

National Park Service
U.S. Department of the Interior

Katmai National Park and Preserve
Alaska



Hunting Guide Concessions Environmental Assessment

Public Review





NATIONAL PARK SERVICE ALASKA REGION

Hunting Guide Concessions in Katmai National Preserve

PUBLIC REVIEW

ENVIRONMENTAL ASSESSMENT

June 2012

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ACRONYMS & GLOSSARY

ADFG	Alaska Department of Fish and Game
ALAG	Alagnak Wild River
ANILCA	Alaska National Interest Lands Conservation Act of 1980
AS	Alaska Statute
BLS	United States Bureau of Labor and Statistics
BOG	Board of Game
C&T	customary and traditional
CE	Categorical Exclusion
CFR	Code of Federal Regulations
CSIS	
CUA	Commercial Use Authorization
EA	Environmental Assessment
EIS	Environmental Impact Statement
FWS	United States Fish and Wildlife Service
GMU	Game Management Unit
KATM	Katmai National Park and Preserve (e.g. the whole management unit)
KTPR	Katmai National Preserve
NEPA	National Environmental Policy Act of 1969
NPS	National Park Service
PL	Public Law
RAC	Regional Advisory Council
Se	Standard error
UCU	Uniform Coding Unit
USCB	United States Census Bureau
USFWS	United States Fish and Wildlife Service

1.0 PURPOSE AND NEED FOR ACTION

1.1 Purpose of and Need for Action

The National Park Service (NPS) is considering soliciting proposals for guided sport hunting services in Katmai National Preserve (Preserve). Guided hunting has occurred in this area before and since the passage of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA), which established the Preserve. Sport hunting is allowed in the Preserve under Federal and non-conflicting State laws and regulations, pursuant to ANILCA Sections 203 and 1313 and 36 CFR Part 13.40(d). This action would continue guided sport hunting by issuing new concession contracts for the Preserve. For the next 10-year contract period and beyond, the NPS is considering revising the guide area boundaries and annual client limits apportioned to each guide area. The purpose of this action is to provide for a more equitable distribution of business opportunities and a reasonable apportionment of clients to guide area resources, while maintaining other purposes and values for which the area was established.

Guided sport hunting services are considered to be an appropriate and necessary means to provide hunting opportunities for both Alaska resident and nonresident hunters within Alaska National Preserves. These services are subject to the provisions of the NPS Concessions Management Improvement Act of 1998 (PL 105-391) and other applicable laws and regulations. Alaska state law requires nonresident brown bear hunters to be either accompanied by a licensed guide or a close relative over 19 years old who is an Alaska resident (see AS 16.05.407). A nonresident alien (foreign citizen) must have a licensed guide to hunt any big game species¹ (AS 16.05.408). Although Alaska residents may hunt brown bear in the Preserve without a guide, they may choose to hunt in the Preserve with a guide.

The NPS intends to issue a new prospectus in a reasonably timely manner because the current contract expires at the end of December 2012. In the past, NPS has authorized two guided hunting concessions in Katmai National Preserve; the Moraine Guide Area occupies the majority of the Preserve, and Sugarloaf Guide Area occupies the southwest corner of the Preserve. The contract for the Moraine Guide Area was terminated by the NPS in 2009 for material breach, and the area has remained without a concessioner since then. The remaining contract for the Sugarloaf Guide Area authorizes a limited number of clients in a small sub-section of Katmai Preserve, and as a result, the bulk of the Preserve is not currently serviced by a guide. The current situation makes this the optimum time to revise the guide areas and associated client numbers for two more-viable guided hunting concessions in the Preserve that would attract quality operators. If a decision is made to proceed with authorizing the guided sport hunting contracts in the Preserve, a concessions prospectus would be issued to competitively award the contracts.

This environmental assessment (EA) analyzes the proposed action and alternatives and their impacts on the environment. Environmental considerations include effects on wildlife populations, subsistence uses, economic opportunity, recreational uses, and wilderness. The EA

¹ Big game includes black bear, brown/grizzly bear, bison, caribou, Dall sheep, Sitka black-tailed deer, elk, mountain goat, moose, muskox, wolf, and wolverine.

has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), and NPS Director's Orders #12: Conservation Planning, Environmental Impact Analysis, and Decision-making.

1.2 Background

1.2.1 Park Purpose and Significance

ANILCA Section 202(2) established Katmai National Park and Preserve (KATM), which expanded the former Katmai National Monument that existed before the 1978 Alaska National Monument authorized by President Carter in 1978. An additional one million and thirty-seven thousand acres of public land were added to the monument and redesignated a National Park, and three hundred and eight thousand acres were established as Katmai National Preserve (Figure 1). The areas are managed for the following purposes, among others:

To protect habitats for, and populations of, fish and wildlife including, but not limited to, high concentrations of brown/grizzly bears, and their denning areas; to maintain unimpaired the water habitat for significant salmon populations; and to protect scenic, geological, cultural and recreational features.

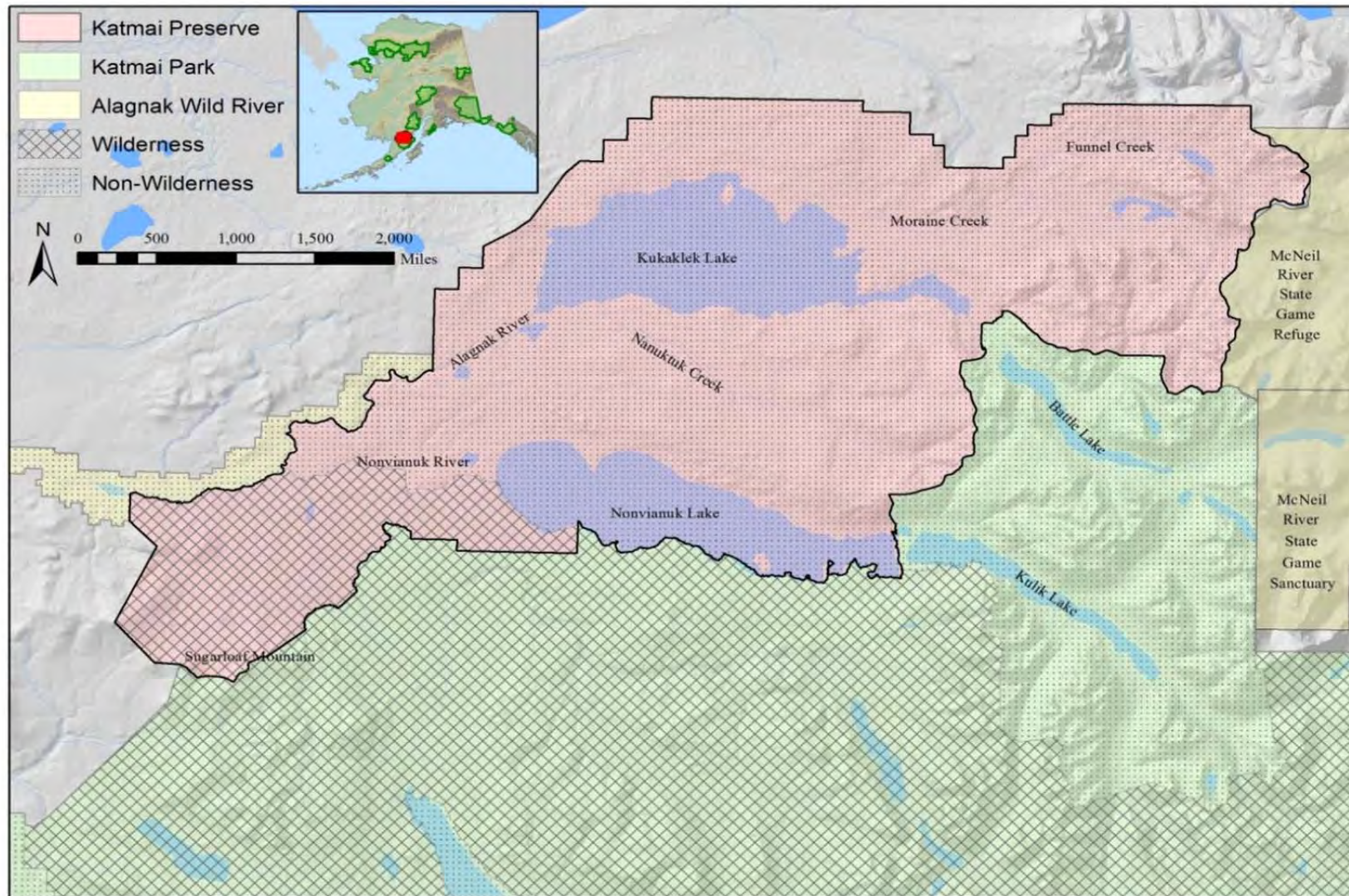
ANILCA Section 203 states lands, waters, and interests in the newly established areas shall be administered pursuant to the NPS Organic Act of 1916, as amended and supplemented, and pursuant to ANILCA Section 1313 and other applicable sections, provided that "hunting shall be permitted", and "subsistence by local rural residents shall be allowed in national preserves".

Pursuant to ANILCA Section 701(4) the subsection of the Preserve south of the Nonvianuk River and Nonvianuk Lake is designated as part of the Katmai Wilderness, totaling a little over 44,000 acres.

The KATM General Management Plan (NPS 1986) includes statements regarding sport hunting in the Preserve:

- Residents of villages near the northern and western boundaries of the Preserve expressed concern about competition for subsistence resources (specifically moose) from sport hunters and poachers and about declining moose populations;
- With hunting permitted in the Preserve, there is potential for expanded recreational activities;
- Bear concentration areas in the Preserve are known along Funnel, Moraine, and Nanuktuk creeks;
- The State of Alaska, through the board of game, establishes hunting and trapping regulations for the Preserve, consistent with the provisions of ANILCA. The NPS will cooperate wherever possible to establish regulations compatible with park and preserve management goals, objectives, and NPS policies;

Figure 1 showing location of Katmai National Park and Preserve, including designated Wilderness.



- Additional parts of the Preserve are considered eligible for Wilderness designation except the surfaces of Nonvianuk and Kukaklek lakes, Native land selections, and private inholdings;
- Commercial operators are required to obtain a permit, license, contract, or other written agreement before operating within the preserve.

The KATM Foundation Statement (NPS 2009) presented the following applicable statements regarding the purpose and significant resources and values of the Preserve:

- Katmai National Park and Preserve is home to the world's largest protected population of brown bears, offering visitors an unprecedented opportunity to study and view bears in their native habitat.
- The taking of fish and wildlife for sport purposes, subsistence uses, and trapping shall be allowed in the Preserve under applicable State and Federal law and regulation.
- Sport and subsistence hunting in the Preserve are permitted so long as healthy wildlife populations are maintained.

1.2.2 Pertinent Laws, Regulations, and Policies

1.2.2.1 NPS Concessions Management Improvement Act of 1998 & 36 CFR Part 51

If approved, a hunting guide prospectus would be issued in accordance with this Act, its implementing regulations, and NPS policies. The prospectus would be issued to attract the widest possible interest from qualified applicants in establishing, operating, and maintaining the hunting guide services, and to inform all interested parties of the requirements and conditions under which the operations may be conducted.

Concession management policies are described in NPS Management Policies Section 10.2 (NPS 2006). A decision to authorize the revised hunting guide concession(s) would be based on a determination that the services are:

- Consistent with enabling legislation;
- Complementary to the unit's mission and visitor services objectives;
- Necessary and appropriate for the public use and enjoyment of the unit;
- Incorporates sustainable principles and practices; and
- Will not cause unacceptable impacts.

1.2.2.2 Other ANILCA Provisions

Section 1313 of ANILCA states:

A National Preserve in Alaska shall be administered and managed as a unit of the National Park System in the same manner as a national park except as otherwise provided in this Act and except that the taking of fish and wildlife for sport purposes and subsistence uses, and trapping shall be allowed in a national preserve under applicable State and Federal law and regulation.

Consistent with the provisions for closure to subsistence uses described in Section 816 of ANILCA, Section 1313 states, "... within national preserves the Secretary may designate zones where and periods when no hunting, fishing, trapping, or entry may be permitted for reasons of public safety, administration, floral and faunal protection, or public use and enjoyment. Except in emergencies, any regulations prescribing such restrictions relating to hunting, fishing, or trapping shall be put into effect only after consultation with the appropriate State agency having responsibility over hunting, fishing, and trapping activities."

ANILCA Section 1314(a) states: "Nothing in this Act is intended to enlarge or diminish the responsibility and authority of the State of Alaska for management of fish and wildlife on public lands except as may be provided in title VIII of this Act..." Section 1314(c) adds: "The taking of fish and wildlife in all conservation system units ... shall be carried out in accordance with the provisions of this Act and other applicable State and Federal law."

1.2.2.3 The Wilderness Act (16 USC § 1131-1136), ANILCA Amendments, and NPS Policy

The Wilderness Act established a National Wilderness Preservation System, "administered for the use and enjoyment of the American people in such manner as would leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness." Section 4(c) of the Wilderness Act describes prohibitions in wilderness, including:

there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

The Wilderness Act §4 (d)(6) provides that "commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas." Due to the ANILCA provision for sport hunting within the Preserve and the State of Alaska requirements for guides for nonresident hunters, guided sport hunting is deemed a necessary commercial activity in the wilderness areas of the Preserve.

