

3. Kodiak Bear Habitat

Synopsis: Kodiak bears live throughout most of the Kodiak archipelago and use virtually all available habitats from the coast to alpine regions. The archipelago is considered high-quality bear habitat, containing ample food, water, cover, and space. While vegetation is a substantial part of the bears' diet, salmon is the most important source of protein for most Kodiak bears. Currently, the human population and related human development have minimal impacts on bear habitat. Potential threats include seasonal human use of inland and coastal areas, future developments (e.g., road and energy development) and related problems (e.g., oil spills), and natural occurrences (e.g., reduction in salmon stocks). Bear habitat and bear-human relationship are intimately intertwined; if people are not willing to make an effort to live around bears, large expanses of wilderness areas are necessary for sustainable bear populations. With this information in mind, the Citizens Advisory Committee (CAC) makes a number of recommendations to protect bear habitat on the archipelago. These recommendations cover the following subject areas: land use, acquisition, and planning; activities on Afognak Island; minimizing habitat degradation; road building in bear habitat; motorized access; bear-use areas; human activities in bear habitat; introduced species; and salmon as a part of bear habitat.

3.1 Habitat Requirements

Kodiak bears live throughout the archipelago, except on Chirikof and the Trinity islands, and use virtually all available habitats from the coast to alpine regions. An estimated 2,980 bears live within the 4,757-square-mile area, and bear densities vary by area and by season. The highest densities are found around Karluk Lake and Kiliuda Bay, while the lowest densities are on Whale, Marmot, and Spruce islands (see Figure 3-1).

Kodiak-bear habitat must provide the same basic elements required by most animal species: food, water, cover, and space.

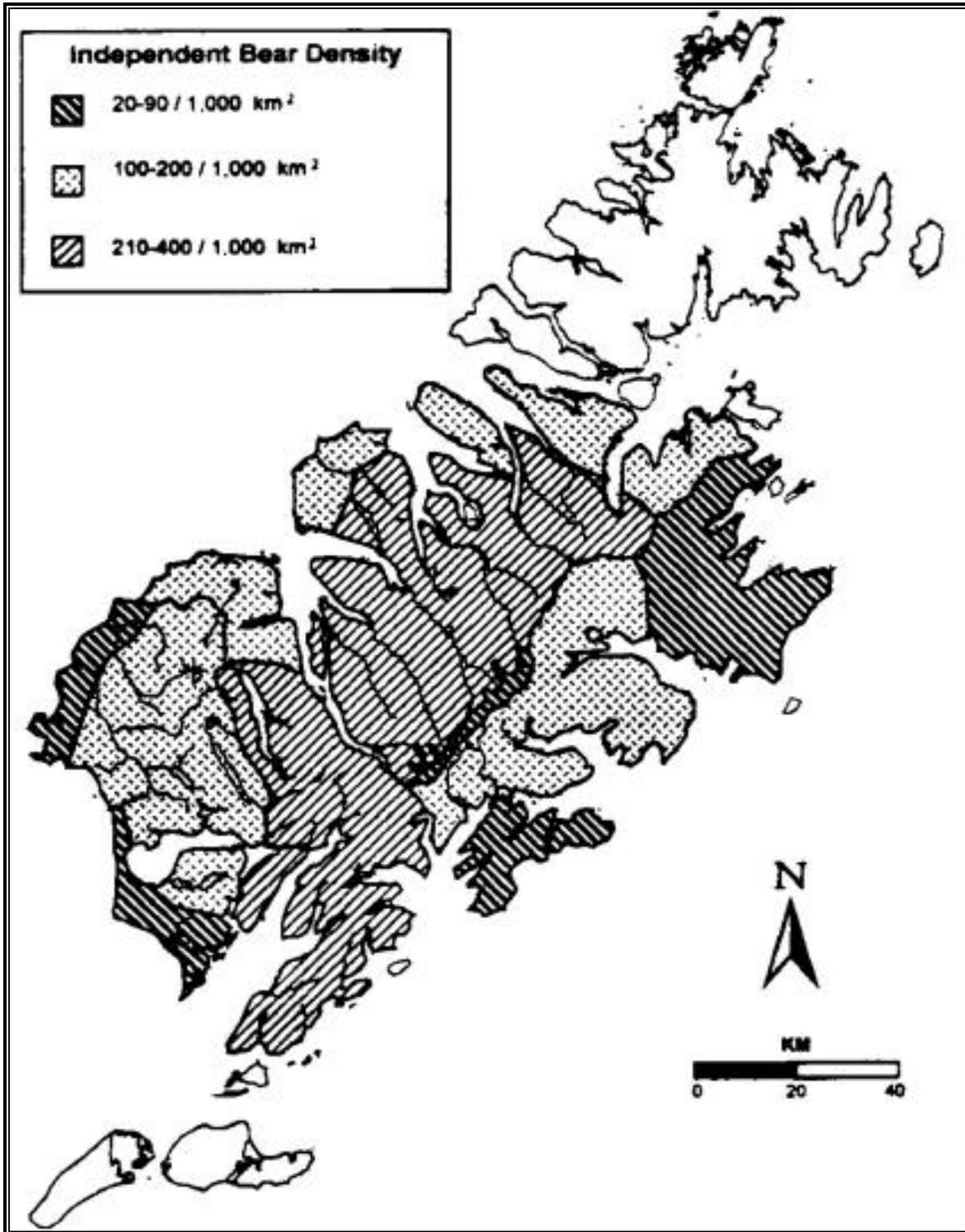


Figure 3-1. Densities (bears per 1,000 square kilometers) of independent bears throughout the Kodiak archipelago (Note: "independent" bears includes all bears that are more than 3 yr old.) (Barnes and Smith 1998)

