Introduction

The brown or grizzly bear (*Ursus arctos*) is the most widespread of any bear species. In North America (where it is known as the grizzly bear) it is found throughout Alaska, into western Canada and in five subpopulations in the states of Wyoming, Montana, Idaho and Washington (Servheen 1990), see Figure 5.1.

Status and management of the brown bear in Alaska

Sterling D. Miller and John Schoen

Status of the brown bear

Alaska has the largest population of brown and grizzly bears (hereafter termed brown bears) of any state or province in North America. Internationally, larger populations occur only in Russia (Chestin *et al.* 1992). Brown bears in Alaska currently occupy all their historic range. In some portions of their range in Alaska, habitat destruction, hunting, and disturbance associated with development have reduced bear densities. Both North American subspecies are found in Alaska. *Ursus arctos middendorfi* occurs on Kodiak, Afognak, and other adjacent islands and *U. a. horribilis* occurs in the rest of Alaska and North America (Rausch 1963). Bears in coastal portions of south central and southeastern Alaska (including both subspecies) are commonly referred to as "brown" bears while those occupying northern and interior habitats are called "grizzly" bears. These distinctions have no taxonomic validity and, in this report, both are termed brown bears.

Brown bear populations throughout most of Alaska are stable (Miller 1993). There are concerns, however, because Alaskan brown bears face many of the same intolerant attitudes and threats that have led to extirpation of the species throughout most of their historic range in the lower 48 states and Mexico. Advances during the 20th century in ecological consciousness, legal protection, wildlife management, and the existence of large reserves of public lands in Alaska, however, appear adequate to assure the survival of both subspecies in Alaska through the 21st century. Reductions in population density and extirpation in some localized areas will likely occur in portions of Alaska during this period.

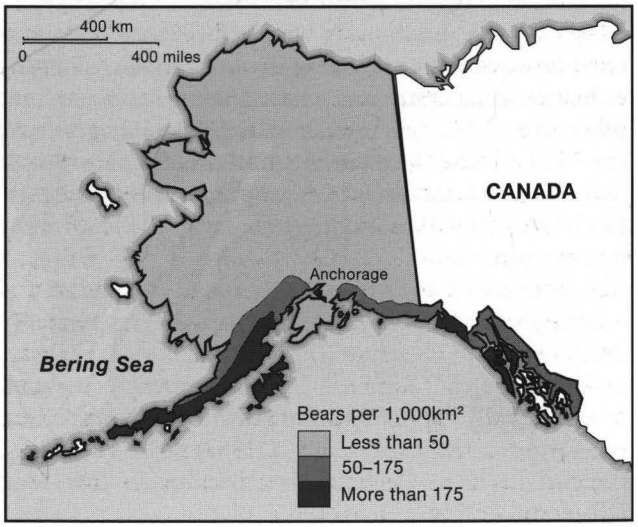
Distribution and density of brown bears in Alaska

Most of Alaska from sea level to approximately 1,500m elevation is occupied brown bear habitat (Figure 5.2). The subspecies *horribilis* occurs from Unimak Island, on the Aleutian chain, throughout mainland Alaska, to Alaska's north slope bordering the Arctic Ocean. Brown bears occur in the riparian corridors along the lower Yukon and Kuskokuim Rivers. A few wandering bears are occasionally found in the wetland delta habitat between these rivers but this area is not considered brown bear habitat (Figure 5.2). In Prince William Sound, they occur on Montague, Hinchinbrook, Hawkins, and Kayak Islands.

In southeastern Alaska, brown bears are abundant on Admiralty, Chichagof, Baranof, and Kruzof Islands but are absent from the more southern islands of Prince of Wales, Kupreanof, Etolin, and adjacent islands; a few wandering brown bears are occasionally found on Mitkof and Wrangell islands which are close to the mainland. In southeastern Alaska, black bears (*U. americanus*) and wolves (*Canis lupus*) occur on the large southern islands not occupied by brown bears (including Mitkof and Wrangell) but not on the northern islands occupied by brown bears. This distribution may reflect post glacial dispersal of brown bears from the north and by black bears from the south following retreat of Pleistocene glaciers (Klein 1963). Black bears, wolves, and brown bears are sympatric in many portions of interior Alaska.