ANILCA §701(4) established the Katmai Wilderness, which includes the southwestern portion of the Preserve. ANILCA provides for motorized access in Wilderness in §1110 (a), which states: "Notwithstanding any other provision of this Act or other law, the Secretary shall permit, on conservation system units (including designated wilderness) ... and lands designated as wilderness study, the use of snowmachines, motorboats, airplanes, and nonmotorized surface

transportation methods for traditional activities (where such activities are permitted by this Act or other law) and for travel to and from villages and homesites.”

NPS Management Policies at 6.3.1 state:

For the purposes of applying these policies, the term “wilderness” will include the categories of eligible, study, proposed, recommended, and designated wilderness.....In addition to managing these areas for the preservation of the physical wilderness resources, planning for these areas must ensure that the wilderness character is likewise preserved.....The National Park Service will take no action that would diminish the wilderness eligibility of an area possessing wilderness characteristics until the legislative process of wilderness designation has been completed. Until that time, management decisions will be made in expectation of eventual wilderness designation (NPS 2006).

Nearly the entire NPS area within the Preserve boundary (about 260,000 acres) is either designated or eligible for wilderness designation.

1.2.2.4 The National Park Service Organic Act (1916) (16 USC § 1-4) & General Authorities Act (1970) (16 USC § 2, 3, and 4)

The NPS Organic Act of 1916 and the General Authorities Act prohibit impairment of park resources and values. The 2006 NPS Management Policies uses the terms “resources and values” to mean the full spectrum of tangible and intangible attributes for which the park is established and managed, including the Organic Act’s fundamental purpose and any additional purposes as stated in the park’s establishing legislation. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute. The primary responsibility of the NPS is to ensure that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The evaluation of whether impacts of a proposed action would lead to an impairment of park resources and values will be included in the decision document for this environmental assessment. Impairment is more likely when there are potential impacts to a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park’s general management plan or other relevant NPS planning documents.

1.2.2.5 Facilitation of Hunting Heritage and Wildlife Conservation (Executive Order # 13443)

The President issued this EO in August 2007 to specify that Federal agencies shall, consistent with agency missions, evaluate the effects of agency actions on trends in hunting participation and implement actions to expand and enhance public hunting opportunities. The NPS proposed action is consistent with the EO.

1.2.3 Relationship of the Proposal to Other Planning Projects

Other planning efforts are ongoing for KATM, and this hunting guide services concession EA takes into account those other plans to assure the end results would be coordinated. The Climate Monitoring Program for Katmai, Kenai Fjords and Lake Clark NPS areas resulted in new remote automated weather stations in KATM, including one at Pfaff Mine near the southeastern corner of the Preserve. A Fire Management Plan is being developed for the entire park and preserve.

1.3 Scoping

Public scoping for this project began with publication of a newsletter in May 2011, which described a proposal to adjust guide areas and associated annual client limits for brown bear for spring and fall seasons. The newsletter was mailed to 111 individuals and organizations that were interested in this proposal, was uploaded onto the NPS PEPC web page, and was open for public comment between May 24 and July 15, 2011.

The NPS received responses on the May 2011 scoping newsletter from five organizations and 39 individuals. While some commenters supported the proposed NPS categorical exclusion as the appropriate level of NEPA compliance, other parties and newspaper articles raised concerns that the proposal warranted detailed evaluation under an EA.

Information on the potential effects of the proposal on brown bears was disputed early in the scoping period. Some commenters expressed concern that the action could have significant effects on other natural resources and wilderness, with about 45,000 acres of the Preserve as designated wilderness and another 260,000 acres as eligible for wilderness designation. Through internal scoping, the NPS realized the proposal could affect moose populations, subsistence, and other recreational uses. Because this proposal has generated considerable public interest, and for reasons stated above, the NPS has decided to prepare an EA. A press release announcing the decision to conduct an EA was released on October 26, 2011.

As a result of the letters received and internal scoping, the following issues were identified for evaluation.

1.4 Issues

1.4.1 Issues Selected for Detailed Analysis

1.4.1.1 Wildlife Populations

The Preserve is managed to both protect habitat for and sound populations of wildlife and to provide for sport and subsistence hunting. The proposed action could affect wildlife populations, their distributions, sex and age ratios, and patterns of use, particularly brown bears and moose. A key ANILCA provision for KATM is to protect high concentrations of brown/grizzly bears and their denning areas.

1.4.1.2 Subsistence

Because subsistence uses by local rural residents is one of the primary uses of KATM Preserve, guided sport hunting could compete for resources needed by local rural residents for subsistence, particularly moose.

1.4.1.3 Recreational Uses

Recreational uses such as unguided sport hunting, sport fishing, bear-viewing, rafting, and boating could be affected by guided hunting in the Preserve. Conversely, most non-resident hunters are required to have guides for certain species in Alaska, such as brown bears, and their recreational opportunity could be adversely affected without guides. Also, resident hunters needing a guide for safety and logistical reasons to hunt in the area could be adversely affected.

1.4.1.4 Employment Opportunities, Local and Regional Economies

The award of guided hunting concession contracts could provide employment opportunities for a few Alaska residents and associated seasonal local and regional businesses. Some community residents would like to have an opportunity to guide hunters in the Preserve. A few commenters expressed concern that guided hunting could affect bear-viewing or other commercial uses and enjoyment of the Preserve.

1.4.2 Issues Dismissed From Detailed Analysis

1.4.2.1 Designated and Eligible Wilderness

After a close examination of the proposed action and other alternatives on the four key characteristics of wilderness (untrammelled, natural, undeveloped, and opportunities for primitive and unconfined recreation), the NPS found all effects would be negligible.

1.4.2.2 Vegetation and Wetlands Protection

Wetlands would not be affected by guided sport hunting operations because no long term or permanent facilities or improvements would be authorized within the Preserve. Effects to

vegetation from field camps and privies would be very short term and not recognizable after a very short period of time.

1.4.2.3 Floodplain Management

Floodplains would not be affected by guided sport hunting operations because no long term or permanent facilities or improvements would be authorized within the Preserve.

1.4.2.4 Threatened and Endangered Species

Guided sport hunting would only be allowed for species that could sustain hunting pressures. Threatened and endangered species passing through the area, such as Steller's eiders, would not be hunted or adversely affected.

1.4.2.5 Cultural Resources

No activities to be authorized for guided sport hunting within the Preserve would adversely impact historic properties that are eligible for listing on the National Register of Historic Places. Measures within the Katmai Compendium to protect resources in the Preserve will apply. Procedures for reporting inadvertent discoveries will be included in each hunting contract's operating plan. No historic properties would be adversely affected by award of the guided sport hunting contracts.

1.4.2.6 Air Quality

Intermittent transport with airplanes and motorboats would have a negligible effect on air quality in the area.

1.4.2.7 Low Income and Minority Populations

Some low income and minority populations live near this remote Preserve, and village residents hunt and gather in the area. The proposed activity would not have disproportionate adverse effects on these populations pursuant to Executive Order (EO) 12898, Environmental Justice.

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2.0 ALTERNATIVES

2.1 Introduction

This chapter describes a range of reasonable alternatives, which include the no-action alternative and two action alternatives with different guide areas and the associated client numbers for each guide area. The proposed action is to issue a prospectus and award guided hunting concession contracts for the next ten years in Katmai National Preserve; however, the NPS is not obligated to award new contracts (no-action). Alternatives considered but dismissed from further analysis, with a brief rationale for eliminating them, are presented near the end of this chapter.

The alternatives were developed and selected for analysis based on internal NPS discussions, consultation with the Alaska Department of Fish and Game, comments in letters received as a result of the spring 2011 newsletter, and consultation with traditionally associated tribes. The main objectives for the action alternatives are to be reasonable in terms of NPS management directions for the Preserve; create a reasonable business opportunity to make a profit; and avoid significant restrictions to subsistence resources including those identified for rural communities associated with the Preserve.

2.1.1 Elements Common to All Alternatives

The NPS would continue to monitor the distributions of wildlife populations in the Preserve to assure the protection of habitats and sound populations of wildlife, including high concentrations of brown/grizzly bears, pursuant to ANILCA Section 202(2).

2.2 Alternative A – No Guided Hunting Contracts Awarded (*No Action*)

Under the No-Action Alternative the NPS would not issue a prospectus for guided hunting and concession contracts would not be awarded to provide guided hunting services within Katmai National Preserve. This alternative would reduce services relative to the status quo (alternative B). Subsistence and sport hunting without guides would continue in the area. Sport hunting access would continue to be by Alaska residents utilizing authorized commercial air services, their own airplanes, motorboats, or other methods of nonmotorized surface transportation to and in the Preserve. No brown bear hunting opportunities for USA citizens who are not residents of Alaska would be available unless they are accompanied by a close relative who is an Alaska resident at least 19 years old with a license to hunt in the state. Non-resident foreign hunters would not be allowed to hunt any big game species in the Preserve. Under this alternative, the current contract for guided hunting services in the small Sugarloaf Guide area would expire at the end of 2012, and no new guided hunting concession contracts would be issued. This alternative provides a baseline for evaluating the effects of the two action alternatives.

2.3 Elements Common to All Action Alternatives

The following elements would be included in contracts under the following action alternatives:

- Guided hunting operations would only be authorized on NPS lands within the Preserve boundaries. The Alagnak Wild River (ALAG) unit of the NPS is outside of the Preserve boundary and the scope of this proposal.
- No temporary facilities other than tents and associated camping equipment would be allowed to remain in any location more than seven days.
- Concessioners would be authorized to guide for all species their clients would be legally able to hunt under current State hunting regulations. The concession contracts would include provisions allowing the Superintendent to place restrictions or limitations on species available for guided hunts. Adjustments in maximum client numbers by authorized guide operations could be made by the Superintendent in each contract's Operating Plan.
- The NPS would issue a prospectus to attract the widest possible interest from qualified offerors in establishing, operating, and maintaining guided hunting services, and to inform all interested parties of the requirements and conditions under which the operation may be conducted. The NPS would select no more than two qualified offerors through a competitive process to provide and operate guided hunting services for the general public in Katmai National Preserve. Each awarded contract would be for the provision of these services within an exclusive guide area within Katmai National Preserve.

2.4 Alternative B –Award Guided Hunting Contracts for the Original Sugarloaf and the Moraine Creek Guide Areas in the Preserve (*Status Quo*)

The NPS would issue a prospectus to solicit offers for two guided hunting concessioners in the Preserve within GMU 9C. One concessioner would be authorized to guide up to 3 clients each year in the Sugarloaf Guide Area, and the other concessioner would be authorized to guide up to 25 clients each year in the Moraine Creek Guide Area (See Figure 2.1). The Sugarloaf Guide Area would overlap the designated Katmai Wilderness in the Preserve, totaling about 59,600 acres. The remainder of the Preserve in the Moraine Creek Guide Area is eligible for wilderness designation except for areas selected and patented by native corporations and other state and private lands within the established boundaries of the Preserve, totaling about 268,400 acres.

This alternative would provide for a maximum of 28 clients annually, or up to 280 clients over the ten-year contract period. It is expected that guides would tend to focus on harvest of moose in the Sugarloaf guide area and brown bear in the Moraine Creek guide area. This alternative would continue the status quo guide areas and client numbers in place since 2003, until the Moraine Creek contract was terminated in 2009.

2.5 Alternative C - Award Guided Hunting Contracts for the Revised Sugarloaf and Moraine Creek Guide Areas in the Preserve (*NPS Preferred Alternative*)

The NPS would issue a prospectus to solicit offers for two guided hunting services in the Preserve within GMU 9C. One concessioner would be authorized to guide up to 12 clients each year in the revised Sugarloaf guide area, and the other concessioner would be allowed to guide

up to 16 clients each year in the revised Moraine Creek Guide Area (See Figure 2.2). The Sugarloaf Guide Area would be enlarged to about 141,300 acres to include the Preserve area south of the Alagnak River to its outlet from Kukaklek Lake, south of Kukaklek Lake to the outlet of Nanuktuk Creek, and south of Nanuktuk Creek to the headwaters of its most northerly stem. The size of the Moraine Creek Guide Area would be reduced to about 186,700 acres to include all other NPS Preserve lands north and east of Nanuktuk Creek and north of the Alagnak River.

This alternative would provide for a maximum of 28 clients annually, or up to 280 clients over the ten-year contract period. This alternative is designed to provide more equitable guiding opportunities in the two guide areas within the Preserve in terms of guide area size and authorized client numbers.

2.6 Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative that would result in the least damage to the biological and physical resources of the Preserve, which would also best protect, preserve, and enhance historic, cultural, and natural resources (Q6a of 40-Most Asked Questions CEQ Regulations a 40 CFR Part 1500). Nonresident hunters without a close relative at least 19 years of age would not be allowed to hunt brown bears in the Preserve, and foreign hunters would not be allowed to hunt any big game species within the Preserve. Nevertheless, the environmentally preferable alternative would be the no-action alternative.

