small group efforts characterize the interest this century in raising public awareness of the brown bears on the island. Regardless of what questionnaires and surveys may reveal about a peoples' attitudes toward wildlife or a particular species like the bear, the actions of a relatively small number of people can greatly determine what is done to eliminate or conserve that species. Interest in the Hokkaido brown bear historically, and currently, has run the gamut from calling for its removal to cries for its preservation. Considering some of the more prominent figures in this history and how their activities have affected public awareness and government policy toward the bear reveals the continued influence of Western thought and wildlife management practice while also allowing a consideration of the future prospects for the future status of the bears on the island.

Early this century, Hokkaido gave rise to a man of foresight at the same time that Roosevelt was making his presence known in the U.S. Saburo Hata was a professor of Zoology and the curator of the museum for the Sapporo school of Agriculture (later Hokkaido University) at the turn of the century. In 1911 we wrote a short treatise entitled simply, *kuma*, or "Bears." Hata related the known distribution of bear species around the world, observations on feeding habits and other behavior, as well as the problems that had arisen between bears and people. Despite the troubles and prevailing attitudes toward the bear, Hata (1911: 87) described it in human terms: tolerant, fair, honest, restrained in the use of its power. He even advised, "If the people of the world become dishonest, superficial, insincere, or the like, it will surely be the

bear that brings us back in line.” Hata (1911: 88) considered the bear to be a great representative of their northern country and called for new measures to prevent conflicts so that “such a grand creature will remain a part of our northern country for eternity .“ The effects of Hata’s suggestion were not immediately apparent; in 1912, over 500 of these symbols of northern grandeur were killed. If anything, attempts to decrease the number of bears in Hokkaido became more organized by the Hokkaido Government.

Despite the precedent he set, Hata’s vision was not acted upon for more than half a century. The first applications of scientific observation and management of the bear were basically attempts to make a better bear trap. Rather than following through on Hata’s challenge, the next curator of the museum and noted authority on brown bears in Hokkaido would apply his knowledge of Ainu practices and bear behavior toward the increased harvest of the bear. With Tetsuo Inukai the bears of Hokkaido came under greater scientific scrutiny and as a result, greater hunting pressure.

Inukai’s career spanned more than fifty years until his death in 1989. Throughout the period he conducted a variety of research both on the habitat and habits of the bear as well as on the Ainu interaction with it. It was through Inukai that the Hokkaido brown bear was first described to a wider domestic and then international audience.

In 1967 Inukai wrote an article entitled *heranai higuma no seitai* , or “Why bear numbers aren’t dropping.” In it he puts forward the theory that while bears have been displaced from traditional habitats because of agricultural and urban development, they now have more nutritious food

sources (cultivated crops and food waste) so that bears can thrive at even higher densities than before (Inukai, 1967). This conclusion further supported earlier calls for the Spring den hunt (Inukai, 1932), the use of strychnine-laced carcasses as bait (Inukai 1966), and other measures designed to limit bear numbers.

Toward the end of his career even Tetsuo Inukai's perception of the condition of the brown bear in Hokkaido appears to have changed. An increasing number of papers written with his protege and successor as Curator of the museum, (now the Hokkaido Pioneer Museum) Masaaki Kadosaki, note that "... from the viewpoint of harmonious coexistence of humankind and nature the maximum annual catch of bears should be limited to 300 or below" (Inukai et al, 1985:84).

Kadosaki has carried the concern one step further by advocating a conservation system for bears based on core preserve forest areas within which bears would be protected. Outside the area, in 2 kilometer-wide buffer zones surrounding inhabited areas, problem bears would be freely controlled (Kadosaki and Inukai, 1992). He continues to organize travelling exhibits of the museum's extensive collection of artifacts from Ainu and pioneer interaction with the bear, and publishes research bulletins on aspects of bear morphology and behavior from the museum.

A colleague of Kadosaki's contributed to greater public awareness of bears through his photography and observation of bears in Hokkaido's interior. From 1970 through 1984, Mamoru Odajima spent most of his summers on the high plateaus (1400+ meters) and mountains of Taisetsuzan National Park.

The most well-known of his works is a 1984 book, *Yasei higuma keiko*, or K-ko: A Brown Bear in the Wild, which followed the life of a single female and her cubs through several seasons (Odajima,1984). Her name has come to be associated with the region of the Park she inhabited, to the point that visitors to the hiking trails still inquire as to her whereabouts.