3.1.1 Food and Water

Bears use a wide variety of foods on Kodiak; grasses, roots, berries, carrion, and salmon are the most important. Bears' intelligence and their need to obtain large quantities of high-quality food while they are out of their dens have resulted in a high degree of adaptability. This adaptability is most obvious to us when bears live near people and learn to eat garbage, pet food, and hunter-killed game instead of more natural fare.

3.1.2 Salmon

While vegetation is the bulk of the bears' diet, salmon are the primary source of protein for most Kodiak bears. These same salmon stocks are also heavily used by humans for commercial, subsistence, and sport harvests. Current Alaska Department of Fish & Game (ADF&G) status reports on archipelago salmon stocks characterize them as healthy and stable. ADF&G's abundance-based harvest strategies, coupled with its goal of achieving maximum sustained yield (MSY), have successfully stabilized Alaska's salmon stocks at historically high levels. Archipelago salmon production has evolved from historical lows to historical highs during the 40-year period since statehood, when ADF&G management was fully implemented.

Human fisheries harvest activities are controlled by the Alaska Board of Fisheries via management plans guided by Alaska's Sustainable Fisheries Policy. Additionally, Kodiak's Regional Comprehensive Salmon Management Plan, as developed by Kodiak's Regional Planning Team (RPT) per AS⁵ 16.10.375, depicts a salmon enhancement framework for achieving and sustaining long-term stability of Kodiak's salmon production. Kodiak archipelago's bear populations have flourished under this management regime; both ADF&G and U.S. Fish & Wildlife Service's (USFWS's) bear number and density statistics reflect historically high, stable bear populations on the archipelago in recent years.

Approximately 350 streams annually provide significant salmon production for bear food and human harvests. Of these, approximately three produce chinook, 33 produce sockeye, 147 produce coho, 104 produce chums, and all produce pinks. Biological escapement ranges are targeted by ADF&G to achieve MSY production goals. Biological escapement goals (BEG) set the number of spawning salmon required to sustain maximum production levels for each salmon species. Allowing escapements to fall below or go above these ranges may lead to lower production. Escapements are monitored by daily hand tallies at 12 fish-weir sites, by frequent in-season aerial surveys, or by post-season foot surveys. Established species-specific time-of-entry patterns are referenced in season against developing returns to evaluate run strengths. Timely in-season adjustments to human harvest opportunities ensure that escapements are achieved.

Overall escapement goals by species for the archipelago are approximately 11,000 to 18,000 chinook; 1,307,000 to 1,959,000 sockeye; 90,000 to 150,000 coho; 140,000 to 420,000 chums; and 792,000 to 2,376,000 odd-year pinks or 2,142,000 to 5,226,000 even-year pinks. These escapement levels should produce long-term average total returns approximating 38,000 chinook; 6,064,000 sockeye; 375,000 coho; 784,000 chums; and 4,752,000 odd-year pinks or 11,052,000 even-year pinks. Total salmon returns during the decade of the 1990s exceeded these long-term production goals. To the extent of their importance to Kodiak's bear populations, the

⁵ Alaska Statute

archipelago's healthy, stable salmon populations correlate closely with its current robust bear populations. (See Appendix U, "Policy for Statewide Salmon Escapement Goals" for complete information about salmon escapement.)

3.1.2.1 Recommendations about Salmon as a Part of Bear Habitat

- Endorse the Kodiak Area Salmon Management plans that regulate commercial fishing on and around the archipelago.
- Continue to collect salmon escapement data to ensure the sustainability of salmon stocks.
- Support operation of essential weirs islandwide and acquire weir sites where appropriate.
- Ensure that easements for access to weir sites be restricted to use by essential personnel.
- Continue to design all salmon enhancement and rehabilitation projects to minimize disturbance of bears and to avoid unnecessary damage to their wild habitats (see Appendix F for more information about salmon enhancement and rehabilitation projects).
- Recognize that the protection of riverine and coastal habitats for bears will help sustain the annual Kodiak salmon commercial harvest, which generates an average exvessel value of \$35 million and provides as many as 5,000 associated jobs.

3.1.2.2 Vegetation

Bears rely primarily on vegetation when salmon are not present in rivers. Although bears forage on a variety of vegetation, certain species of sedge and berry-producing shrubs are especially important. Bears use sedges in estuaries during June and in alpine areas in late June and early July. Berries produced by salmonberry, red-berried elder, blueberry, and devil's club shrubs are used extensively during summer. Berry production influences bear movements away from salmon-spawning streams when berries are abundant and often results in increased bear-human interactions during years when berry production is low.