2.7 Alternatives and Actions Considered But Eliminated from Detailed Study

2.7.1 Award Two Guided Hunting Contracts for the Revised Sugarloaf and Moraine Creek Guide Areas in the Preserve with Client Limits for Brown Bear by Season (NPS Proposal in the May 2011 Newsletter)

The National Park Service developed and evaluated a proposal that would limit the number of clients that could hunt brown bears within each of two revised guide areas (including a total harvest of 8 bears during even-year spring seasons and 13 bears in odd-year fall seasons). The intent of the proposal was to establish client limits that would prevent the harvest level of bears from negatively impacting the population. After careful review, this alternative was eliminated from detailed consideration for three reasons. First, review of data showed that the observed number of bears in the Preserve is increasing, with no indication that harvest levels have been greater than what the bear population can reasonably support. Second, review of bear demographic data showed that family groups remain well below 70% of the bears observed (an accepted goal in managing healthy populations of brown bears) and harvested animals are not declining in age, both of which suggest current harvest rates are not excessive. Third, harvest is managed through seasons and bag limits that are set by the Alaska Board of Game, which considers opportunity for both resident and non-resident hunters. Any attempt to manage harvest primarily through a concession contract would solely affect guided harvest. The consequences of this approach may be ineffective because harvest of bears by resident hunters without a guide would not be limited in the Preserve and guided hunters would be disproportionately affected.

2.7.2 Issue Commercial Use Authorizations instead of Concession Contracts

One commenter suggested issuing one or more commercial use authorizations (CUAs) for each guide area instead of concession contracts. The Concessions Management Improvement Act of 1998 provides that the Secretary shall utilize concessions contracts to authorize services to visitors to units of the National Park System. The Act also provides that the Secretary may authorize services through a commercial use authorization (CUA), provided certain criteria are met. In no circumstance does the act require the NPS to authorize services to visitors under a CUA instead of a concession contract.

Generally, if the NPS determines that the number of operators should be limited, then long term (ten year) concession contracts are awarded through a competitive selection process. When there is no need to limit the number of operators or specify a land area assignment and therefore no need to use a competitive selection process, then CUAs are often used, which have a statutory maximum term of two years.

The NPS has determined that limiting the number of operators and authorizing the activity through a concession contract is the appropriate process for managing the Katmai hunting guide visitor service. The competitive process for concession contracts increases the likelihood of obtaining high quality operators. Establishing defined guide areas with longer term contracts provides an incentive for good stewardship of the area, because maintaining healthy game populations also has a direct impact on the future business opportunity for the guide. The concession contracts also provide for more direct working relationships between the NPS and the guide through additional requirements and contract oversight that exist in a concession contract. The NPS believes that limiting the number of sport hunting guides operating within a given area is consistent with wildlife conservation, safety, and quality of guided hunting services. The NPS decision on limiting the number of sport hunting guides is consistent with views expressed by the State of Alaska Big Game Commercial Services Board, the State of Alaska Department of Natural Resources, and the current practices of the U.S. Fish and Wildlife Service.

2.7.3 Provide for Overlapping Guide Areas for Two Guide Contracts in the Preserve

Overlapping guide areas could result in competition for the most valuable wildlife resources, the best camping sites, and the best habitat. This can result in degradation of wildlife habitat and visitor experiences. While this model is sometimes appropriate in areas where the primary species to be hunted has a significant migratory range (such as caribou), the NPS has found that guide areas without overlap result in better resource stewardship. Competition for resources would be reduced where operators do not overlap. Exclusive guide areas are known to minimize friction and competition and to enable concessioners to demonstrate stewardship for their area.

2.7.4 Award Three or More Guide Contracts in Katmai National Preserve

An alternative was suggested to allow up to 3 guides to operate with three separate guide use areas in the Preserve, but this would diminish the economic viability of guided hunting within the Preserve and reduce competition and the quality of services offered to the public. The NPS

prefers to provide for two economic opportunities rather than three or more, which would be more likely to fail and reduce public services in large areas during a 10-year contract period.

2.7.5 Award One Guide Contract in Katmai National Preserve

The large size of the Moraine Guide operation in previous contracts suggested that adding the few clients allocated to the Sugarloaf area to one larger operation would be a viable alternative. However, after careful review of past records with two guide concessioners and considering the potential for a reasonable business venture, the NPS decided limiting the prospectus to one guide concessioner was not necessary. Additionally, no public scoping comments called for fewer than two concessioners and some commenters requested more than two concessioners.

2.7.6 Guided Hunting in the Alagnak Wild River Unit

A few local area residents have asked about the potential for guided hunting in the Alagnak Wild River unit, which is managed by Katmai National Park and Preserve. This area is outside the boundaries of Katmai National Preserve, and it is outside the scope of this NPS proposal.

Table 2.1 Summary Description of the Alternatives

NPS GUIDE AREA ALTERNATIVE	SUGARLOAF	MORaine	TOTAL CLIENTS
A – No Action	0 acres/ 0 clients	0 acres/ 0 clients	0
B – Status Quo	59,600 acres/ 3 clients/ Unspecified species	268,400/ 25 clients/ Unspecified species	28 clients
C – Revised Areas <i>(NPS Preferred)</i>	141,300 acres/ 12 clients/ Unspecified species	186,700 acres/ 16 clients/ Unspecified species	28 clients

Table 2.2 Summary Impacts of the Alternatives

ALTERNATIVE IMPACT TOPIC	Alternative A – No Prospectus and No Hunting Guides	Alternative B – Status Quo	Alternative C – Revised Guide Areas and Client Limits <i>(NPS Preferred)</i>
Wildlife			
Brown Bears	Lower proportion in family groups and more single bears; unguided hunter harvest could decrease bear numbers, but population controlled mostly by salmon availability.	Past harvest under this scenario has not been excessive, but increasing proportion of bears in family groups and fewer single large male bears indicate moderate harvest pressure. If population productivity or changes in hunter effort indicate excessive harvest, then the state would institute regulatory changes including in-season registration permits and, a single fall hunt season.	The potential for harvest issues is the same as for alternative B. There is no indication that historical use has caused overharvest with similar levels of authorization. If population productivity or changes in hunter effort lead to overharvest, then the state would institute regulatory changes including in-season registration permits and, a single fall hunt season.
Moose	Less human harvest pressure could result in increased bull:cow ratio, but more bears could decrease moose population.	Calf:cow ratios may continue to be low but not fall beneath ADFG guidelines, and overall impacts to moose would be minor with the population remaining stable and low.	Effects on moose would be minor, and the moose population should remain stable.

Other (Caribou)	Caribou season is currently closed, but if it reopened, hunter harvest effects would be nominal.	If the hunting season for caribou remains closed to non-residents, then no effects would be observed. If the hunting season were to reopen, the effect on caribou would be minimal due to the large herd size.	If the hunting season for caribou remains closed to non-residents, then no effects would be observed. If the hunting season were to reopen, the effect on caribou would be minimal due to the large herd size.
Subsistence Uses	The overall effect on subsistence resources and uses would be minor as 3 moose would not be taken by guided hunters, but lower take of bears could slightly adversely affected moose availability.	A minor adverse effect to Federal subsistence would occur with continuing harvest of 3 moose, but harvest of bears could offset the direct effects of moose harvest by guided hunters.	A minor adverse effect to Federal subsistence would occur with continuing harvest of 3 moose, but harvest of bears could offset the direct effects of moose harvest by guided hunters.
Recreational Uses	Hunting accounts for a small portion of visitation to the Preserve and occurs at other times than other recreational uses. The effect of no guided hunting on other recreational uses would be minor; however, resident hunters without guides might take advantage of the area not serviced by guides. Foreign and most nonresident	Minor effects on visitation within the Preserve may occur because guided hunting accounts for a small portion of visitation. Hunting occurs during times with little visitation from other users. Nonresident hunters would have an opportunity to hunt brown bears in the Preserve. Changes in wildlife numbers and/or composition due to	Minor effects on visitation within the Preserve may occur because guided hunting accounts for a small portion of visitation. Hunting occurs during times with little visitation from other users. Nonresident hunters would have an opportunity to hunt brown bears in the Preserve. Changes in wildlife numbers and/or composition due to

	hunters would be excluded from the Preserve.	guided hunting would be minor resulting in minimal effect on visitor numbers and experiences within the Preserve.	guided hunting would be minor resulting in minimal effect on visitor numbers and experiences within the Preserve.
Employment and Economies	The overall impact to local and regional economies would be negative and minor from loss of guided hunting estimated to decrease area expenditures by \$115,000 to \$245,000 out of tens of millions of annual expenditures in the region.	The overall impact to local and regional business opportunities and local and regional economies would be positive and minor because guided hunting would be authorized for up to 28 clients/year in two former guide areas, resulting in annual expenditures of about \$115,000 to \$245,000 in the local and regional economies out of tens of millions of annual expenditures in the region.	The overall impact to local and regional business opportunities and local and regional economies would be positive and minor because guided hunting would be authorized for up to 28 clients/year in two new guide areas, resulting in annual expenditures of about \$115,000 to \$245,000 in the local and regional economies out of tens of millions of annual expenditures in the region.

Figure 2.1 Alternative B – Status Quo Guide Areas

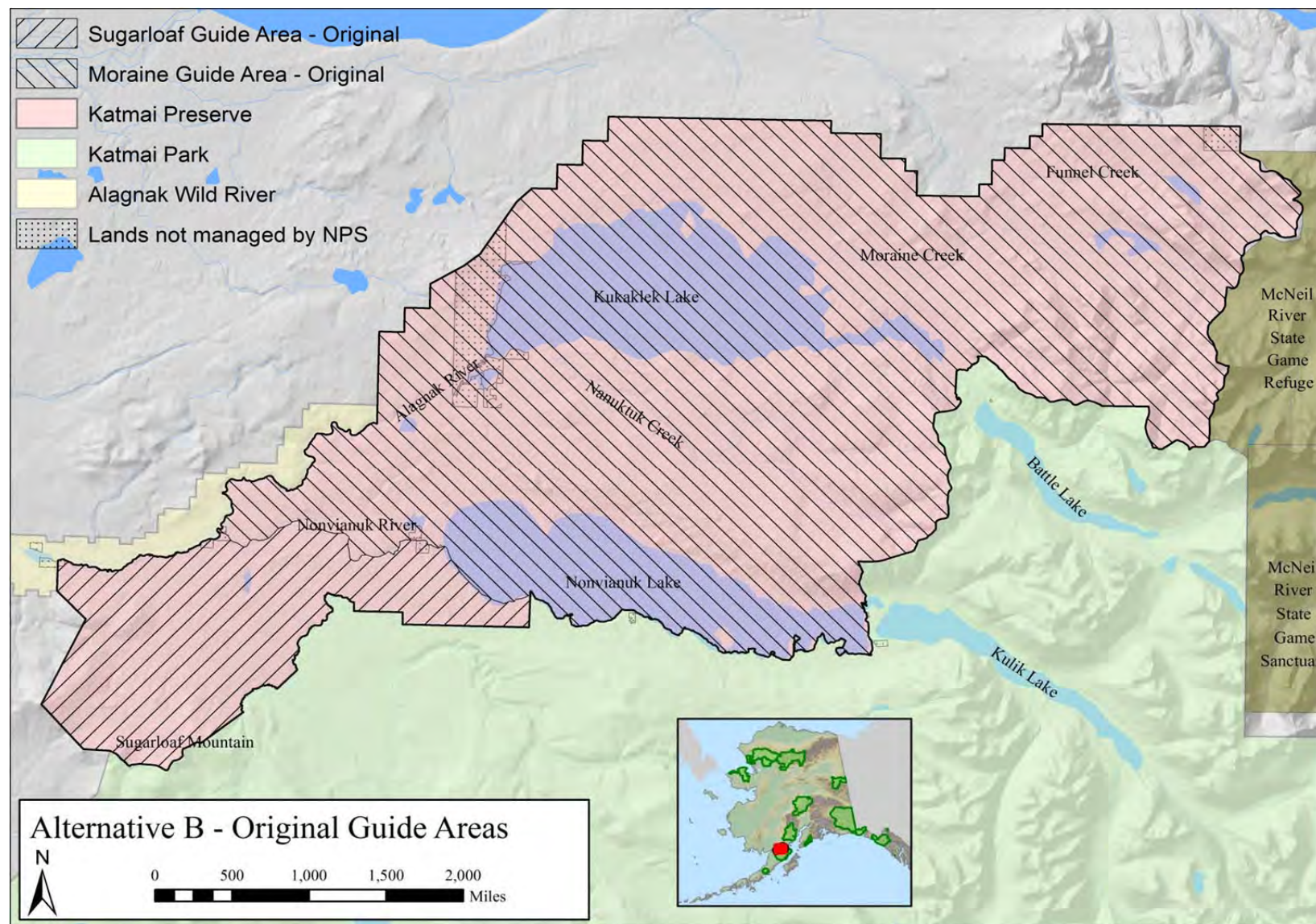
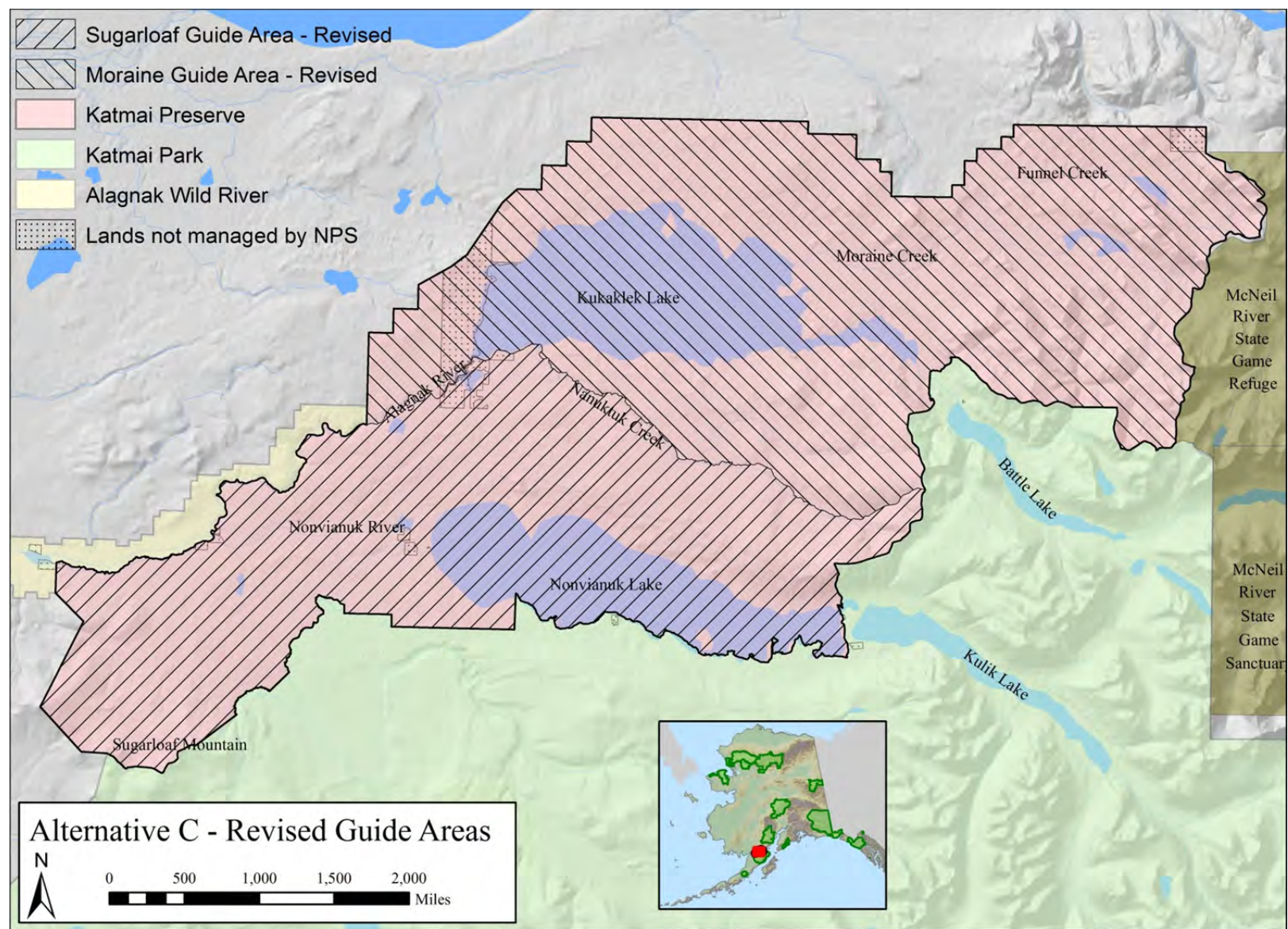