While interest in K-ko was at its peak, a retired Forest Service employee wrote a popular compendium of history and personal observations of the bears of Hokkaido. In *Higuma Hyakka*, or A Guide to Brown Bears, Moritake Kimura (1983) draws on 40 years of field experience and research to describe the history of confrontations between humans and bears, the habits of the bears, and steps that can be taken to prevent further problems. Kimura also writes of bears frequently for the Hokkaido Times newspaper, feeling a responsibility, he says, to share his experience and knowledge with the public (M. Kimura, pers. comm.).

These individual research and publication efforts have done much to raise public awareness about the presence of the brown bear in Hokkaido. However, much of the current push to generate systematic management plans reflects the success of a handful of university students who convened an extracurricular group to learn about the bear. In the twenty odd years since its inception, the Hokkaido University Brown Bear Research Group has become the driving force behind the research that has brought attention to the decline of the bears in Hokkaido.

The Hokkaido University Brown Bear Research Group, or *Kumaken*, began in 1970 when student unrest shut down universities throughout Japan.

According to Iwao Ogawa, (1993) one of the three original founding members, the creation of *Kumaken* was an attempt to bring together students and faculty from a variety of academic disciplines and personal interests to share perspectives and expertise. *Kumaken* became a forum not only for scientific observation and study but also for the application of their findings to the development of management policies and systems designed to minimize conflicts between bears and people without relying exclusively on control kills (Yamanaka, 1993b). The choice of the bear for a study subject reflected the fact that it was widely distributed throughout Hokkaido, and therefore was a factor in many outdoor activities.

From the inception of the group, *Kumaken* members worked with a variety of “associates” both within the University and throughout Hokkaido. Interested Professors provided lab space; Hunting Association members offered advice on tracking; a local bar gave them a warm reception that continues at least weekly to this very day. Members worked with the body of literature that had been built up on Hokkaido’s brown bears as well as with the papers and texts they could gather from North America and the Soviet Union, necessitating time-consuming translation from English and Russian into Japanese. Such persistence of the student members, who initially funded all activities from their own pockets, built the foundation for many of the scientific studies upon which the management of bears in Hokkaido rests today.

The earliest field studies were simply attempts to see bears in the wild. The group chose to focus its attention on the mountains of Taisetsuzan National Park, a 231,000 hectare area in the center of the island. Their first

attempts were fruitless, earning them the nick-name , “see no bears bear research group” But with time and the extension of their study areas to Shiretoko National Park in the northeast, and the Hokkaido University Research Forest in Teshio in the west, observations of bears and their sign became more frequent, and analyzable data were gathered (Hokudai Higuma Kenkyuu Gruppu, 1982).

Reflecting the increasing influence of the Western literature, later studies concentrated on measures of population parameters and habitat use. Collection of scat and procurement of stomach and related viscera from hunters began in earnest, and by the mid-seventies *Kumaken* members began to get contracts to conduct bear occurrence studies and interviews of the public for local governments. Several students were able to incorporate their work with the group into senior theses and eventually published works. What they were finding was that despite Inukai’s earlier claims to the contrary, the bear populations were showing real signs of decline and isolation.

A 1981 paper by *Kumaken* member Koichi Kaji reviewed brown bear harvest data from earlier in the century as well as collected from his own questionnaire to 1600 people in land management agencies and hunting groups. Kaji (1981) concluded that forest cutting and agricultural development during the 1950’s and ‘60’s contributed to an increased isolation of subpopulations that were showing signs of decreased numbers themselves. As well, the spring den hunt, by doubling the pressure in mothers with cubs when compared with fall harvests, represented an extremely high pressure on the populations. Similarly, Toshiki Aoi (1985, 1990) documented the rapid decline

in bear numbers in northern Hokkaido, as well as the forest cutting and development that was contributing to the decline of habitat .