Sitka black-tailed deer and Roosevelt elk were introduced onto the archipelago in the 1920s. These ungulates proliferated and provided both humans and bears with an alternate food source. Deer and elk also share food sources with bears. In areas where they concentrate during the winter, the ungulates have heavily browsed some shrubs, including high-bush cranberry and red-berried elder, which are important foods for bears. It is not known what long-term impact this browsing will have on bear populations.

3.1.2.3 Recommendations about Introduced Species

- Identify funding sources to study effects of introduced species on bear habitat (see chapter 7, "Research and Monitoring").
- Conduct research to determine if a problem exists with introduced species depleting bears' food resources or otherwise damaging bear habitat. When evaluating the results of research on introduced species, consider social issues (e.g., subsistence hunting).

Research should be subject to peer review (also see chapter 7, “Research and Monitoring”).

- Federal and state governments work with villages and other landowners to maintain the species that currently exist on the Kodiak archipelago.
- Guard against the introduction of additional nonindigenous species that could prove harmful to bears and their habitat. (See also section 6.4.1.)

3.1.2.4 Water

Water availability is rarely a problem on the Kodiak archipelago, but it is a critical need for bears’ consumption and thermoregulation. Bears drink regularly, and ready supplies of fresh water are essential. Because of their large size and thick coats of fur and fat, Kodiak bears are designed to stay warm. When confronted with warm summer temperatures (>65° F) or after prolonged physical exertion, they frequently rest in snowbanks or shallow lakes or rivers to cool themselves.

3.1.3 Cover

Cover requirements include protection from the weather, security from detection, and areas for denning. Alder thickets, which abound in lower and middle elevations on Kodiak Island and southwestern Afognak Island, are the favored resting locations for bears during inclement weather and when they are sleeping. The thickets also provide secure areas where bears can avoid being detected by people. On Shuyak Island, northeastern Kodiak Island, and much of Afognak Island, spruce trees and the associated undergrowth of devil’s club provide cover for bears. Steep or rocky areas can also provide cover for family groups when they are avoiding predatory male bears.

Dens are typically dug, although natural cavities may be used if available. Bears seek well-drained sites for dens. When high, steep country is available, it is used; in areas of more moderate topographic relief, however, bear dens may occur in the sides of hills or hummocks. When the substrate is not stable enough to support excavations, bears dig dens under the roots of alders or spruce trees.

3.1.4 Space

The physical arrangement, or spacing of resources within a bear’s habitat is as important as the availability of the resource itself. If food resources are not near places where the bears are secure, the animals will hesitate to use them. Spacing of resources also refers to the time at which resources are used. When forced to compete with other bears or with people for resources, bears may shift their activity patterns to reduce conflict. This is why most bears living near human habitation adopt more nocturnal behavior.

3.2 Status of Bear Habitat on the Kodiak Archipelago

The Kodiak archipelago is arguably the best bear habitat in the world. Thus, it supports one of the densest known populations of brown bears, and those bears grow larger than they do in most other areas.

At the current time, Kodiak Island's inland habitat is contiguous and intact. Coastal areas have much more human activity, but it is generally restricted to isolated areas and small numbers of people. Roads are restricted to the northeastern coast of the island and in the immediate vicinity of villages. The only large-scale disruption of inland habitat, the Terror Lake hydroelectric project, was completed with minimal direct or indirect adverse impact to bears or their habitat because of a conscious effort to work with and around the bears (see also section 2.2.13). Wildfire, primarily human-caused, has burned an average of 1,135 acres of habitat annually over the past 10 years. No research on the effects of wildfire on Kodiak bear habitat has been undertaken.

In summary, Kodiak bears are adaptable, and with a healthy habitat and human neighbors who are tolerant and knowledgeable, they can thrive. Bear habitat and bear-human relationships are intimately intertwined, however, and if people are *not* willing to make the extra effort to live around bears, large expanses of wilderness areas are necessary for sustainable bear populations.

3.2.1 Logging on Afognak Island

Afognak Island's bear habitat has experienced considerable alteration in the past 25 years because of commercial logging on private lands. These lands are primarily managed for timber production, but they are under the jurisdiction of the Forest Practices Act, which governs commercial logging and seeks to ensure that protection of natural resources is a high priority.

Large-scale logging has the potential of damaging wildlife habitat by diminishing or altering vegetative cover; increasing blockage of bear access corridors and access to salmon-spawning streams by slash, erosion, and siltation; and causing indirect impacts through human activities. Although there have been no objective studies, it appears that, despite the fact that there have been major changes to the habitat, these logging activities have not had major adverse impacts on the bear population. The bears still have access to healthy salmon, and berry and grass production has been enhanced in many areas. Hunting regulations in these logged areas have become more restrictive to limit the effects of direct persecution, and general access to logging roads has been restricted.