Figure 2.2 Alternative C – Revised Guide Areas (*NPS Preferred Alternative*)

3.1 Project Area

As described in chapter 1, guided hunting has occurred in Katmai National Preserve since before ANILCA passed in 1980. The project area addresses activities and affected resource conditions in the Preserve and the subsistence section may describe communities near the Preserve whose residents use the Preserve area for subsistence activities.

Katmai National Preserve (Preserve or KTPR) is on the northern end of the Alaska Peninsula approximately 225 miles southwest of Anchorage, 90 miles southwest of Homer and 35 miles northeast of King Salmon in the Lake and Peninsula Borough. The Preserve boundaries encompass 333,401 acres, which is located within Alaska Game Management Unit (GMU) 9C. Native Corporation lands exist on the western side of the Preserve, and there are other privately owned lands. The NPS manages about 308,000 acres of surface area inside the legislated boundaries of the Preserve.

The landscape in the Preserve is dominated by numerous large and small lakes—including Kukaklek and Nonvianuk Lakes—wetlands and open tundra, stands of black and white spruce, and thickets of alder and dwarf birch. The eastern part of the Preserve is characterized by rolling tundra leading up to mountains forming the spine of the Aleutian Range. The western part of the Preserve is dominated by the large lakes, which then feed into the forested terrain around the Alagnak (Branch) and Nonvianuk Rivers at the western end of the Preserve.

The Preserve is not accessible by road, but the area is accessible by a variety of other methods including airplanes, boats, or snowmachines, or other non-motorized surface transportation. Daily scheduled commercial flights from Anchorage provide regular access to the community of King Salmon, and from that hub, visitors can access remote locations within the Katmai National Park and Preserve. Located approximately seven miles to the west of the park boundary, King Salmon serves as a gateway for Katmai National Park and Preserve, and is the location of the park headquarters. Most visitors to the Preserve fly in on float planes to lakes large enough for landings and take-offs. Some hunters might drive river boats up the Alagnak River and around the lakes. Salmon species, particularly sockeye salmon, migrate up and spawn in rivers in the Preserve, and fry and smolt rear in the lakes and feeder stream areas before migrating out. Brown bears and sport fishermen are attracted to the abundant fishery. Moose concentrate in lower elevation areas with more cover and feed in the west end of the Preserve.

3.2 Wildlife & Fish Populations and Historical Uses

3.2.1 Brown Bear

3.2.1.1 Local History

Katmai National Park and Preserve was created to “protect habitats for, and populations of, fish and wildlife including, but not limited to, high concentrations of brown/grizzly bears and their denning areas” according to the Alaska National Interest Lands Conservation Act of 1980 (ANILCA). The park and preserve include one of the largest protected populations of brown

bears in the world (NPS 2009). In early biological studies the brown bear was recorded as the only yearlong resident of Katmai (Cahalane 1959), which area encompassed the original monument before the expansions to include the entire ANILCA park and preserve. These bears move as resource availability shifts and at any one time a cross section of the population may be found in the preserve (Sellers and Aumiller 1994). According to the Alaska Department of Fish and Game (ADFG) bear populations were low in the mid 70's as salmon escapement numbers declined. Changes in hunting regulations and higher salmon escapements allowed bear densities to increase. Currently, it is thought that Katmai National Park, which is inside unit 9, along with the McNeil River Game Sanctuary contains 2,000 – 2,500 bears.

3.2.1.2 Population History

The National Park Service initiated studies of the brown bear population in the Preserve to examine the changes in bear activity since the establishment of the Preserve. In 2009 aerial line-transects covering over 4,000 kilometers of the preserve were flown during the spring, and resulted in a bear density estimate of 101 ± 18 (se) bears/1000km². Based on an area of 1,254 km², the total number of bears inhabiting the preserve was 127 ± 23 (se)(Loveless et al. in review). Since bears move throughout their habitat over the growing season as resource availability shifts, monitoring populations that make use of an area, such as the preserve, also involves examining the bears that move into the area to feed.

Fall stream surveys have been used to document minimum levels of bear activity in the Preserve since 1980 (Figure 3.1). ANILCA stated that one of the purposes of the expansion of Katmai, including the Preserve, was to maintain high concentrations of brown/grizzly bears. The General Management Plan for Katmai identified three streams in the preserve as high bear concentration areas: Moraine Creek, Funnel Creek, and Nanuktuk Creek. Since 1980 the bear activity documented on these streams has increased substantially, mostly since the mid-1990's (Figure 3.2).

Another metric used to assess the condition of bear populations is demography, or population structure. Harvest pressure is generally considered to result in a larger proportion of family groups in relation to areas with little or no harvest (Table 3.1). Population structures observed in 2009 indicated an increase in family groups and a decrease in single bears at a level indicative of moderate harvest (Sellers and Aumiller 1994). Compared to similar studies performed in South-western/South-central Alaska, Katmai National Preserve has a lower estimated density than that of Katmai National Park, and the coastal area of Lake Clark National Park (Olsen and Putera 2007) but higher estimates than Togiak Wildlife Refuge (Walsh et al. 2010) and the area west of Lake Clark National Park and Preserve (Becker and Quang 2009; Table 3.2). Reasons for variations in bear densities could include many factors, such as habitat quality, resource availability, and rates of mortality whether natural or human-caused.

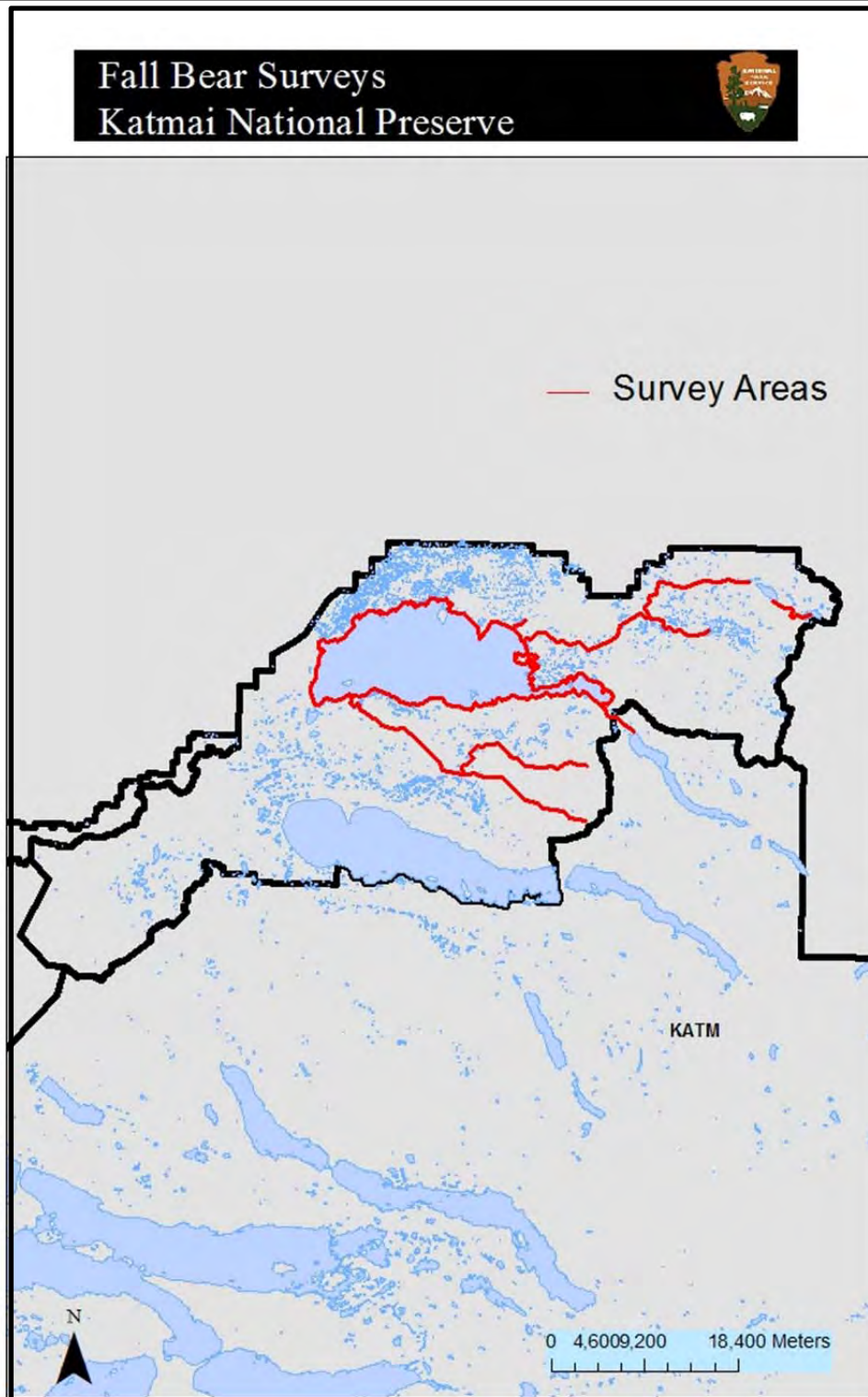


Figure 3.1 - Map of fall bear surveys performed in Katmai National Preserve.