These and other research projects undertaken by *Kumaken* members have contributed significantly to the current understanding of the brown bear in Hokkaido. But more significantly, *Kumaken* has been a means for interested students to learn Western wildlife science and management techniques that receive little attention within most of Japan's university system. The forward to the 1986 release of Aldo Leopold's classic 1933 text, Game Management, notes that by 1984 in the North America, 95 universities and colleges had developed wildlife curricula, with a total enrollment of more than 7,500 students (Jahn, 1986). In contrast, even today there are only two universities in Japan with explicit "wildlife" programs. Even Hokkaido University, home of *Kumaken* , has no wildlife biology or management curricula. Both graduates and current students lament the lack of support for applied wildlife management curricula.

Kumaken membership remains the common thread for many of the researchers and other professionals active in the development of bear conservation measures today. As will be noted later, *Kumaken* alumni make up a large proportion of the committee drawing up wildlife management guidelines for Hokkaido. Many of the more than 200 current and former members hold wildlife research and education positions in government and private organizations throughout Japan. The experience and perspective gained during their *Kumaken* years carries over to their current efforts in wildlife conservation today.

Because his position is explicitly charged with research on the brown bear, Tsutomu Mano is the most obvious demonstration of the realization of the *Kumaken* dream. Tsutomu Mano is the first wildlife biologist filling the job category “bear biologist” for the Hokkaido government. He received his Ph. D. in Applied Zoology from Hokkaido University in 1990. In his dissertation he analyzed population trends exhibited by the bears of the Oshima peninsula in southern Hokkaido. He represents the brown bears of Japan on the IUCN Species Survival Commission’s Bear Survival Group. As the only official brown bear research biologist for the Hokkaido government, Mano is in a unique position to influence the direction of management policy.

In addition to Mano’s studies, bear research carried out within Shiretoko National Park in the northeast part of the island also reflects the *Kumaken* legacy. Masami Yamanaka was a *Kumaken* member from 1978, and has worked as the chief wildlife researcher manager within Shiretoko National Park since 1987. Yamanaka actually works for the local town of Shari, which established and operates the Park’s Nature Center. He did much to encourage the town government to create and fund the research position he now holds. As a result he has some freedom in determining research priorities for the center, and brown bear ecology research occupies an understandably high percentage of the total program.

Again, the official bear research programs overseen by Mano and Yamanaka, as well as similar government research on Sika deer carried out by *Kumaken* alumnus Koichi Kaji, are valuable for two related reasons. First, they are the first systematic government efforts to create a scientific baseline

from which to develop management prescriptions. And secondly, they increase the opportunity for students of wildlife science to get the practical field experience that remains limited within University curricula. As such, the early *Kumaken* studies have come full circle: the annual *Kumaken* census of bears in the highlands of Taisetsuzan National Park has become an official government study directed by Mano and carried out with participation by current *Kumaken* members. Radio-tracking and food habit studies in the Oshima peninsula and Shiretoko National Park can be carried out with funding from Hokkaido and local governments.

Similarly, private organizations encouraging public awareness of the need for more systematic management and conservation of bears exhibit a similar *Kumaken* influence. Founding member Ogawa now directs an environmental education center, *Econetwork*, in Sapporo. Ogawa also cooperated with Naoko Maeda (*Kumaken* '71) a researcher at the Noboribetsu bear farm, in both the publication of the magazine *Higuma*, or "Brown Bear" from 1976 - 1991, and the creation of the *Higuma no kai*, or Brown bear Association, an annual public meeting since 1981 at which research findings are presented and open discussions allow free debate among a variety of perspectives toward the bear.

In short, these efforts represent the first steps toward the development of an integrated system of wildlife research and management for the island. But within that genesis there has been no great push to create a system that draws heavily upon traditional Japanese or Ainu attitudes toward the natural world. Instead, *Kumaken* members and other interested people refer to

Western management models and call for *kokusaiteki*, or “international” styles for management of wildlife and the natural environment. In 1990, Mano, Kaji, and other colleagues in wildlife research organized and convened a Bear and Deer Forum in Sapporo, inviting noted wildlife management researchers who had been attending a conference in Tokyo. As a result of the public attention the conference received and the advice offered by the Western scholars, organizers were able to use this positive response as a justification for the creation of the wildlife research section in the Hokkaido Environmental Sciences Research Institute. Since its establishment two years ago, the wildlife research section has received inquiries from government officials interested in establishing their own wildlife research centers in Tochigi, Nagano, Yamanashi, and Iwate prefectures as well as from the district of Tokyo (T. Mano, personal communication).