Commercial activities such as logging do not necessarily have negative impacts on bear habitat if appropriate mitigation or avoidance measures are taken. It is often the cumulative effects that follow logging activities, particularly increased access, that impact bears. This includes displacement of bears from important habitat, increased human presence in bear habitat, or defense of life or property (DLP) killing of bears.

3.2.1.1 Recommendations Regarding Afognak Island

- Establish an education plan and explore economic incentives aimed at encouraging public and private landowners to consider the effects of motorized access on bears.
- Establish an education plan and explore economic incentives aimed at encouraging private landowners to continue land-management programs that are consistent with wildlife conservation.
- Teach outdoor recreationists to be bear-aware.

- Urge ADF&G, sports enthusiasts, and wildlife conservation groups to cooperate with private landowners to help make their forest practices as compatible as possible with conservation of bears (e.g., continued adherence to the Forest Practices Act and continued use of responsible garbage-management practices).
- Respect private property rights, while recognizing private land owners' responsibilities to adhere to applicable laws in the conservation of bears and their habitats.

3.2.2 Human Population

The estimated resident human population of the Kodiak archipelago is 14,181 and has been relatively stable for the past 20 years. More than 90 percent of the human populace lives along the road system that circumscribes Chiniak Bay on northeastern Kodiak Island. Five-year averages show that each year approximately 4,360 people are in the field hunting deer, approximately 520 hunting elk, 95 hunting goats, and 510 hunting bears. Each year, an average 15,565 anglers fish in Kodiak's fresh and salt waters.

Commercial fishing is vital to the economy of the region; fishing and fish-processing occur year-round. During summer months, however, residents and transients alike expand their activities to remote coastal areas in pursuit of salmon.

Residents of the Kodiak archipelago generally have a higher tolerance and a greater understanding of bears than do people in many other areas. To ensure this understanding, various agencies make ongoing efforts to educate newcomers and visitors and to minimize attracting bears to human habitat.

As the human population expands its activities throughout the archipelago, however, human encroachment into bear habitat could pose problems for bears.

3.2.2.1 Recommendations Regarding Human Activities in Bear Habitat

- Maintain or enhance the current high-quality bear habitat on the Kodiak archipelago by protecting riparian areas, including water quality and salmon resources; protecting healthy and contiguous upland areas; and continuing the type of human uses of the area that fosters coexistence.
- Strongly encourage education of outdoor recreationists about bear behavior, impacts to bear habitat, bear-human interactions (e.g., resulting from improperly handled food and trash), field safety practices, and use of bear-resistant containers and electric fences, etc. (see also chapter 8, "Education").
- Distribute to refuge users educational materials on building safe campfires(see also chapter 8, "Education").

3.2.3 Kodiak Archipelago Land Management

Lands of the Kodiak archipelago are primarily managed by three major entities (see Figure 3-2): U.S. Fish & Wildlife Service, which manages Kodiak National Wildlife Refuge; Alaska Department of Natural Resources, which manages grazing leases and includes the Alaska State Park System; and Native corporations.

Shuyak, eastern Afognak, western Raspberry, northeastern Kodiak, Sitkinak, and Tugidak islands are primarily state lands. Native landowners control most of Afognak, Whale, Spruce, and Sitkalidak islands and coastal areas on northern Kodiak Island. Much of the Karluk and Sturgeon rivers, the Akhiok area, and the eastern part of Raspberry Island are also managed by Native landowners.

Kodiak National Wildlife Refuge (KNWR) encompasses the southern two-thirds of Kodiak Island, the northwestern portion of Afognak Island, and all of Uganik Island. Beginning in the 1970s, Alaska Native Claims Settlement Act (ANCSA) legislation conveyed to Native ownership some 310,000 acres (approximately 20 percent) of KNWR. During the 1990s, a broad coalition of interest groups—using money from *Exxon Valdez* oil spill settlement funds, the Land and Water Conservation Fund, and private donations—purchased back high-quality bear habitat from willing sellers. These lands are now managed by KNWR or the Alaska State Park System.

Management of bear populations requires close attention to direct human-caused mortality, such as annual harvest levels, as well indirect human impacts, such as management of habitat. Wildlife managers recognize that the cumulative effects of increasing land-use activities may ultimately result in an irreversible decline in bear numbers. Accordingly, conservation of the Kodiak bear population should be considered in comprehensive land-use planning and land-acquisition decisions.