The distribution of brown bears in Alaska appears to have remained relatively unchanged since European and Russian exploration during the mid-1700s (Figure 5.2). Brown bear densities vary greatly in different regions of Alaska. Density estimates conducted using standardized techniques (Miller *et al.* 1987) throughout Alaska reveal densities >175 bears/1,000km^2 in the coastal populations

Figure 5.2. Portions of Alaska occupied by high, intermediate, and low density populations of brown bears (*Ursus arctos*). Classifications were based on subjective extrapolations from areas where density was estimated through intensive studies (Miller *et al.* in prep.) Brown bear distribution in Alaska has remained unchanged during 1800–present.



of the Alaska Peninsula, Kodiak and Afognak Islands, and the northern islands of southeastern Alaska (Figure 5.2) (Miller *et al.* in prep.). Approximately 50% of Alaska's brown bear population occurs in these high density populations which represents about 8.5% of the brown bear habitat in the state (Figure 5.2). It appears likely that these high densities are supported in large part by abundant runs of up to five species of Pacific salmon (*Oncorhynchus* spp.) and lush plant and fruit resources found in these warmer maritime environments. Bears in these high density portions of the Alaskan coast are larger and generally darker than bears from interior and arctic regions of Alaska. These size and color differences have resulted in coastal bears being commonly called "brown" bears while the smaller and usually lighter-colored interior bears are called "grizzlies".

Densities less than 40 bears/1,000km^2 have been reliably estimated in the portions of interior Alaska without access to abundant salmon runs (Figure 5.2) (Miller *et al.* in prep.). These estimates range from 6.8/1,000km^2 on the coastal flatlands and adjacent foothills of the northeastern Brooks Range (Reynolds and Garner 1987) to 34 bears/1,000km^2 in Denali National Park (Dean 1987). These low density habitats represent about 84% of the brown bear's distribution in Alaska (Figure 5.2). Approximately 41% of Alaska's brown bear population lives in these low density habitats.

Intermediate densities of 40–175 bears/1,000km^2 are thought to occur in small areas of south-central Alaska near the coast and on the mainland in southeastern Alaska. These areas represent approximately 7.5% of Alaska's bear habitat and contain about 9% of the population (Figure 5.2). The classification of these areas as intermediate in density is based on subjective impressions; bear densities have not been directly measured in any of these areas.

There is no precise estimate on the number of brown bears in Alaska. During the period 1985–1992, however, information on brown bear density was estimated in 15 Alaskan study areas using standardized capture-mark-recapture techniques (Miller *et al.* in press). Density estimates using other techniques were available in four other areas (Miller *et al.* in press). In 1993, biologists from the Alaska Department of Fish and Game were asked to make subjective extrapolations from these density estimates to obtain population estimates for each of the 26 game management units in Alaska (Miller 1993). Biologists were also asked to subjectively estimate minimum and maximum numbers for their areas based on the reference density values. This resulted in an estimate of 31,700 bears in Alaska with a lower limit of 25,000 and an upper limit of 39,100 (Miller 1993). This estimate is lower than previous estimates for Alaska (Peek *et al.* 1987) not because bear populations have declined, but because of improved information on bear densities.

Legal status

State law (Alaska Administrative Code 5AAC 92.990) classifies brown bears as "big game." Under this classification brown bears may be legally killed by resident, non-resident, and subsistence hunters with the appropriate licenses and tags during specified seasons. In most of the state, hunters are not permitted to take a brown bear more frequently than once every four years. Hunters are not allowed to kill newborn or yearling cubs or female bears accompanied by cubs younger than two years old.

In addition to sport hunting, brown bears may also be legally killed in defense of life or property. Persons killing bears under such circumstances are required to file a report with a state wildlife protection officer and to surrender the hide and skull to the state.