From the time of the Ainu, through the development of the Hokkaido frontier, and to the present day, perceptions of the value of the bear have changed substantially. Although the immediacy of the Ainu relations with the bear has all but disappeared, in recent times the recognition of an existence value for the bear seems to be re-emerging, even if in a more detached, scientific or recreational expression. In a 1992 survey of visitors to a region of Taisetsuzan National Park that is popular in September among both humans and bears, 76% of the respondents agreed that the mountains were bear territory and that public access should somehow be limited to avoid potentially dangerous encounters (Hokkaido Shinbun, 2/4/1993). The success or failure of the attempt to reach Saburo Hata's dream of coexisting with the bear now

turns on attempts to develop policies that give weight to the variety of values associated with the bear.

CHAPTER 7
THE PROPOSED INTEGRATED WILDLIFE MANAGEMENT
SYSTEM (1)

In his 1933 text, Game Management, Aldo Leopold (1933: 411-412) presented his suggestions for, "An American Game Policy:"

1. America has the land to raise an abundant game crop, the means to pay for it, and the love of sport to assure that successful production will be rewarded.

2. There are conflicting theories on how to bring the land the means of payment, and the love of sport into productive relationship with each other. No one can confidently predict which theory is "best." The way to resolve differences is to bring all theories susceptible of local trial to the test of actual experience. The "best" plan is the one most nearly mutually satisfactory to the three parties at interest, namely the landowner, the sportsman, and the general public. No other plan is likely to be actually used.

3. There are some, but not enough, biological facts available on how to make the land produce game. All factions, whatever their differences, should unite to make available the known facts, to promote research to find the additional facts needed, and to promote training of experts qualified to apply them.

Today in Hokkaido, researchers and administrators are working to formulate a wildlife management system appropriate for the island. Despite the fact that many aspects of the social, cultural, and economic setting differ significantly from that of the U.S. in the 1930's, the three points Leopold raised

(1) Material for this section, unless noted otherwise, comes from a series of draft papers used in the "Wildlife Conservation and Management System Working Committee" meetings held in Sapporo on November 24, 1993. At present these are not public documents, however a final version is to be presented some time in 1994. I was invited to attend and participate in the meetings concerning management of Sika deer and brown bear.)

then are mirrored to some degree in the discussion now going on in Hokkaido. Some of the researchers in Hokkaido may be familiar with Leopold's life and work, but even for those who are not, the system of wildlife management he encouraged has become a model they seek to adopt. In the development of proposed guidelines for an integrated wildlife management system in Hokkaido, researchers draw more on Western management models than on their own cultural heritage.

In June 1993, a "Working Committee," composed of government and academic researchers, government officials, and private consultants first met to discuss the development of a set of guidelines for a "Wildlife Conservation and Management System," for Hokkaido. The model guidelines they are creating are limited at first to the management of four species that are either popular game species and/or a source of damage to agricultural crops: the brown bear, the Sika deer, the Japanese crane, and the Ezo upland grouse. Even when they are completed later this year, the guidelines will carry no legal weight; they are meant to be points for consideration by representatives of the local, regional, and national governments as well as by the private and agency land owners and managers whose cooperation and approval must be sought. They are meant to be suggestive simply because such an integrated wildlife management system would be the first of its kind in the country. A packet of materials prepared for subsequent meetings in November, 1993, even included a list of definitions of 17 terms (including *management unit*, *regional subpopulation*, *telemetry*, *light census*, *LANDSAT*) because many of the

fundamental concepts will be new to some of the government officials who will consider adoption of the guidelines.

The description of Western management practices as the base management model reflects the interests of the members of the working committee. Former *Kumaken* members and associates make up six of the ten persons designing the brown bear and Sika deer portions of the system. Understandably, they are attempting to promote a system comparable to the Western models that they have studied. As such, they seek to encourage the citizens of Hokkaido and Japan to embrace Western attitudes toward wildlife management, just as their Meiji Restoration forefathers encouraged adoption of Western economic practices more than a century ago.

The guidelines explicitly recognize wildlife as a resource to be sustainably harvested and utilized. The concept underlying the development of the management system acknowledges the value of wildlife species both for sports hunting and “non-consumptive educational and recreational use.” This concern is quite similar to the definition of game management penned by Aldo Leopold 61 years ago: “Game management is the art of making land produce sustained annual crops of wild game for recreational use”(Leopold, 1933:3). This perspective has allowed for the quantification of a game “crop”, the establishment of numerical population targets for given regions and time periods, and even the calculation of the monetary value of viewing a particular species of wildlife in its natural habitat.