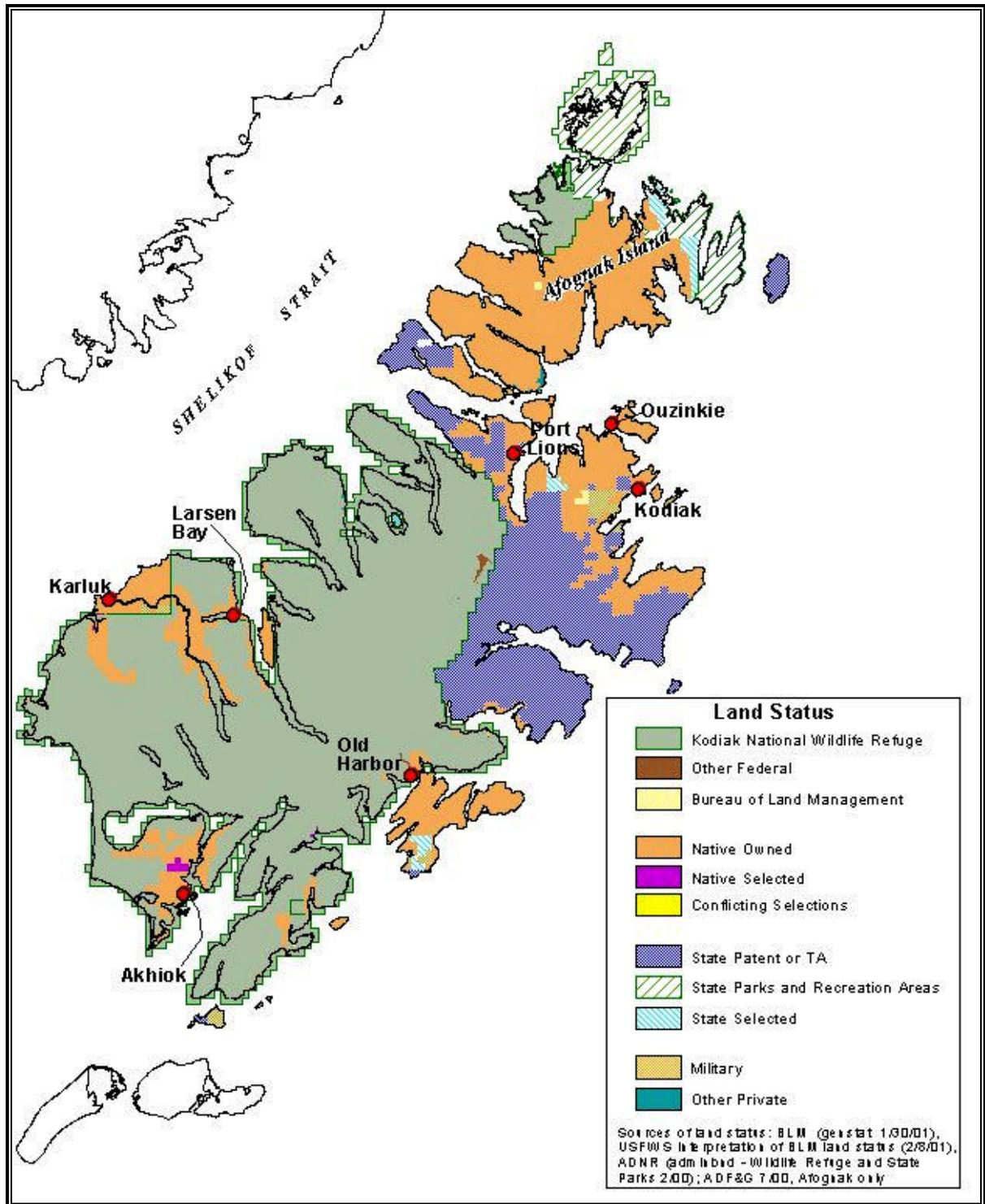


Figure 3-2. General land-ownership status for the Kodiak archipelago

3.2.3.1 Recommendations for Land Use, Land Acquisition, and Planning

- Continue acquiring small parcels of high-priority bear and salmon habitat from informed willing sellers.
- Consider bear habitat when evaluating lands for acquisition.
- In any land transfer, recognize subsistence activity, consistent with state and federal laws.
- When their lands are affected, involve village representatives and individuals associated with remote camps in land-acquisition planning.
- Consider bear habitat when conducting land disposals on state land.
- Pursue the acquisition of high-priority bear and salmon habitat on Afognak and Shuyak islands to complete the planned state park units there.
- Through land-use planning, maintain contiguous bear and salmon habitat (i.e., avoid patchwork development).
- Retain state and federal agency access to salmon populations to allow monitoring of stock status. Retain historical salmon rehabilitation and enhancement options identified in Kodiak's comprehensive salmon plan (i.e., lake fertilization, stocking of barren lakes, hydroacoustic surveys of smolt and presmolt populations, use of barrier nets in terminal harvest areas, monitoring of weir sites and fish passes, lake monitoring through limnology assessment, smolt enumeration through mark and recapture, and conducting egg-takes for out-stocking programs) (see also Appendix F).
- Encourage private landowners (e.g., via the use of conservation easements, economic incentives, and education) to consider bear habitat when making land-management decisions.
- Encourage a high level of cooperation among various landowners to achieve ecosystem management objectives for bears.
- Urge all parties to work cooperatively to ensure successful implementation of the conservation easement agreement on the Karluk and Sturgeon rivers watersheds.
- Urge ADF&G, in cooperation with USFWS, to identify key habitat linkages to ensure free movement of bears throughout their natural ranges and to avoid habitat fragmentation.
- Encourage Bureau of Land Management, USFWS, the public, and landowners to together review controversial 17(b) easements and corridors, renegotiate terms and conditions if proved necessary to prevent resource damage, and consider relocating or relinquishing easements that adversely impact important bear habitat. The CAC strongly recommends discouraging off-road vehicle (ORV) use on easements not currently used by ORVs.