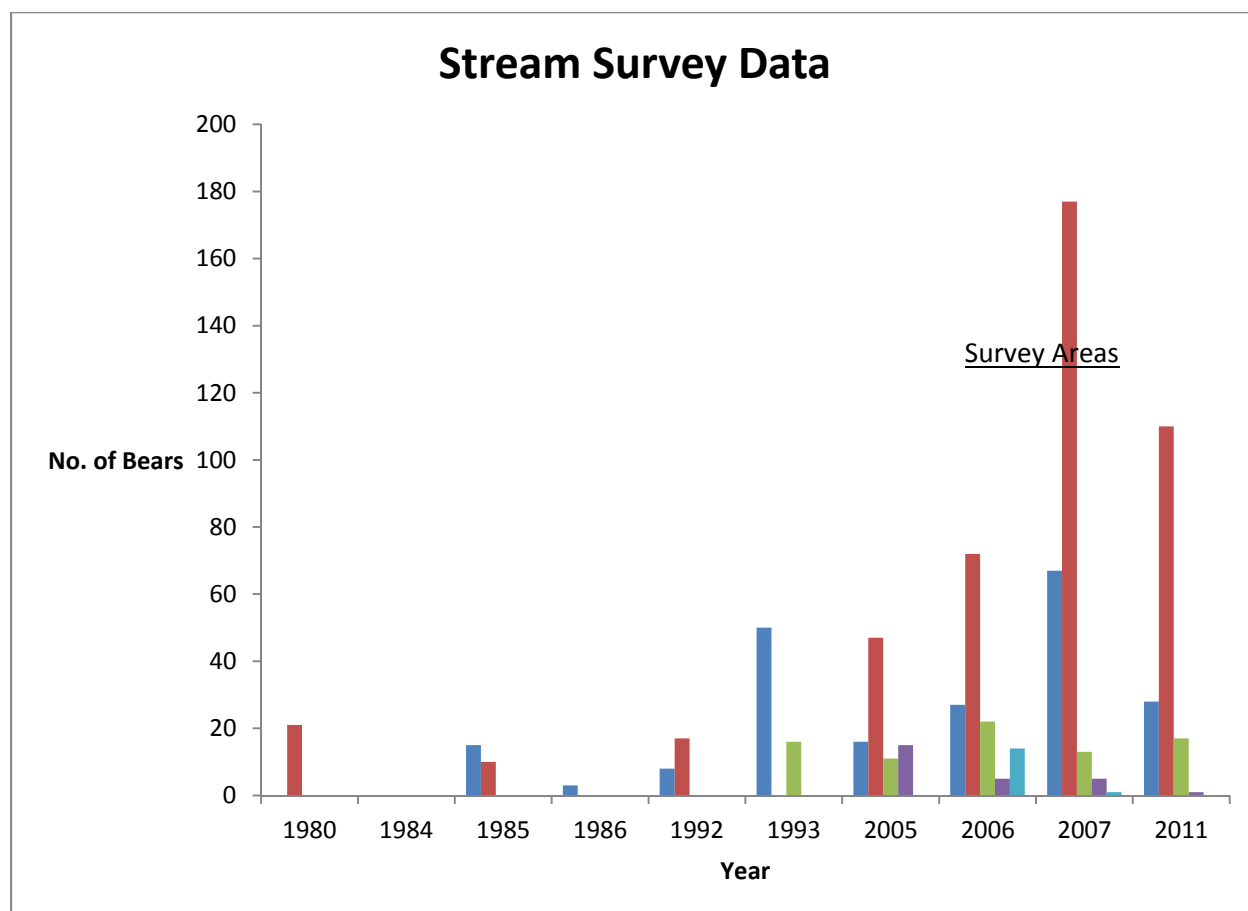


Figure 3.2 - The number of bears recorded on various waterways during August in Katmai National Preserve.

Hunters target larger bears, which results in more older and male bears being harvested. Heavy harvest pressure results in fewer male bears and fewer older bears in the harvest as those demographic groups are removed. Data from the harvested animals do not indicate harvest levels that are depleting either older or male bears (Figures 3.3 and 3.4). ADFG surveys of 9C performed during 2004 and 2005 showed a productive population exposed to a moderate harvest rate (Butler 2009).

3.2.1.3 Regulatory History

In the 1960's the Alaska Peninsula became the premier place to hunt trophy size bears. Harvest pressure increased as more hunters arrived. By the mid 1970's high harvest rates and low salmon escapement caused an emergency closure to all of GMU 9 and a closure of the central portion of the peninsula. Since that time, bear populations have rebounded and the area is managed by the state of Alaska for trophy bear harvest opportunities. Harvest rates are recorded by the Alaska Department of Fish and Game (ADFG) per regulatory year (July 1-June 30). Bear Table 3.1 Comparisons of the proportion of bears in family groups among surveys

and studies conducted within Katmai National Preserve (KTPR) and Katmai National Park (KATM).

Survey Area	Year	Total Bears Observed	No. of bears in family Groups	% bears in Family groups
KATM (cap) ^a	1989-91	258	97	38
KATM (CMR) ^a	1989-91	456	181	40
KATM (TO) ^a	1989-91	1426	524	37
KTPR ^b	1993	103	40	39
9C ^c	2004-2005	674	314	47
KTPR ^d	2006	478	297	62
KTPR ^d	2007	839	487	58
KTPR ^e	2009	195	110	56

^a Demographics of bears in KATM, reported from bears captured (cap), capture-mark-recapture (CMR), and summer aerial telemetry observations (TO) (Sellers et al 1999)

^b Reported from aerial surveys of KTPR (Sellers et al. 1999)

^c Reported from line-transect aerial surveys of KATM & KTPR (Olsen and Putera 2007)

^d Alaska Department of Fish and Game stream surveys

^e Loveless et al.

Table 3.2 - Summary of results of bear line-transect aerial surveys in South-western/South-central Alaska

	Katmai National Preserve	Lake Clark National Park	Katmai National Park	Togiak National Wildlife Refuge	Other Lake Clark Area
Bear groups detected	105	113	413	197	153
Total bears detected	195	208	657	330	306
Average bears/group	1.86	1.84	1.59	1.68	2
Total area surveyed (km ²)	4176	3846	10657	16544	
Estimated bear density/1000km ²	101±18	147±72	156±21	40(31-54)	26±4
Study	NPS Data 2009	Olsen and Putera 2007	Olsen and Putera 2007	Walsh et al. 2010	Becker and Quang 2009

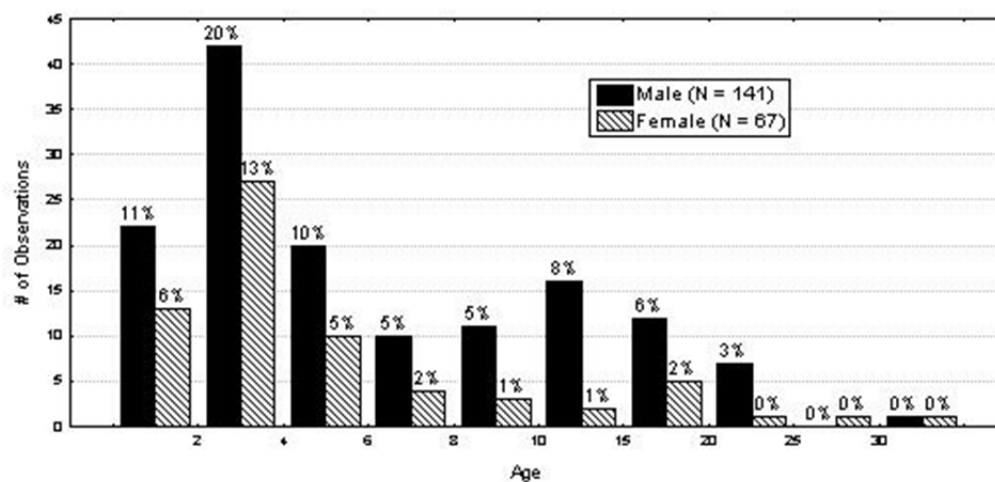
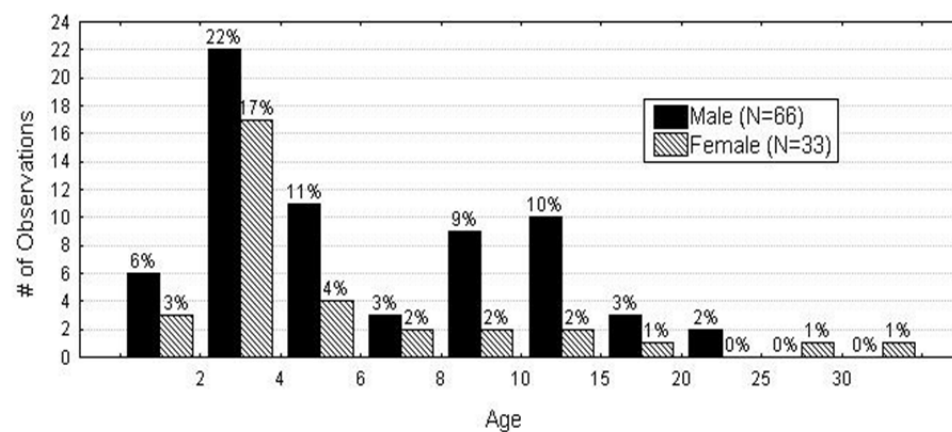
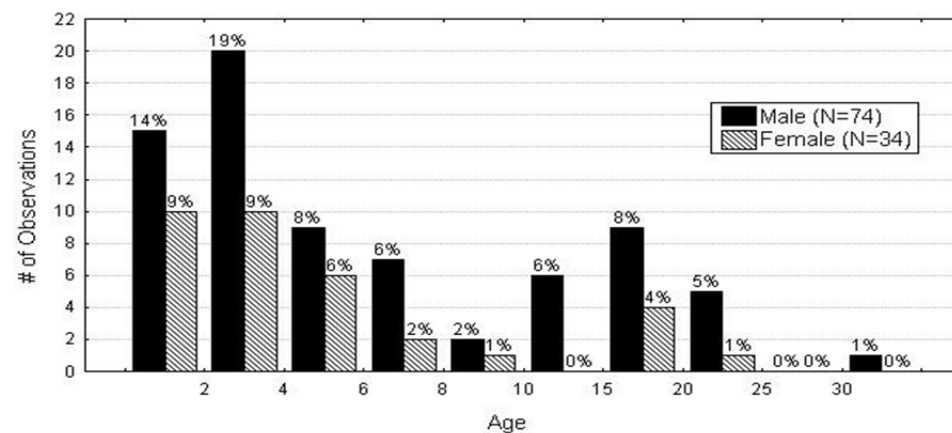


Figure 3.3 - Age distribution of male and female bears harvested in KTPR, 1989 – 2009. Data provided by Alaska Department of Fish and Game, King Salmon, Alaska.

(a)



(b)



Figures 3.4a & b - Age distribution of male and female bears harvested in KTPR, (a) 1989 – 2001, and (b) 2003 – 2009. Data provided by Alaska Department of Fish and Game, King Salmon, Alaska.

hunts occur in the spring of even years and in the fall of odd years. This schedule results in one regulatory year having two hunts followed by a regulatory year with no harvest opportunities, but client numbers would be tied to the calendar year, not the regulatory year.

To account for the potential effect of differences between spring and fall bear densities within the Preserve, harvest rates are calculated separately for spring and fall harvest. In the spring, aerial transect surveys provide an estimate of the number of bears available for the spring hunt. These surveys also show the number of bears overwintering in the area. August stream surveys indicate the minimum number of bears using the area during peak resource availability and indicate the extent to which bears may be in the area during fall. Since each spring harvest and each fall harvest represent a single annual harvest, the estimate for each independently is given as a raw number. To assess overall harvest rates, the spring and fall harvest rates are averaged together to account for the effect of the different seasons without over counting due to the alternate-year management.

As the brown bear population increased so did the number of bears harvested from an average of 13 bears in the preserve during 1987 – 1997 to an average of 24 bears during 1999 – 2009. The increases suggest that a large proportion of the overall harvest in unit 9C is coming from the Preserve, but at the same time the number of harvested bears in subunits 9A and 9B are decreasing (Butler 2009). This corresponds to the change in salmon distribution over the years (Figure 3.5).

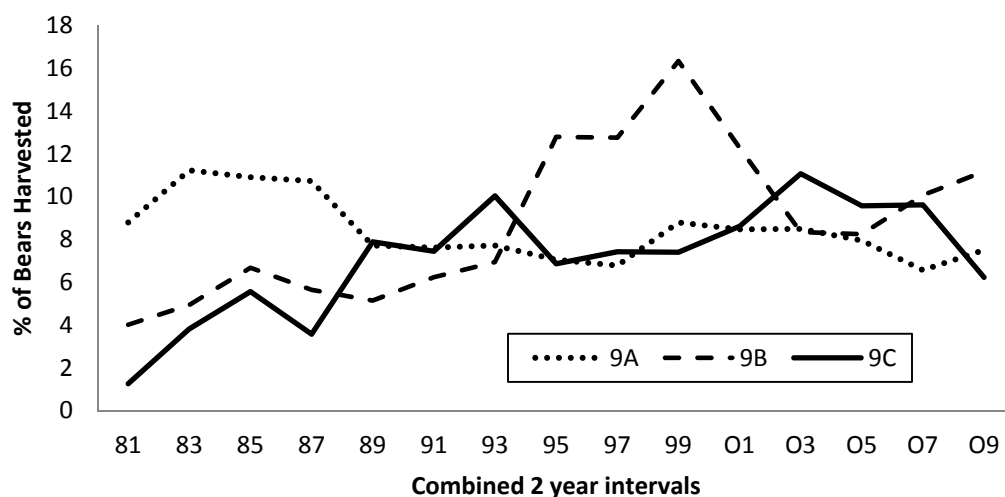


Figure 3.5 - Proportion of bears harvested from subunits 9A, 9B and 9C within management unit 9 from 1981 - 2009. Harvests are combined into 2 year intervals, with ending year of interval shown on x axis. Decreases in the proportion of bears harvested in subunits 9A and 9B coincided with increases in the proportion of bears harvested in subunit 9C during 1999-2007.