Alaskan brown bears are on Appendix IIB of CITES. This listing is designed to protect threatened populations elsewhere in North America; the brown bear population status in Alaska is secure. Under this listing, a federal wildlife export permit is required before the hides or skulls of brown bears may be shipped out of the United States or transported through Canada.

Until recently, the State of Alaska has had almost exclusive management authority for brown bears and other species of non-endangered resident wildlife in Alaska. However, under the subsistence provisions of the 1980 Alaska National Interest Lands Act (ANILCA), the US federal government in 1990 assumed management authority for subsistence uses of wildlife, including bears, for rural Alaskan residents on most federal public lands in Alaska (about 62% of the state). Uncertainties associated with the recent mixture of state and federal management authority have created administrative and legal problems that have and will continue to complicate efforts to manage harvests of bears and other species in Alaska.

Population threats

Humans represent the most significant source of mortality on adult brown bears in Alaska. Humans kill bears for sport or subsistence, in defense of human life and property, and illegally for a variety of reasons.

Most hunting is for trophies but a small and under-documented proportion of the statewide hunting kill is for subsistence use by residents in rural villages. An unknown, but perhaps significant, amount of illegal killing also occurs throughout Alaska. Illegal kills occur in National Parks and other closed areas as well as in areas open to legal hunting. Although sale of bear parts is illegal in Alaska, the increasing value of these parts in overseas markets has doubtless resulted in an increased number of illegal kills. Throughout most of the state, the legal sport

harvest is closely and accurately monitored and seasons and bag limits are adjusted to maintain harvests within levels thought to be sustainable.

In a few management areas in south-central and east-central Alaska, brown bear populations have been reduced through liberalized hunting regulations designed to reduce bear numbers. Such reductions are desired to increase moose (*Alces alces*) populations. Brown bears are known to be effective predators on newborn moose (Ballard *et al.* 1981; Ballard and Larsen 1987; Ballard *et al.* 1990), but it has not been demonstrated that these bear reductions have been successful in improving moose calf survivorship (Miller and Ballard 1992). The current areas where bears are being intentionally reduced are small and the management objectives for these areas require maintenance of "viable" bear populations. There is, however, widespread and vocal support for proposals designed to reduce bear numbers in many additional portions of Alaska (Miller and Ballard 1992). These proposals reflect a willingness to reduce bear populations thought to be too high for maximum moose production or from other human perspectives, including fear of or damage by bears. The intolerant attitude toward brown bears reflected in some of these proposals is similar to the attitudes that resulted in the extirpation of bears throughout much of their historic range in the United States (McNamee 1984; Brown 1985). Although, the bear reduction efforts ongoing in Alaska are geographically restricted and do not represent a threat to the species survival, they are a cause for concern.

Unintended declines in bear populations as a result of sport hunting can best be avoided by establishment of conservative harvest quotas (Miller 1990). Even with conservative quotas, legal sport kills combined with inadequately documented kills in defense of life and property, subsistence kills, and illegal kills may significantly deplete populations. Declines from this combination of factors may be gradual and go undetected for long periods because available methods for direct monitoring of bear population trends are imprecise and expensive (Harris 1986; Miller 1990; Miller *et al.* in prep.).

As human presence increases in once lightly occupied areas of bear habitat and in urban areas, killing of bears in defense of life or property has increased in Alaska (Miller and Chihuly 1987). Around urban centers and in heavily populated rural areas such as on the Kenai Peninsula, such kills are sufficiently frequent to have depleted local bear populations. The occasional human injury or death from bear attacks in Alaska increases fear of bears and these instances are usually followed by increased numbers of bears killed by persons who perceive bears as threats. Increased human presence and the commonly associated problem of bears being attracted to human foods and garbage increases the likelihood of damage to property or injury to people by bears (Herrero 1985). This pattern can initiate a cycle that may create population-level threats in large areas (Knight and Eberhardt 1988). With proper human behavior, education, and training, this cycle is not inevitable (Walker and Aumiller 1993; Aumiller and Matt 1994). The number of areas in Alaska where bear killing in defense of life and property will become significant sources of mortality will doubtless increase through the next century. This will lead to population reductions in additional localized areas and may reduce bear populations more widely in some important portions of Alaska.