3.2.3.2 Recommendations to Minimize Habitat Degradation

- Urge ADF&G, in close cooperation with USFWS, to identify and monitor threats to bears and their habitats and take effective actions to alleviate these threats.
- Encourage appropriate agencies to mitigate damage to bear habitat.
- Urge ADF&G, in close cooperation with USFWS, Kodiak Island Borough, and private landowners, to identify and map all important bear habitats in the archipelago and design action strategies to protect them.

3.3 Kiliuda and Shearwater Habitats

Kodiak bear research is an important priority for ADF&G, USFWS, and the Kodiak Brown Bear Trust. Kodiak bear research began with harvest statistics in the 1940s when it was recognized that Kodiak Island was producing the largest brown bears (measured by skull size). Over the decades, the data collected on Kodiak bears have grown, and the technology and methods of the researchers have improved.

Research on bear population density is perhaps the most important tool for effective bear management. In 1996, the Kodiak Brown Bear Trust partnered with the State of Alaska, USFWS, and the National Rifle Association to fund a brown-bear abundance and habitat assessment study in the Kiliuda Bay section of KNWR and the Shearwater Peninsula.

Objectives of the study included the following:

- estimation of brown-bear abundance in a 150–square-mile area
- estimation of the brown-bear habitat quality on the Shearwater Peninsula mitigation lands for the Terror Lake Hydroelectric Project
- revision of brown-bear population estimates for the Kodiak archipelago

The Kiliuda/Shearwater study project was important because previous research on Kodiak bears had focused on the southern and western portions of Kodiak Island. Knowledge of bear populations on the island's eastern drainages was limited, consisting mainly of hunters' observations and occasional bear sightings incidental to aerial salmon-escapement surveys.

In contrast with drainages in southern and western Kodiak Island, eastern drainages are shorter and steeper, and salmon populations are less diverse and abundant. No major sockeye salmon systems occur within KNWR on the eastern side of the island.

3.3.1 Summary of Kiliuda-Shearwater Findings

Two types of aerial surveys (transect and intensive) produced 239 sightings of bear groups during the May 19–27, 1996, survey period. Single animals and family groups accounted for about one-half and one-third of the observations, respectively. The remaining observations were of bears in breeding and sibling groups.

Bears were found throughout the study area, with the largest number of sightings recorded in the areas immediately north and east of the head of Kiliuda Bay (Shearwater Peninsula; see Figure 3-3). More than 75 percent of the bears were found in midslope (500–1,500 ft) habitats.

Observation rates indicated that bear density was higher than predicted. Density of total bears was estimated at 360 independent bears in the 374-square mile area (0.96/sq mi). This density ranks the area as the second highest brown-bear population density on the Kodiak archipelago, second only to the Karluk Lake drainage's 179 bears in the 121-square mile area (1.48 bears/sq mi).

An assessment of habitat quality on the study area was based on the aerial survey data, distribution and abundance of salmon, and the distribution and level of human activity associated with developments on private land. Streams with strong runs of chum and pink salmon were highlighted as key feeding sites for bears.

Considerable development has occurred in parts of the Shearwater Peninsula, and continued development could have an adverse effect on bears. Conversely, acquisition of private inholdings on the Kiliuda peninsula is nearly complete and has reduced threats to bears in portions of Kiliuda Bay. Currently, a high proportion of bear habitat on the Shearwater-Kiliuda area is intact and sustaining negligible or low levels of human activity. Data from this study indicate that the north side of Kiliuda Bay supports high levels of bear use during spring and summer and is an area where further development of private parcels could be detrimental to the bear population.

Biologists have identified the Shearwater Peninsula as having high densities of Kodiak bears. The CAC believes it is important that human impact (i.e., development) be minimized in this important bear habitat.

3.3.2 Recommendations Regarding the Shearwater Peninsula⁶

- State lands should continue to be managed consistent with terms of the 1981 Terror Lake Agreement (see Appendix S).
- Alaska Department of Natural Resources should work with ADF&G and USFWS to identify important bear habitat within the Shearwater Peninsula that should be classified as wildlife habitat and protected from land disposal.
- Support fair and timely consummation of the proposed Old Harbor Village Corporation land exchange of Sitkalidak Island for lands on Kiliuda Bay on the Shearwater Peninsula.

⁶ The CAC identified this issue as being of current concern and one for which the CAC is making recommendations for immediate action.