The ADFG estimates that 75% of the bear harvest from Unit 9 comes from guided hunts (Butler 2009). The stability of the guide industry is a key component of the ADFG management practices. In Katmai National Preserve non-resident hunters have outnumbered resident hunters

with most being guided hunts (Figure 3.6). From 1991 -2009 the average percent of the harvest accounted for by non-resident hunters in Katmai National Preserve was 66% based on ADFG data (Figure 3.7).

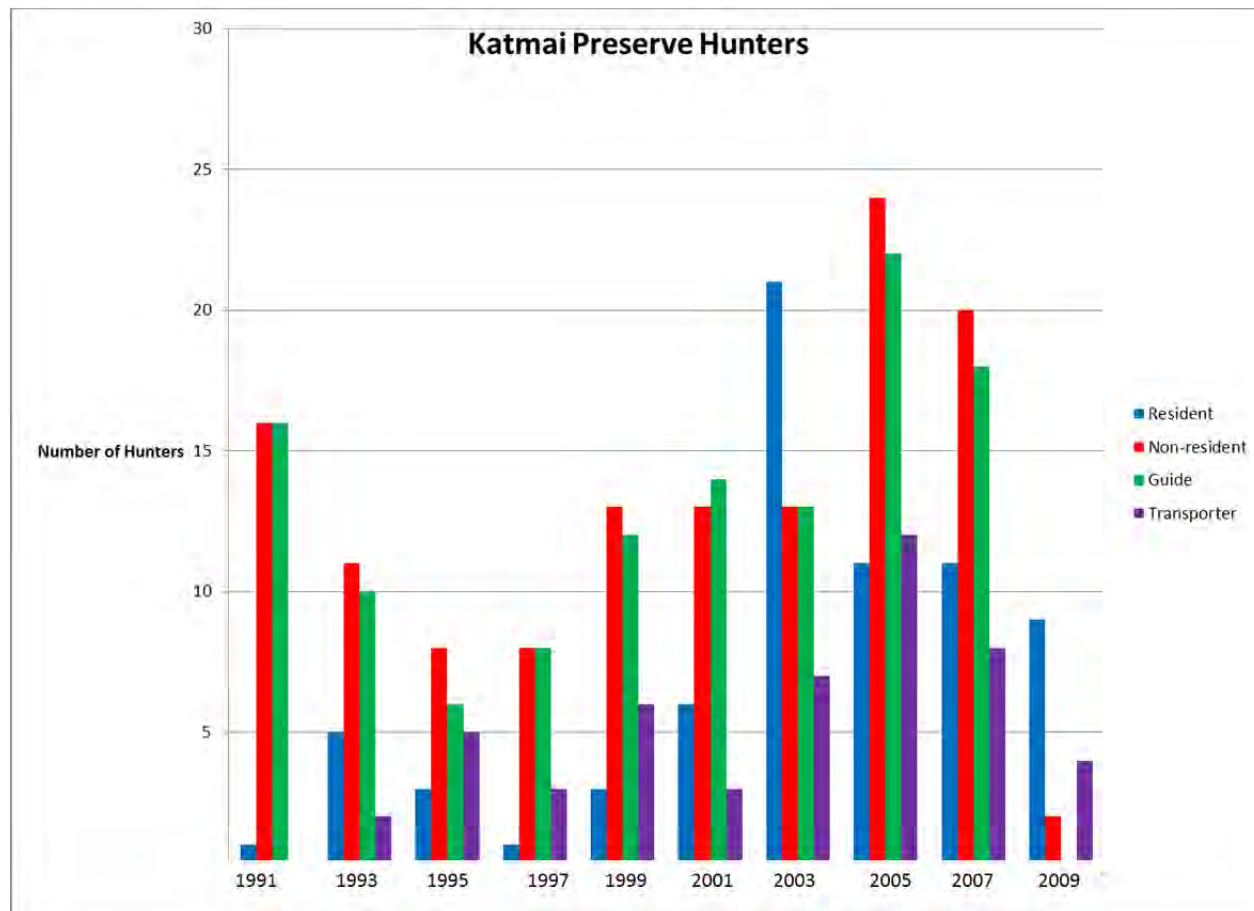


Figure 3.6. ADFG data showing the number of resident and non-resident hunters in Katmai National Preserve and the number of hunters led by a guide or that used a transporter to get to the Preserve from 1991 -2009.

Brown bear population productivity is strongly affected by the availability of salmon (Hilderbrand et al. 1999; Mowat and Heard 2006). Various studies have recommended harvest rates of 4 - 8 percent of the population (Miller 1998, Sellers et al 1999). For Unit 9, ADFG documents a current bear harvest rate of 7% (Butler 2009). Within KTPR, the spring harvest rates from 1999 to 2009, based on the 2009 survey data, ranged from 1% to 7%, and averaged 4%. Fall harvest rates, based on a count of 280 bears during the fall stream survey in 2007, ranged from 4% to 10% and averaged 7%. The combined average harvest rates for spring and fall ranged from 2% to 8%, and averaged less than 6%.

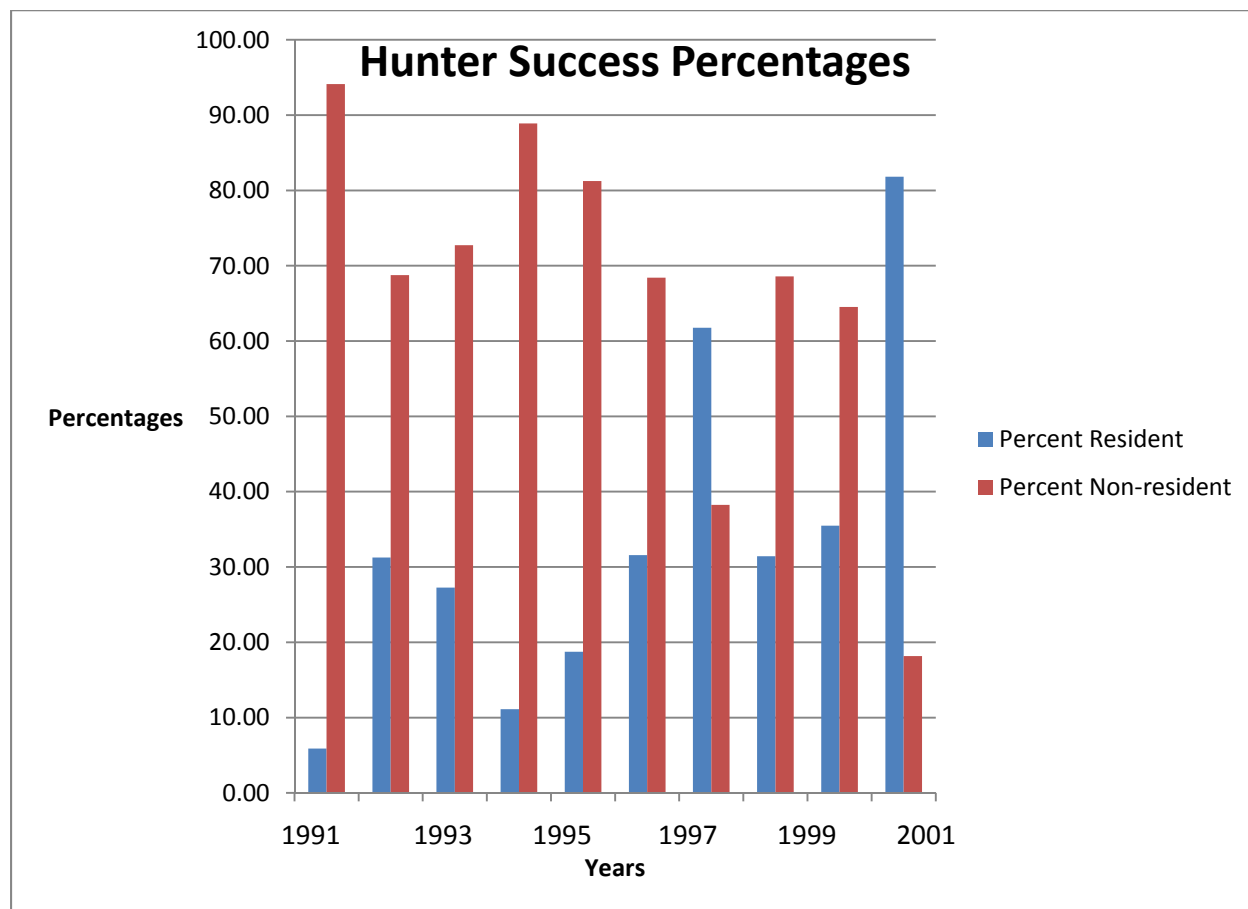


Figure 3.7 ADFG data shows the percentage of successful resident and non-resident hunters in the Preserve.

It is difficult to monitor population trends by current means and therefore combined studies of harvest rates with population demographics and sex/age ratios should be used to assess harvest levels (Butler 2009; Loveless et al in review). The current management objective for unit 9 is to maintain a high bear density with a sex and age structure that will sustain a harvest composed of 60% males, with 50 males 8 years or older taken per regulatory year (Butler 2009). In the Preserve, the proportion of males in the harvest has increased, and is above the 60% target used by ADFG throughout Unit 9 (Figure 3.3, 3.4). Additional data on population demographics is available from the various surveys performed at different times. The one consistent demographic parameter that can be examined across these different survey types is the proportion of observed animals within family groups. Data from the 1990's showed family groups accounting for 40% of observed animals, while the more recent surveys have documented family groups as near 60% of observed animals (Table 3.1). This level is considered indicative of moderate harvest rates, but can also result from rapid population expansion, which is also consistent with the increased numbers documented in the stream surveys.

3.2.2 Moose Populations and Distribution

3.2.2.1 Local History

Moose populations on the Alaska Peninsula were scarce until they dramatically increased in the 1950's and 60's. As the population peaked, evidence of range damage from over browsing became evident, which may have resulted in nutritional stress and caused poor calf survival (Butler 2010). Hunting opportunities were expanded to allow greater harvest, and by 1980 moose populations began to level off. Even during high growth periods, calf:cow ratios were considered low and as the population decreased these ratios dropped even lower. In 1999 the Alaska Board of Game (BOG) determined that the moose in GMU 9C were "important for providing high levels of human consumptive use" (Butler 2010). Surveys performed in 1999 and 2000 in 9C showed a relatively stable bull:cow ratio, but calf:cow ratios were extremely low (Sellers 2002). In 2005 reports from local citizens complained of there being no moose in the area and since then concern for the moose population has been growing (Federal Subsistence Regional Advisory Council (RAC) 2010).

3.2.2.2 Population History

With moose being an integral part of subsistence to local rural Alaskans, tracking densities and bull:cow ratios to provide information on reproductive success and population status and trends has been considered vital. National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and the ADFG have collected data on age and sex composition of moose since 1969. Four survey areas are found in 9C. The Branch River trend area includes parts of Katmai National Preserve, the Alagnak River and land surrounding the borders (Figure 3.8). NPS surveys of the Branch River area began in 1978. From the mid 1980's, the overall moose count within the Branch trend area has averaged around 200 moose per year until 2005, and then in 2010 populations had dropped to below 100 moose (Figure 3.9). Bull:cow ratios during that time period fell within the ADFG guidelines of 25 bulls:100cows (ADFG 2009). In 2010, though 92 moose were observed during the survey, no calves were seen.

3.2.2.3 Regulatory History

During the dramatic increase of the moose population, liberal hunting regulations were initiated in 1973 in hopes of slowing growth as well as to let the habitat recover from the over browsing (Butler 2010). Complaints about low numbers of moose were reported in 2005. In 2006, the Bristol Bay Federal Subsistence Regional Advisory Council (RAC) submitted a proposal asking for a 2 mile buffer along rivers closed to non-federally qualified users on federal public lands in the hopes that populations would stabilize or increase. Over the following years, additional similar proposals were put forth to reduce competition between local and non-local hunters. The various forms of these proposals were considered by both the BOG and the Federal Subsistence Board on and off through 2008. At that time, the BOG, the Federal Office of Subsistence Management and the ADFG put together a Unit 9 Moose Working Group to discuss and tender suggestions on what should be done to manage moose populations. All decisions were deferred until the working group met.

In April of 2010, a 15 member group met in King Salmon. The members represented hunters, subsistence users, federal land managers, and federal and state biologists (RAC 2011). One outcome of the working group was a recommendation to change to a registration permit moose hunt to facilitate in-season information gathering on harvest and effort. This recommendation was adopted through the state regulatory process and went into effect during the 2011-2012 state regulatory year.