Habitat threats

Alaska is unique among the 50 states in the USA because its major ecosystems are still relatively intact and they include healthy populations of all the large carnivores that existed prior to 1800. The vast tracts of undeveloped wildlands that still exist in Alaska bodes well for the future of brown bears in Alaska. For many of these lands, development is not imminent. However, some threats to brown bear habitat do exist.

Throughout the coastal rainforests of southeastern Alaska, industrial-scale logging on private and national forest lands is expected to significantly reduce brown bear habitat capability as important old-growth forest habitats are converted to second-growth plantations that are of limited value to bears and many other species (Schoen *et al.* 1994). Throughout much of this area, the timber harvests are concentrated in the highest-quality timber stands found in southeastern Alaska (Schoen *et al.* 1988). These stands are used extensively by brown bears during summer and have been identified as critical brown bear habitats (Schoen and Beier 1990). The impacts of this logging will be long-term and irreversible under current logging schemes. In addition, logging may reduce the long-term productivity of some of the region's important salmon spawning streams which would have obvious implications for bears.

In most of the rest of Alaska, brown bear habitat is still relatively intact and there does not appear to be a serious threat of losing significant habitat over the next 25 to 50 years. Although Alaska may not face the same level of habitat loss that has occurred throughout brown bear range in the lower 48 states, the suitability of bear habitat must incorporate the influence of human activities (Schoen 1990). Habitat fragmentation, roads, and garbage disposal are part of the infrastructure of resource development (logging, mining, petroleum development, hydropower development, agriculture, commercial and residential real estate development) that, along with tourism, is the major emphasis in Alaska's growing economy. These factors contribute significantly to direct mortality of brown bears as described below.

Management

Outside of National Parks, brown bears are managed for sustained yield harvests by hunters in most of the rest of Alaska. During the last decade, an average of 1,090 bears per year have been legally taken and reported in Alaska (Table 5.1). An unknown number of additional bears are killed annually and not reported. The number of bears harvested annually in Alaska has increased over the last three decades (Table 5.1). This increase reflects a rise in the popularity of bear hunting as well as expanding bear populations in some areas such as the Alaska Peninsula where populations are recovering from overexploitation during the late 1960s and early 1970s.

Except for rural subsistence bear hunters in northwestern Alaska, hunters are required to purchase a license and big game tag to hunt bears, and successful hunters are required to have the hide and skull of their kills examined and sealed by a representative of the Alaska Department of Fish and Game. During this examination, the sex of the kill is determined from the hide and a tooth is extracted from the skull to determine age by counting cementum annuli. Sport hunters may not take a bear more frequently than once every four years in most of Alaska. Compliance with kill reporting requirements is considered high in most areas of the state, but kills are underreported by hunters in many rural areas. Liberalized bag limits (1/year), elimination of the need to purchase a tag, and easier reporting mechanisms have been instituted in portions of rural northwestern Alaska in an effort to increase voluntary reporting of brown bear kills.

Table 5.1. Reported harvests of brown bear (*Ursus arctos*) in Alaska, 1961–1994.

Year	Harvest	Year	Harvest	Year	Harvest	Year	Harvest
1961	470	**1971**	739	**1981**	888	**1991**	1153
1962	534	**1972**	831	**1982**	823	**1992**	1285
1963	557	**1973**	924	**1983**	974	**1993**	1127
1964	634	**1974**	779	**1984**	1118	**1994**	1024
1965	776	**1975**	826	**1985**	1156		
1966	866	**1976**	832	**1986**	1121		
1967	790	**1977**	774	**1987**	1215		
1968	641	**1978**	818	**1988**	1104		
1969	510	**1979**	882	**1989**	1088		
1970	628	**1980**	882	**1990**	1145		
Mean	640.6	**Mean**	828.7	**Mean**	1063.2	**Mean**	1147.25

Table 5.2. Proportion of total area of brown bear (*Ursus arctos*) habitat in Alaska (1.48 million km²), estimated brown bear population (31,700), and reported annual kill (10 year average = 1,078) in each of 3 density strata (>175, 40–175, and <40/1,000km²).