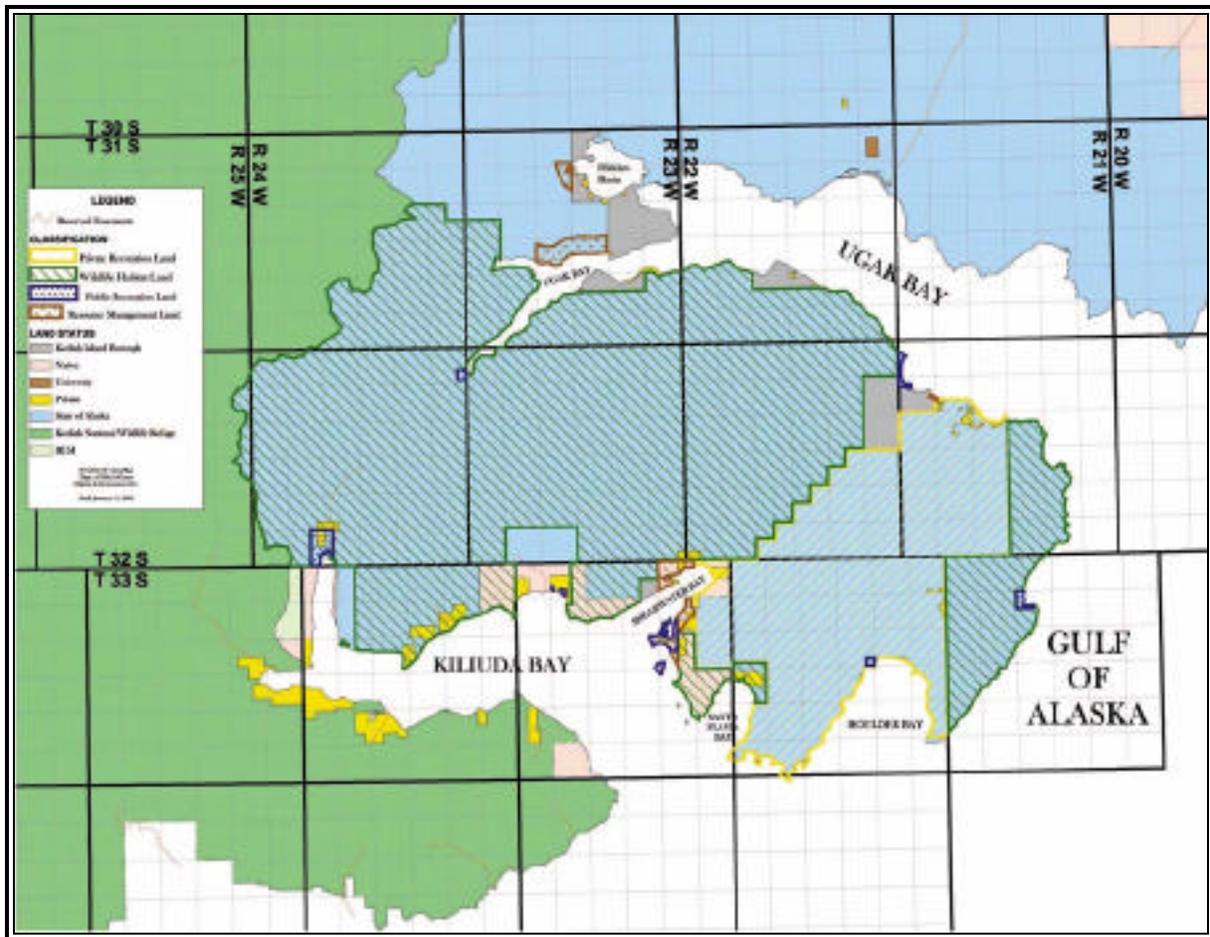


Figure 3-3. Shearwater Peninsula

3.4 Potential Threats to Bear Habitat

Resident human populations are relatively stable, most of the lands are managed for healthy ecosystems, and no large-scale developments are currently proposed.

3.4.1 Use of Back-Country Areas

Of greatest concern is the increasing seasonal human use of inland and coastal areas. Backcountry use of streams continues to gain in popularity; in some locales, this includes private land that has been acquired for public use. The increase in sport fishing and camping along these streams is generating conflicts between people and bears.

Use of ORVs and snowmachines has continued to expand throughout the state, especially in road-accessible areas of southcentral and interior Alaska. Riders are taking these machines into previously undisturbed bear habitat and affecting both the physical habitat and the security of bears. The majority of the increase is associated with the use of four-wheel all-terrain vehicles (ATVs) particularly associated with nonhunting recreational use. Increasing public complaints and observations of resource managers indicate that some areas of Alaska experience problems

with ORV and snowmachine use. Typical problems include damage to soils and vegetation, displacement of wildlife, and conflicts with other outdoor users. Unregulated motorized access can potentially impact bear habitat on the Kodiak archipelago. US Fish and Wildlife Service has the authority to limit ORV use on refuge lands, and use of ORVs is not allowed on USFWS managed lands within KNWR.

3.4.1.1 Recommendations Related to Bear-Use Areas

- USFWS should work with ADF&G and the Kodiak Unified Bear Subcommittee (KUBS) when reexamining refuge areas that are closed or proposed to be closed to the public and commercial operators (see section 1.4.5).
- On USFWS land, restrict back-country use (e.g., require permits) before resorting to total closure to use (USFWS must be equipped to do so).
- Continue to seek enhanced funding for identification and study of important and critical bear habitat.
- Manage critical bear habitat to prevent adverse impacts.
- Consider restricting human use on important streams if there are documented adverse impacts on salmon stocks, bears, or both.
- Mandate an open public process prior to restrictions and ensure that nothing in these recommendation will conflict with federal and state subsistence laws.