Specifically for the brown bear, the guidelines address one overriding goal:

- arresting the decline of regional subpopulations while maintaining a sustainable harvest;

within four specific component programs:

-maintenance or recovery of sub-population stability;

-appropriate management of habitats;

-provision of damage prevention programs; and

-development of a consensus of human coexistence with the bear

(Hokkaido Government, 1993a).

In one sense the guidelines are a summary lesson in Western wildlife management practices and philosophy, complete with descriptions of population estimation methodology, monitoring programs, and the incorporation of that data into the management system.

As a further measure of the influence of the Western model in Hokkaido, the major theme throughout the working papers and discussions is hunting harvest. Non-consumptive values associated with wildlife are included the conception of the system, but the body of discussion both in the drafts and during the meetings themselves, focused on game harvest. This is despite the great difference between the prominence of hunting in the historical development of wildlife management in the U.S, when compared with the minor pastime that hunting is in Hokkaido. Earlier it was noted that hunter numbers are already low (less than 0.2% of the population both in Hokkaido and

nationally) and in steady decline (*Hokkaido Ryouryukai*, 1993). In contrast, wildlife management arose in the United States precisely because there was such a great demand for sports hunting at the turn of the twentieth century.

While it is certainly true that hunting was common at the time of colonization of Hokkaido, now, when hunting is so limited and in such decline, a wildlife management system that is centered on sports hunting values may not be the most appropriate model. Certainly the collection of fees from the decreasing number of sports hunters would generate only a portion of the revenue needed to implement large-scale management programs. More importantly, the primary reason for hunting of bears, then and now, has been as a means of controlling the damage to agricultural crops and the perceived danger to human life.

Damage control functions were recommended for inclusion among the explicit goals of the system during the November meetings. But considering the fact that damage control actions constitute the greatest proportion of human-caused mortality of the bear, they are arguably the best focal point around which to create a management system. Mano (1993) has pointed out that despite the apparent drop in bear population numbers, discounted agricultural damage values have remained steady over the last decade. Certainly a system that responds to the perception of the bear as a dangerous threat to both life and livelihood will be embraced and supported more widely by members of the rural communities than would a system geared toward sustainable sports hunting. Perhaps this will become more evident as discussion proceeds beyond the current working committee to the individual

communities and management agencies whose cooperation will be necessary for successful implementation.

Revising the proposed guidelines to place more emphasis on the control of human-bear conflicts would not require major revision in the actual implementation of the plan, but simply in the rationale and justification for it. The make-up of the system described in the guidelines consists of a three-fold approach that may allow the flexibility to move away from the hunting dominated theme. Locally administered units would conduct research on wildlife species and develop public education programs to encourage further support.

As presented in November, the management system would be composed of 13 newly devised "management units" that cut across existing political boundaries to better encompass habitat use by individual subpopulations. At least one manager and an assistant researcher would be responsible for the administration of each unit, with the suggestion made that local retirees be recruited as well to offer their familiarity with the local land as well as to act as ears to the talk of the community.

Each management unit would carry out its own scientific population monitoring programs as well as assessments of local socio-economic factors that would then be fed back into administrative decisions, such as allowable harvest of game species. Here, too, the model is not offered with any particular reference to traditional Japanese culture or even the highly evolved wildlife culture of the Ainu. Instead, meeting documents include a diagram from an American textbook on wildlife management and conservation describing the

feedback mechanism of research and monitoring programs. The model is appealing and commonly used in the U.S. where demand for wildlife management is already high. As explicitly recognized in the meetings, however, part of the role of these management units in Hokkaido would be the development of education programs to encourage participation in outdoor activities, to stimulate the demand that a management system would supply.

Here we find one of the most critical points necessary to consider when searching for a particularly Japanese sense of the natural world: the wildlife managers and researchers themselves note that public awareness and understanding of the challenges that wildlife face are seriously lacking and that the success of any management program will depend on effective public education programs to address that limitation. One might expect that a culture so, "in touch with the natural world as to consider it inseparable from itself," (Murota, 1986: 105) would recognize when its very self was being lost.