	Percent of area (km²)	Percent of estimated population	Percent of reported annual kill
High density	8.6	49.4	58.1
Intermediate density	7.3	8.9	9.2
Low density	84.1	41.7	32.7

The most popular brown bear hunting areas in Alaska are the Kodiak Archipelago, Alaska Peninsula, and northern islands of southeastern Alaska (Admiralty, Baranof, and Chichagof). In the Kodiak area, harvests have been limited by means of a lottery for hunting permits since 1976. On the Alaska Peninsula, harvest has been limited by closure of the area to bear hunting during alternate regulatory years since 1975. Together, 37% of the Alaska brown bear harvest derives from Kodiak and the Alaska Peninsula. An additional 10% of the harvest comes from high density populations on Admiralty, Chichagof and Baranof islands. Statewide, over half of the annual harvest comes from the high density south coastal populations where about half of the bear population occurs (Table 5.2).

Several areas in Alaska are also managed to provide enhanced opportunities for brown bear viewing. These include the McNeil River State Game Sanctuary, Denali and Katmai National Parks, O'Malley Creek on Kodiak Island, and the Stan Price State Wildlife Sanctuary on Admiralty Island. Anan Creek on the mainland in southeastern Alaska is being developed for black bear viewing. Public demand for bear viewing opportunities is higher than can be sustained without adversely impacting bears and the quality of viewing opportunities. Thus, human use is limited in some sites by access permits. As the tourism industry continues to expand in Alaska, public demand will likely grow for creating additional bear viewing sites.

Human-bear interactions

As generalist omnivores, brown bears recently occupied a wide range of habitats and had one of the greatest natural distributions of terrestrial mammals (Nowak and Paradiso 1983). Today, assuming the physical availability of suitable habitat, the most critical factor influencing brown bear conservation in Alaska and elsewhere is the degree of interaction with humans. Human populations in Alaska have increased dramatically. Prior to World War II, Alaska's human population numbered approximately 70,000. The Alaska population in July 1991 was estimated to be 570,000 and the state was listed as the second-fastest growing state in the nation between 1990 and 1991 (U.S. Commerce Department Census Bureau). Clearly, people will increasingly dominate the future landscape in Alaska.

As human populations expand and demand for resources increases throughout the industrial world, more pressure is placed on Alaska's natural resources. Today, resource extraction and tourism are the major industries shaping Alaska's economy. Major resource

developments in Alaska include fishing, oil and gas development, logging, mining, agriculture, road and rail construction, real estate development, mariculture and aquaculture, and hydroelectric development. Logging, oil and gas development, and mining all require an extensive transportation infrastructure. This fragments previously inaccessible or lightly inhabited areas of bear habitat and increases opportunities for legal hunting as well as for adverse bear-human interactions including defense of life and property kills and illegal hunting. A direct correlation was found between autumn brown bear kill and cumulative kilometers of road construction on northeastern Chichagof Island during the period 1978 to 1989 (Titus and Beier 1991).

Outside of Alaska's major urban centers, the two regions most vulnerable to habitat fragmentation are the south coastal forests which are being extensively logged and the North Slope. Over the long-term, the transportation infrastructure will significantly increase the probability that individual bear home ranges will be bisected by a road or utility corridor. Increased human access inevitably leads to higher bear mortality (Peek *et al.* 1987; Miller and Chihuly 1987; McLellan and Shackleton 1988, 1989; Schoen 1990).