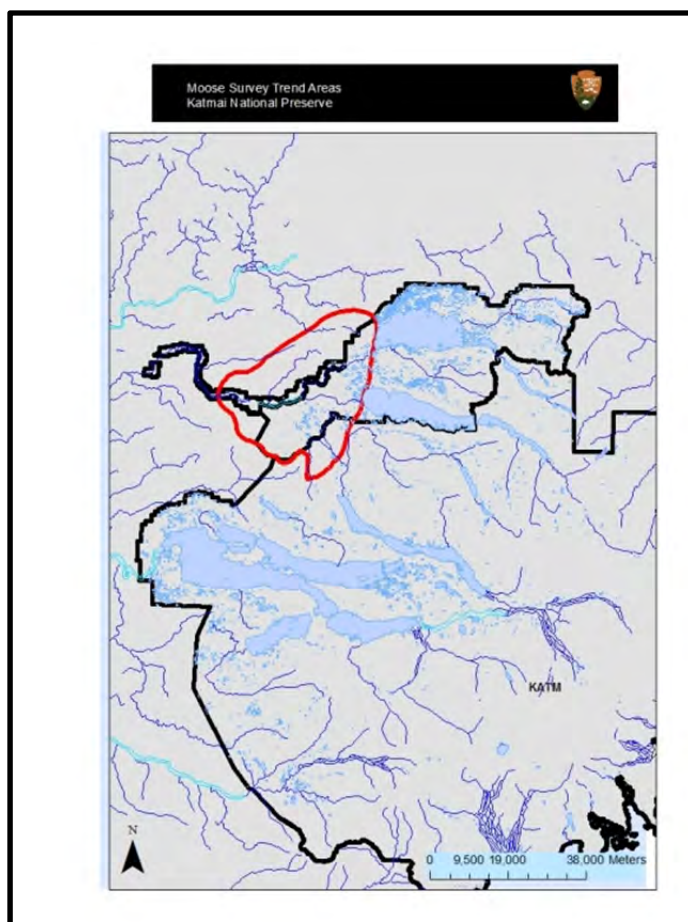


Figure 3.8 - Katmai National Park and Preserve with the Branch River moose survey area in red (including areas of Katmai National Park and Preserve), Alagnak Wild River, and private land.

3.2.2.4 Hunting History

According to Davin Holen, Subsistence Resource Specialist for the ADFG, it takes 100 – 140 moose to meet subsistence needs in GMU 9C (2010). In surveys conducted in 1992 in the villages of Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok, the majority of the residents used moose with many of the residents sharing meat between the few numbers harvested (ADFG 1992). According to that report, in the Igiugig area, 41% of the consumption is large land mammals. The village of Kokhanok is high on the list of villages in the state that depend on subsistence resources (ADFG 1992) with 28.8% of foods being from large land mammals. As caribou numbers declined these needs are being fulfilled with more moose.

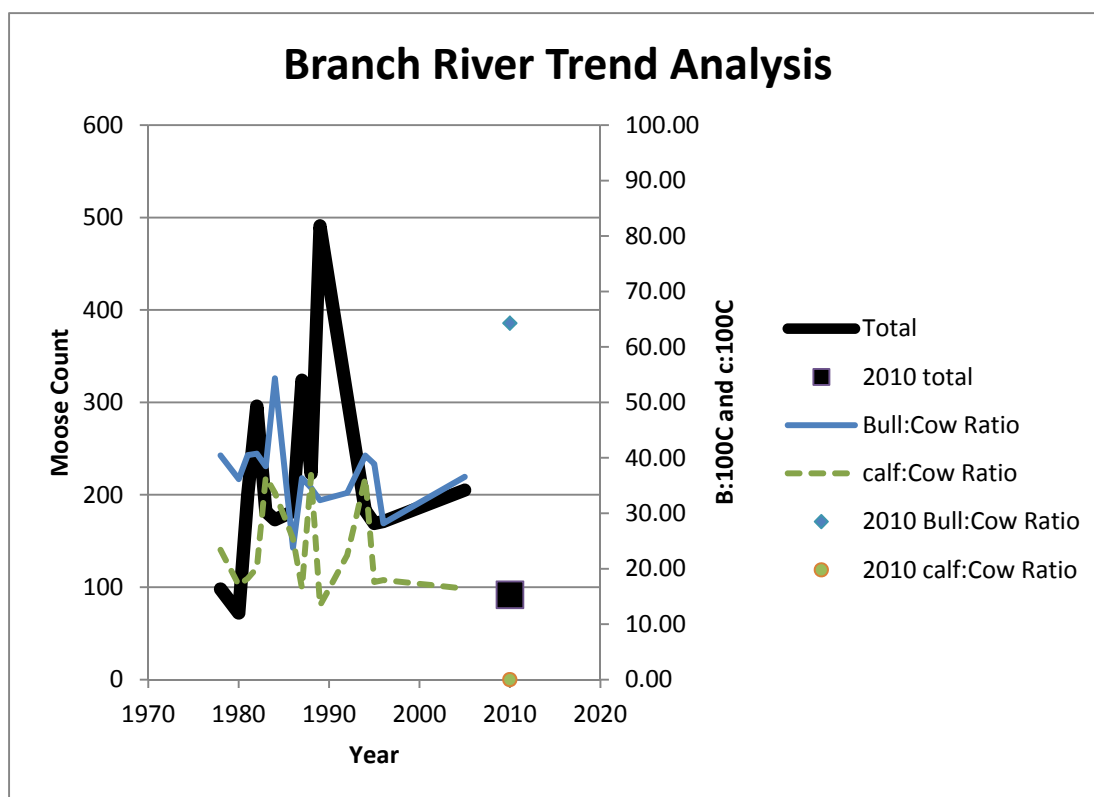


Figure 3.9 - Population numbers from 1978 through 2010 along with yearly bull:cow and calf:cow ratios during the same time period.

In GMU 9C the number of moose hunters is decreasing, including resident hunters, which is also true in Katmai National Preserve. As the number of hunters decreases so does the number of moose taken, though hunting success has been stable since 1985 (Butler 2010; Figure 3.10). Davin Holen explained to the working group that according to community reports people are able to harvest fewer moose than in other years, and reasons given were high fuel costs and the change in the climate (2010).

3.2.3 Caribou: The Mulchatna Herd

3.2.3.1 Local History

Historical research on the herd was performed by Skoog (1968) who discovered the first recordings of caribou in the area in journals of Russian-American Fur Company agents. The herd was first described as plentiful. Population numbers peaked in the 1860's and by 1870 the numbers were declining. Skoog found records stating that large migrations of caribou had ceased by the 1880's. Reports from the Alaska Game Commission (1925 – 1939) stated that the caribou numbers had begun to increase in 1930 but by the end of the decade numbers were once again declining. No official data was collected through the 40's and 50's, though in 1949 the herd was estimated at 1,000 (Woolington 2011). In 1974 a major attempt to accurately assess the herd resulted in an estimate of 14,231. The herd again decreased in numbers until the 1980's, at

which point population numbers started to increase until they peaked in 1996 at an estimated 200,000 (Fig. 3.11). The herd numbers have been in a decline since then with the last estimate being 30,000 caribou in 2008 (Woolington 2011).

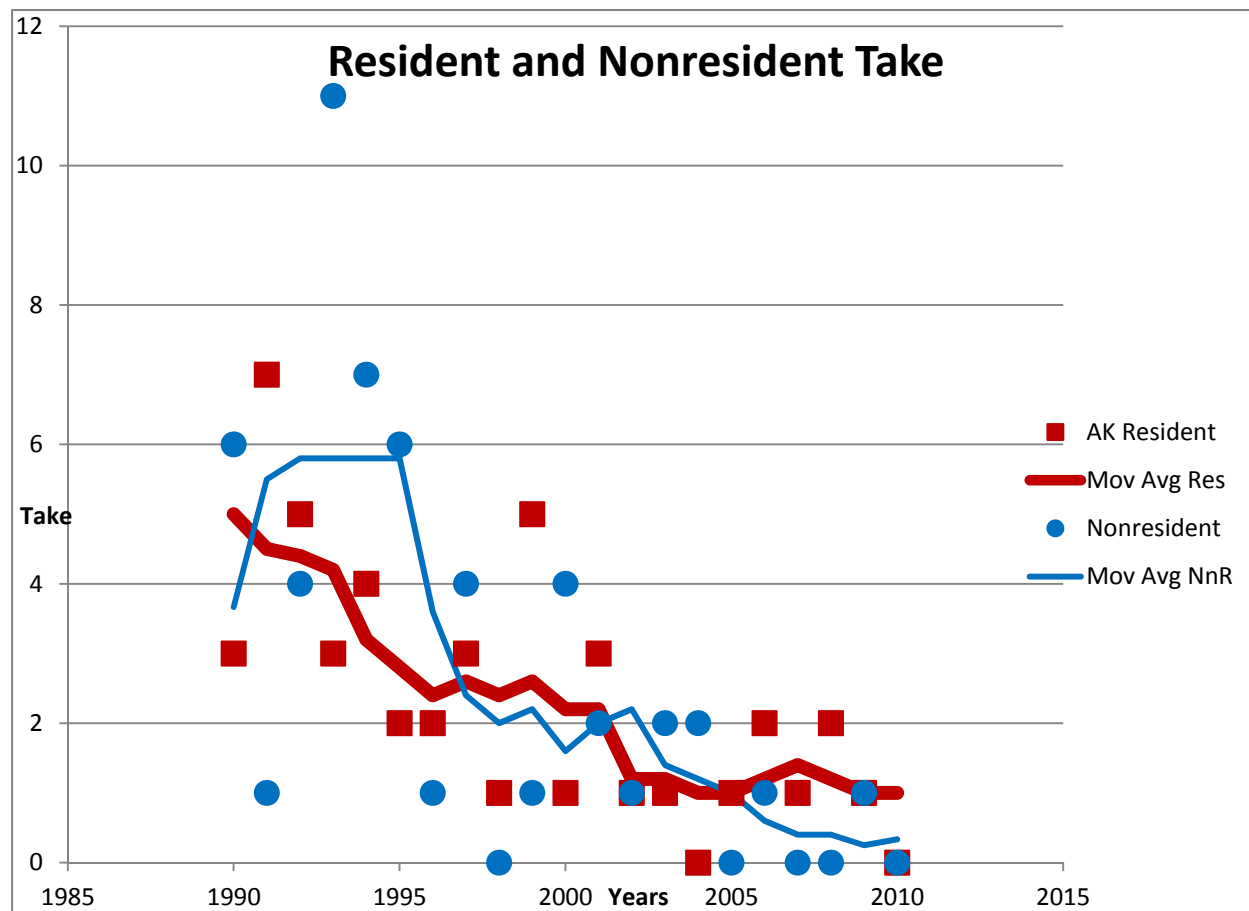


Figure 3.10 - The number of moose taken per year by resident and nonresident hunters; a five year moving average (the average of points from two years before and two years after) is provided to illustrate the overall trends for both resident and nonresident hunters

3.2.3.2 Population History

Aerial surveys are performed by the Alaska Department of Fish and Game during two different periods. In June, a post-calving survey is conducted, usually on a cycle that is intended to be every two years, with the intent of conducting a photographic census of the herd. In October, composition counts are conducted each year, and are sometimes extensive enough to indicate herd size (Figure 3.11). The herd increased at an average rate of 17% per year during 1981 – 1996 (Woolington 2011). In 1995 10-month old calves were evaluated for body condition (Valkenburg 1997). Though the calves were under the average weight of calves found in the interior of Alaska they were considered fat and healthy. After 1995 fewer trophy size bulls were seen and calf:cow and bull:cow ratios started to decline with the lowest ratios recorded in 1999.

In the fall of 2000 captured calf weights were variable and 6 out of the ten calves had pneumonia (Valkenburg et al. 2012). Hoof rot was also recorded in the herd in 1998. These facts suggest that disease could be a limiting factor. Habitat deterioration resulting from high herd numbers in the 1990's is also a considered reason for the decline (Manning and Butler 2007). Predation is not considered the primary reason for the decline in the population (Valkenburg et al. 2012).

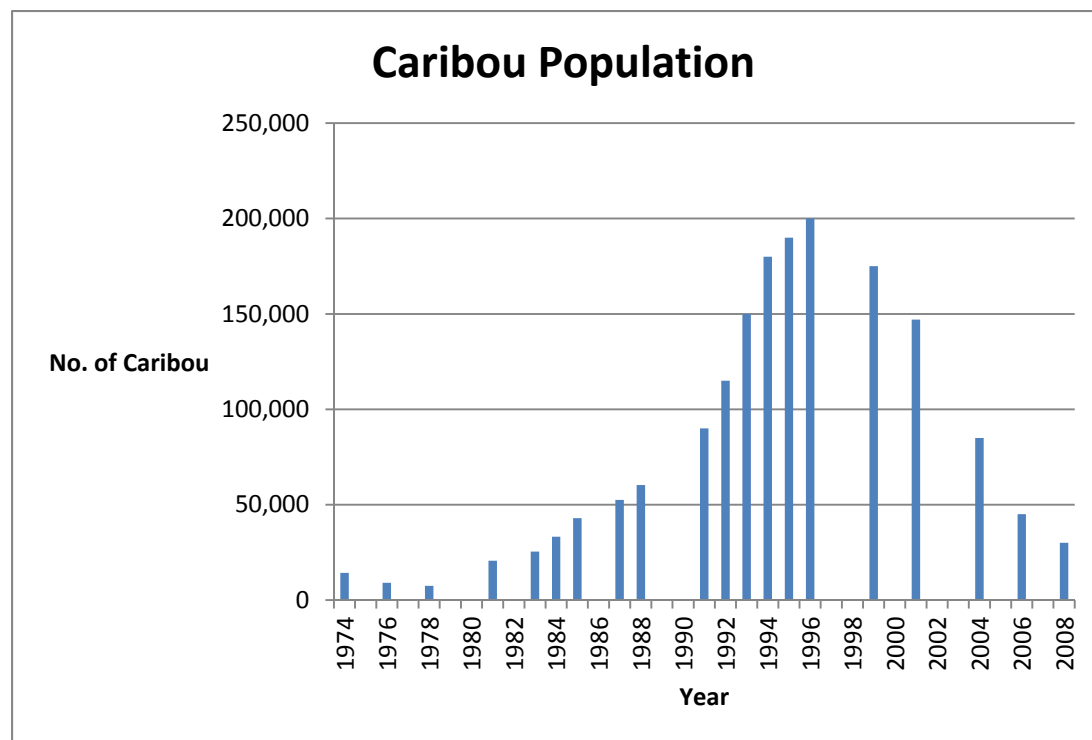


Figure 3.11 - Estimated caribou numbers per year provided by the ADFG.