3.4.1.2 Recommendations Regarding Motorized Access

- Create baseline information regarding ORV use throughout the archipelago in order to evaluate areas of problems (see chapter 7, “Research and Monitoring”).
- The CAC strongly recommends discouraging ORV use on easements not currently used by ORVs.
- Limit ORV use in important bear habitat areas (i.e., restrict recreational use of ORVs to designated-use areas [e.g., corridors] near villages).
- Develop statewide legislation requiring the licensing and registration of ORVs.
- Urge Kodiak Island Borough (KIB) to coordinate efforts among ADF&G, USFWS, private landowners, ORV users, and other interested parties to initiate an ORV planning process.
- Commend private property owners’ existing policies restricting motorized public access and encourage continuation of these policies.
- Formally recognize the Kodiak Snow Bruins for its policies regarding responsible snowmachine use.
- To minimize snowmachine impact on bears, do additional research to provide the facts necessary to identify highly sensitive areas of bear habitat (e.g., denning areas) (see chapter 7, “Research and Monitoring”).
- Develop snowmachine limitations (e.g., closures) for sensitive denning areas.

- Develop an education and enforcement plan for responsible use of ORVs to minimize negative impacts on bear habitat.
- The CAC objects to ORV manufacturers and retailers whose advertising (commercials) encourage unethical and damaging use of ORVs on public lands.
- Seek the cooperation of ORV user groups to encourage more responsible use of ORVs while in bear habitat.
- Prohibit air boats and personal watercraft (e.g., jet skis) in important bear habitat.
- Enforce state and federal laws regarding the intentional harassment of bears with aircraft (also see section 6.7).
- To minimize disturbance to bears, develop guidelines for overflying by helicopters for recreational purposes (also see section 6.7).
- To minimize disturbance to bears, develop guidelines for overflying by fixed-wing aircraft for recreational purposes (also see section 6.7).

3.4.2 Road Building and Energy Development

Future developments that could have adverse impacts on bears include road and energy development. A plan to construct a road to circumnavigate Kodiak Island has been proposed, but it is unlikely this project will proceed in the near future. Oil and gas deposits in Shelikof Strait are available for leasing through the federal government (see also section 2.2.15). Interest in these deposits is expected to be high; if they are proved and developed, exploration and extraction operations would probably be established on the Kodiak archipelago. Sites for additional hydroelectric facilities on Kodiak Island have also been identified.

Access routes, including roads, can increase human presence in bear habitat. Routes and roads may displace bears, fragment habitat, increase human use of an area, and lead to increased bear-human conflicts and DLP mortality. Existing roads and the continued building of new roads in bear habitat could be detrimental to the long-term well-being of Kodiak bears.

More insidious threats to bear habitat are those that are not anticipated or are the cumulative effect of several minor impacts. Climatic changes that reduce salmon stocks or berry production for long periods would have catastrophic impacts on bears. Human-caused factors such as oil spills would also be detrimental. The cumulative effects of increasing human uses in the backcountry, expansion of coastal facilities, and bears being killed in defense of life or property (DLP) near towns and villages are not fully understood, but have potentially greater impact than any single threat to Kodiak bear habitat.

3.4.2.1 Recommendations about Road Building in Bear Habitat

- Explore alternatives to building new roads in important bear habitat areas.
- Support closure (i.e., decommissioning) of obsolete logging roads on public and privately owned lands.
- Continue existing practices to limit motorized public access to logging roads.

3.5 Wilderness and Wild Rivers Designations

The CAC recognizes that the Kodiak archipelago possesses outstanding and unique wilderness and wild river values of great importance to bears, salmon, and other fish and wildlife and believes these public resources should continue to be available for public use and enjoyment.

U.S. Fish & Wildlife Service produced wilderness study reports for KNWR in 1972 and again in 1987, as required by the Wilderness Act of 1964 and the Alaska National Interest Lands Conservation Act of 1980, respectively. Both reports found that most lands in the refuge meet criteria for designation as wilderness, defined in the Wilderness Act for size, ownership, natural integrity, naturalness, solitude, and primitive recreational opportunities. Refuge lands were also found to possess outstanding special values, including some of the finest bear habitat in the world; hundreds of bald eagles, a refugium with unique characteristics; the most productive waterfowl habitat on the Kodiak archipelago; and spawning habitat for steelhead trout, Dolly Varden, Arctic char, and millions of Pacific salmon.

A succession of federal administrations has failed to act on these recommendations because of opposition from development interests, along with widespread public misunderstanding, confusion, and fear of what such designations might mean, especially in terms of access to and uses of refuge lands and waters.

The CAC believes it is essential that the public understand the true values, economic benefits, and possible impacts derived from proposed wilderness and wild river designations. U.S. Fish & Wildlife Service is required by law to identify, during the revision of KNWR Comprehensive Conservation Plan (U.S. Fish & Wildlife Service 1987), those lands and waters within KNWR that qualify for such designations.