Another byproduct of development is garbage. Garbage dumps associated with mining, logging, petroleum development, and local communities have been an attractant for bears and resulted in significant bear problems throughout Alaska. Bears that become conditioned to humans and human foods usually become nuisances and may become threats to human safety (Herrero 1985). The usual result is that such bears are commonly killed. Such attractant sites end up as "population sinks" where bears are drained from ecosystems (Knight *et al.* 1988).

Although agriculture does not pose a serious threat to loss of bear habitat in Alaska, the livestock industry has the potential to significantly reduce bear populations through killing of bears seen as economic threats to livestock herders. Currently, the most significant threats derive from cattle ranchers on Kodiak Island and reindeer (*Rangifer tarandus*) herders in northwestern Alaska. Additional threats to bears would develop if schemes to develop moose or pig farming or to expand the area involved with reindeer ranching succeed.

Fish hatcheries and mariculture facilities developed within high-density coastal brown bear habitat are also potential sites of conflict. If human garbage, hatchery stock, and fish foods are not handled and secured properly, they may attract bears from long distances. As these facilities proliferate along the coast, a significant proportion of bears may be vulnerable to nuisance control actions.

Although most of Alaska's lands are public lands, parcels of lands selected by the State of Alaska have been widely converted to small privately owned plots. Many Alaskans have built recreational cabins on these plots in areas where there was previously little human presence or construction. Many of the persons using these cabins view bears as a threat to their personal safety and are angered by damage bears cause to their structures. There are currently places in the state where complaints from owners of these remote cabins have led to efforts to reduce bear numbers through increased hunting. It is probable that owners of these cabins also shoot many bears that are not reported as required by law. In some places, lands transferred to corporations of Alaskan natives under terms of the Alaska Native Claims Settlement Act have similarly been developed for maximum economic returns with corresponding losses to bear numbers and habitats.

Alaska's wilderness character has attracted adventurous travelers for more than a century but until recently only in small numbers. In 1951, fewer than 10,000 people visited Alaska. The Alaska Visitors Association estimated nearly one million people visited Alaska in 1992 generating $1.1 billion in revenue. Today, tourism has become Alaska's number one growth industry and is an important force in Alaska's economy. As more wilderness guides and tourists travel the back country, adverse encounters with bears will increase. On the positive side, however, there is an increasing demand for access to areas where tourists can view bears in natural settings and several bear viewing areas have been established in recent years. If managed carefully, such programs have the potential for educating people about the special needs of bears and increasing public support for bear conservation.

Public education needs

The image of the brown bear continues to both fascinate and frighten people. Improved public education will be an important component of conservation efforts designed to preserve this species in Alaska. Public education goals include educating visitors and Alaskan residents about ways to safely live, recreate, and extract resources in areas occupied by brown bears, and to provide the public with a balanced image of bear-human interactions. Goals for public educational efforts include: 1) reduce the number of human injuries by bears; 2) reduce the amount of property damage caused by bears; 3) reduce the number of bears killed unnecessarily, or in defense of life or property; and 4) increase hunters understanding of the need for conservative management of hunted bear populations.

Conservation recommendations

Research

1. Maintain long-term studies of hunted and unhunted bear populations in several different ecosystems within Alaska.

2. Quantify how human presence affects brown bear habitat use and population viability.
3. Quantify thresholds of habitat disturbance on bear population viability.
4. Develop cumulative effects models for development activities affecting regional bear populations.
5. Assess genetic variability of regional bear populations in Alaska.

Monitoring

1. Establish regional population benchmarks for selected brown bear populations throughout Alaska. These population estimates should be repeatable and include a measures of precision. These estimates are needed to monitor status and trends of populations so that management changes may be made before populations become threatened.
2. Monitor habitat integrity in selected regions of the state (e.g., North Slope oil fields, Southeast coastal rain forest, etc). Photographic and EROS satellite imagery will allow managers to track the habitat fragmentation by transportation and utility corridors and/or quantity and juxtaposition of clearcuts within a forest.
3. Continue to closely monitor sport harvest levels of brown bears within Game Management Units distributed throughout the state. Improve documentation of subsistence harvests, defense of life and property kills, and illegal kills.