The environmental awareness that has swept the world in the last two decades has not missed Japan, and interest in the environment is clearly growing. The April, 1992 announcement by the Federation of Economic Organizations (*Keidanren*) of a \$2.3 million program to support environmental organizations (Japan Times, 6/1/92); the Ministry of International Trade and Industry (MITI) plan to study the preservation of wildlife resources in developing countries (Japan Times, 9/28/92); and the March, 1992, introduction of a "Preservation of Endangered Species of Wild Fauna and Flora" bill to the Japanese Diet (Japan Information Center, 1992); are but three examples of a recent trend within Japan to give greater attention to

environmental concerns. The Endangered Species Protection bill became law in April 1993, and land management agencies are now devising implementation plans.

Despite this government attention to environmental problems, however, there has been no great upswell of citizens' activism on behalf of the natural environment. This is understandable given the environment in which most Japanese people live and work. The Ainu inhabited the same immediate environment as the brown bear and that immediacy was reflected in the ritual of their daily lives. Similarly, citizens of pre-Meiji Japan would have had daily contact with the natural world and with the cultural rituals that were used to interpret it. But for most of the people of Hokkaido and Japan today, the immediate environment is now urban, and wildlife is an occasional visual amenity. Proponents of the Hokkaido wildlife management system look to Western wildlife science as a means to reacquaint those urban dwellers with the land and its wildlife, to reintroduce some of the immediacy that has been lost. As Leopold (1933: 38) wrote of the similar period of development in the U.S., scientific study and analysis of ecological data represents only one means of approaching the larger goals of wildlife management:

Education may be considered a success and conservation an assured fact, when both layman and scientist can shift their attention from the symbol to the music- can hear with John Muir, 'every cell in a swirl of enjoyment, humming like a hive, singing the old new song of creation.'"

It will take considerable time and effort before the proposed wildlife management guidelines can be implemented in Hokkaido. Once formulated, the guidelines will be distributed for consideration and discussion among land

management agencies, local governments, and other stakeholders. Only then can resource managers begin to put, "... the theories susceptible of local trial to the test of actual experience" (Leopold, 1933: 411). Perhaps, then, it is too early in the development history of a wildlife conservation movement in Japan to expect anything more than the study of established Western models. The framers of the Hokkaido guidelines explicitly recognize that "wildlife management research in the US is in its 4th generation and that in Europe approaches its 6th, while Japan is just working on its 2nd" (Hokkaido Government, 1993a). However, there are few explicit indications at this point in the discussion that either the traditional Japanese sense of nature or the precedent of the Ainu are being reconsidered within the context of a modern wildlife management system. In the concluding chapter of this paper I will consider if and how this might be done, and what bearing it might have on the conservation status of the brown bears on Hokkaido.

CHAPTER 8
CONCLUSION: TRADITIONAL AFFINITIES AND MODERN
REALITIES

In perhaps his best known essay on conservation, "The Land Ethic," Aldo Leopold notes, "There is as yet no ethic dealing with man's relation to land and to animals and plants which grow upon it. Land, like Odysseus' slave-girls, is still property" (1949: 203). Although wildlife in Japan, including brown bears, is not legally recognized as the property of either the state or the individual, there is little evidence that traditional Japanese conceptions of the natural world have evolved into a visible land ethic in Japan today. On the contrary, at least in the case of the brown bears of Hokkaido, one must conclude that it is the influence of Western conservation practices and philosophies that drives conservation efforts in Hokkaido today.

Continued ecological research will give a more complete picture of the conservation status of the brown bears of Hokkaido. Baseline scientific data, though limited, continues to be compiled. Without documentation and analysis, one can only make conjectures about increased isolation and consequent decreased viability of subpopulations on the island. More thorough analyses of population trends, habitat use, and the negative impacts of continued development of natural forest areas will identify critical issues that may determine priorities for more proactive management actions the Hokkaido government seems willing to explore. For this growing management interest to

be translated into meaningful action for the sake of the bear, however, substantial public support must still be generated. The generation of this public support requires concerted attempts to influence public attitudes toward the bear.