Inventory

1. Inventory important/critical brown bear habitats within each region of the state.

Gap analysis

1. Conduct an analysis to determine regional gaps in habitat protection from an inventory of important/ critical brown bear habitats.

Education

1. Develop a comprehensive bear safety education program with modules that cover recreation, industry, and rural residents. The purpose of this program will be to reduce defense of life and property kills.
2. Require bear safety training for resource agency, industry, and tourism organizations operating in bear country.

Policy

1. Develop improved interagency agreements on how to manage bear/human conflicts in Alaska.
2. Develop improved interagency agreements on solid waste management and bears in Alaska. The central focus for this policy should be the requirement for fuel-fired incineration of garbage at industrial camp sites and communities located in Alaska brown bear habitat.

Planning

1. Establish comprehensive regional planning as a major tool in bear management and conservation in Alaska. Regional plans should include a comprehensive inventory of brown bear populations and critical habitats with coordination among state and federal resource agencies and the Alaska Natural Heritage Program. Current and future industrial, agricultural, transportation, and recreational developments should be overlaid on the distribution of important bear habitat. A gap analysis could then identify areas where conservation planning should focus and cumulative effects analysis could predict impacts over time to regional and area specific bear populations. Planning on this scale would minimize the loss of critical habitats and reduce habitat fragmentation. Interagency cooperation is essential because of the varied and disjunct land management jurisdictions throughout Alaska.

Law enforcement

1. Increase funding for enforcement activity to monitor and reduce the illegal kill of brown bears in Alaska.

Ecotourism

1. Bear viewing programs in Alaska are in high demand. Future development of programs should be carefully planned and developed to provide a variety of viewing experiences ranging from high quality low participation programs such as that at the McNeil River State Game Sanctuary (Aumiller and Matt in press) to high participation programs like those in some Alaskan National Parks like Katmai and Denali.
2. Emphasize the economic value of brown bears to local residents. Many local residents in rural Alaska consider bears a nuisance and are inclined to kill them needlessly. The big game guiding industry and the tourism industry should work cooperatively with ADF&G and its cooperating agencies to assess the economic value of brown bears to Alaska and help ensure that some of that value is shared with local residents.

Conclusion

Alaska offers the greatest opportunity in the world for developing a model conservation program for brown bears. The successful conservation of brown bears in Alaska will require that managers incorporate an ecosystem perspective into their research and management programs. To maximize future options, it is critical that resource managers plan for large areas for long periods. Interagency cooperation will also be essential for maintaining Alaska's unique brown bear resource. A critical first step for ensuring the long-term conservation of brown bears is for Alaskan

scientists, resource managers, policy makers, and educators to craft a strategic conservation plan. This plan should be designed to assure that Alaskan bear populations remain healthy in the face of accumulating threats.

Acknowledgments

The following biologists with the Alaska Department of Fish and Game (ADF&G) provided information used to compile the estimate of number of brown bears in Alaska: R. Eagan, J. Dau, G. Del Frate, B. Dinneford, S. Dubois, C. Gardner, H. Golden, H. Griese, D. Harkness, R. Kacyon, C. Land, D. Larsen, M. McNay, B. Nelson, R. Nowlin, T. Osborne, H. Reynolds, M. Robus, R. Savoy, D. Sellers, R. Smith, T. Spraker, R. Stephenson, K. Titus, R. Tobey, L. Van Daele, J. Whitmann, and B. Young. V. Barnes of the U.S. Fish and Wildlife Service assisted this effort. Helpful comments on an earlier draft of this manuscript were received from C. Smith (ADF&G). C. Schneiderhan (ADF&G) prepared Figure 5.2.

Status Survey and Conservation Action Plan

Bears

Compiled by Christopher Servheen, Stephen Herrero and Bernard Peyton

IUCN/SSC Bear Specialist Group
IUCN/SSC Polar Bear Specialist Group

Editorial assistance by Kristy Pelletier, Kana Moll, Joseph Moll