In a seminal study of Japanese attitudes toward wildlife, Stephen Kellert (1991:305,306) concludes that the Japanese sense of nature is limited to a "...typically narrow emotional, ecological, and intellectual context.." and is "...often lacking an ecological or ethical orientation, or a strong sense of responsibility to conserve or protect the natural environment." His findings are consistent with others who have expressed doubts about how traditional Japanese notions and "contrived" artistic representations of the natural environment can address modern natural resource conservation problems (Saito,1992:8; Tyler,1989:55). As noted by Kellert (1991:306), "Effective management and protection of the planet's biological diversity will depend...on moving beyond a narrow emphasis on the aesthetically and emotionally attractive to a broader recognition of nature's value and significance to the human condition."

Perhaps it is exactly those traditional cultural symbols and expressions of affinity for the natural world that could fix public attention on critical environmental issues within Japan today. The familiarity of these expressions and symbols could be used to convey often abstract ecological principles to the general public. The process could be similar to the way in which Western industrial economic practices were adapted within the context of traditional Japanese culture. Achieving this end will require a thorough re-examination of

the context from which the expressions and symbols arose.

Although basically independent of Japanese cultural traditions, the Ainu precedent in Hokkaido represents a unique opportunity for such a re-examination. Ainu cultural symbols and references to the bear are well-known throughout Hokkaido today. Less is known about how the Ainu were able to live in such close contact with the bear without considering it the dangerous menace that it was in the eyes of 19th Japanese colonists and many in the rural communities of Hokkaido today. The Ainu had stores of meat, fish, and grains, and it is clear from the folklore record that these were sometimes raided by bears. But there has been little consideration of how Ainu living practices might have minimized those conflicts. Some of these practices might be directly applicable today, thereby keeping people and bears out of each others' way and decreasing the pressure for damage control harvests.

Recent interest in fuller recognition for the Ainu culture has not manifest itself in calls for brown bear conservation practices. According to representatives of the Ainu community, current efforts are geared first toward full recognition of the Ainu as a people (K. Kawamura, A. Nomoto, pers. comm.). With increased recognition given to the people themselves, there will be increased interest in the material and social aspects of the culture. Further analysis of what Watanabe (1973: 13) described as a "social solidarity between man and nature," could produce both valuable symbols to articulate an existence value for the bear as well as practical information on how to behave when in bear habitat. Again, this would not be a substitute for scientifically derived management prescriptions; rather it would complement

those programs by appealing to a sense of cultural heritage, much as appeals to the Native American tradition and even the Romantic tradition are made in conservation programs in the United States today.

As indicated in the expressed willingness among Taisetsuzan National Park visitors to limit entry to critical bear habitat, there is some, perhaps growing recognition of an existence value of the bear. Encouraging the growth of that value among the public is critical to the success of bear conservation efforts based on Western wildlife management science.

Although the culture of the Ainu is the appropriate reference when considering ways for the people of Hokkaido to coexist with brown bears, the principle of re-examining traditional conceptions of the natural world for both information and inspiration could be equally valuable throughout Japan. In a 1991 essay comparing the conception of nature expressed in some traditional forms of Japanese Buddhism with the conservation esthetics and ethics of Aldo Leopold, Odin (1991) concludes that both perspectives recognize an interdependence of all life forms, and can therefore complement each other as sources for the re-establishment of a more harmonious human-land relation. Similarly, Tyler (1989: 56) has noted that some Japanese conceptions of the natural world, (“Noteworthy among these is the proposition that ‘rocks, plants and trees, each and every one are the Buddha’s holy forms’”) might be useful in the development of a new environmental ethic today.

But again, re-examination must go beyond the outward expression of those conceptions to discover the historical contexts that spawned them. Further analyzing the influence of Buddhist and Shinto land ownership on the

cultural rituals before the Meiji Restoration , and contrasting those practices with current land development practices might be one effective means of conveying to the public both the consequences of current development practices and what alternatives are possible.

It has been argued that the Western influences that were apparent in Japan after the Meiji Restoration of 1868 contributed to the loss of ritual connections to the land that described the Japanese affinity for the natural world (Murota, 1985; Graphard, 1985). It may be ironic that Western scientific concerns for the loss of wildlife species diversity could be the impetus for re-introducing that affinity to the Japanese people today. A coordinated appeal to the value of wildlife management science complemented by a recognition of valuable cultural heritage might return the Hokkaido brown bear to its position as *Kamin kamui*, or Master of the Mountains.

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