Present management policies are focused on the sub-herds formed from the larger Mulchatna herd instead of the entire herd. At present, it appears that the sub-herds have limited overlap or interaction. New studies will focus on the predation effect on newborn calves. The objective is to manage the herd to maintain a population between 30,000 – 80,000 with a bull:cow ratio at 35:100. In 2011, the bull:cow ratio was 21.7:100.

3.2.3.3 Regulatory History

Katmai Preserve is part of unit 9C under the State of Alaska hunting regulations. While there are two caribou herds that are managed through the regulations within unit 9C, the focus of hunting efforts at the northern part of 9C, including the Preserve, has been on the Mulchatna herd. During the peak years, the Mulchatna herd was known for their large antlers and body size. Caribou hunting in the preserve was as popular as bear hunting, both of which were much more common than moose hunting. Limits established at that time were 5 caribou per hunter. Even with high bag limits the percent of the take never rose above 7% of the population (Table 3.3). The number of caribou hunted rose as the herd range increased and more people moved into the area, but the harvest rate remained well below 5% of the caribou population (Woolington 2011). The declining numbers caused a change in hunting regulations concerning the herd. Current

Table 3.3 - Mulchatna Caribou Population Counts and Harvest

Year	Population Estimate	No. Harvested	% Harvested
1974	14,231		
1975			
1976	9,097a		
1977		473	
1978	7,503	223	2.97
1979		236	
1980		245	
1981	20,618	277	1.34
1982		1330	
1983	25,416a	415	1.63
1984	33,214a	2060	6.20
1985	42,945a	1982	4.62
1986		2496	
1987	52,527	2255	
1988	60,328		
1989			
1990			
1991	90,000	1573	1.75
1992	115,000	1602	1.39
1993	150,000	2804	1.87
1994	180,000	3301	1.83
1995	190,000	4449	2.34
1996	200,000	2366	1.18
1997		2704	
1998		4770	
1999	175,000	4467	2.55
2000		4096	
2001	147,000	3830	2.61
2002		2537	
2003		3182	
2004	85,000	2236	2.63
2005		2175	
2006	45,000	921	2.05
2007		767	
2008	30,000	510	1.70
2009		309	

a = minimum count totals

regulations allow resident hunters to take two caribou and by 2009 the nonresident hunt was closed (Woolington 2012), which remains true today.

3.2.3.4 Subsistence History

Subsistence harvest of caribou within Katmai National Preserve coincides with the sport seasons and is generally reported through state hunt season reporting requirements. Subsistence uses in the area are customary and traditional, and park personnel have encountered subsistence hunters in the field. The level of activity has been very low in recent years, which coincides with low caribou activity in the region.

3.2.4 Salmon Populations and Uses

3.2.4.1 History

Salmon are very important to the environment since they bring in marine derived nutrients into a relatively nutrient poor system. These nutrients are vital and provide nourishment for many plants and animals. Although all five species of Pacific salmon have been documented in the Alagnak drainage (the main drainage in KTPR) the primary species found in KTPR waters is sockeye salmon (*Oncorhynchus nerka*).

3.2.4.2 Population Trends

Salmon populations are known to be highly variable with large differences in the number of fish that return to the spawning grounds each year (escapement). Data has been collected on the number of sockeye salmon returning to the Alagnak drainage since 1957 (no data from 1977-1983). From 1957 until 2002, the escapement only exceeded 1,000,000 fish once (1960 – 1,240,530 fish), then there was over a million fish in seven of the next nine years peaking at 5,396,592 in 2004 (Figure 3.12). This large increase in recent years has resulted in increased number of bears and visitors within KTPR.

3.2.4.3 Recreational Value

Although angling for coho (*Oncorhynchus kisutch*) and chinook (*Oncorhynchus tshawytscha*) salmon is very popular in the Alagnak River downstream of KTPR, angling effort for the predominant sockeye salmon is very low in the preserve. However, highly sought after rainbow trout (*Oncorhynchus mykiss*) follow the salmon to their spawning grounds to feed on their eggs then flesh after they die. This congregates the trout and makes them more readily available to sport anglers. The large numbers of spawning and dying salmon also attract brown bears (*Ursus arctos*), which draw bear viewers to the salmon spawning areas.

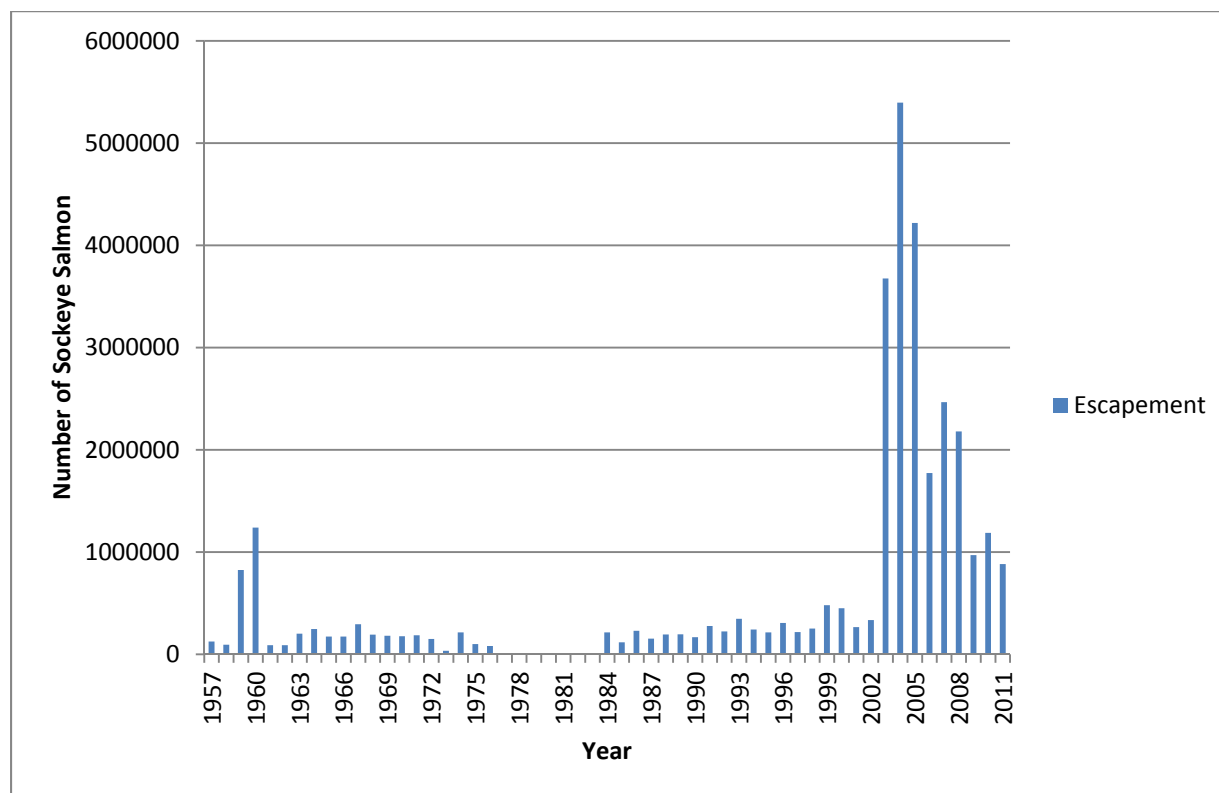


Figure 3.12 - Number of sockeye salmon returning to the Alagnak River from 1957-2011 (*No data for 1977-1983*)

3.2.4.4 Subsistence Use

Salmon, particularly sockeye salmon, have been a primary food source for locals since they first settled in the area. Salmon is still a very important food source for locals. In the past local subsistence users would set up fish camps in the Kukaklek Lake area where they would catch salmon then dry them for long term storage. However, in recent years most locals tend to harvest fish closer to their communities, which lie outside of the Preserve.

3.3 Subsistence Uses and Users

The area's primary subsistence resources include sockeye salmon, silver salmon, whitefish, pike, rainbow trout, moose, caribou, brown bear, bird eggs, ptarmigan, ducks, snowshoe hare, furbearing animals, berries and various plants.

3.3.1 Eligible Subsistence Users

Eligibility for the Federal Subsistence Program in Katmai National Preserve (KTPR) is determined primarily through customary and traditional (C&T) use determinations by the

Federal Subsistence Board. When communities or areas have a positive C&T determination for a species in a particular game unit, only residents of those communities or areas have a Federal subsistence priority and are eligible to hunt or trap that species in that unit under Federal Subsistence regulations. If the Federal Subsistence Board has not made a customary and traditional use determination for a species, then all rural residents of Alaska may utilize that species for subsistence in that unit. There are 32 communities with C&T determinations for the big game species in GMU 9C most likely to be impacted by the proposed action; namely, brown bear and/or caribou and/or moose. These communities and C&T determinations are summarized in table 3.4.

In addition to Federally-qualified subsistence users, residents of the State of Alaska may also subsistence hunt or trap in the KTPR under State of Alaska subsistence regulations. Sport hunting is also allowed in the preserve consistent with State of Alaska sport hunting regulations, seasons and bag limits.

Table 3.4 C&T Determinations for Brown Bear, Caribou and Moose in GMU 9C

SPECIES	COMMUNITY or AREA
Brown Bear	<u>Rural residents of 9C</u> (includes King Salmon, Naknek, and South Naknek) and <u>Igiugig, Kokhonak, and Levelock</u>
Caribou	<u>Rural residents of 9B</u> (includes Igiugig, Iliamna, Kokhanok, Levelock Newhalen, Nondalton, Pedro Bay and Port Alsworth) <u>Rural residents of 9C</u> (includes King Salmon, Naknek and South Naknek) <u>Rural residents of 17</u> (includes Aleknagik, Clark's Point, Dillingham, Ekuik, Ekwok, Koliganek, Manokotak, New Stuyahok, Portage Creek, Togiak and Twin Hills), and <u>Egegik</u>
Moose	<u>Rural residents of 9A</u> <u>Rural residents of 9B</u> (includes Igiugig, Iliamna, Kokhanok, Levelock Newhalen, Nondalton, Pedro Bay, and Port Alsworth) <u>Rural residents of 9C</u> (includes King Salmon, Naknek, and South Naknek) <u>Rural residents of 9E</u> (includes Chignik, Chignik Lagoon, Chignik Lake, Egegik, Ivanof Bay, Perryville, Pilot Point, Port Heiden, Port Moller, and Ugashik)

3.3.2 Federal Subsistence and State Hunting Regulations

Federal subsistence hunting in KTPR occurs primarily in areas accessible by aircraft or boat in the spring, summer, and fall, or by snow machine in the winter. Federal registration permits are required in Unit 9C for Federal subsistence harvests of brown bear, but not for other subsistence hunts including caribou (in the portion of 9C within the Alagnak River drainage; there is no Federal open season for caribou in other areas of 9C), moose, and furbearers. Local residents may also elect to hunt under State of Alaska subsistence or general hunting regulations. Caribou

and moose are the primary species in the preserve utilized for subsistence by Federally-qualified local residents.

Caribou hunting in KTPR is open to resident sport hunters and Federal subsistence hunters in that portion of the preserve within the Alagnak River drainage from August 1 through March 15. The remainder of KTPR has been closed to Federal subsistence caribou hunting since 2006 due to a dramatic decline in the population of the Mulchatna and Northern Alaska Peninsula Caribou Herds. The State of Alaska, however, currently maintains an “open season to be announced hunt” in the State regulation book, which was most recently opened by emergency order on January 18, 2012. Moose hunting is open to sport and Federal subsistence hunting throughout KTPR. Table 3.5 summarizes Federal and State hunting regulations for the 2011-2012 regulatory year.

3.3.3 Federal Subsistence Harvest

The ADFG Subsistence Division conducts periodic community harvest surveys to document use of wild resources by rural residents. These surveys also include maps indicating locations important for gathering wood and plants, berry picking, and areas used for subsistence hunting, fishing and trapping of specific species. Permit data alone is not a good indicator for determining actual harvest levels for some species in the Bristol Bay area due to inconsistent compliance with the State harvest ticket program (Holen et al. 2005). Tables 3.6–3.8 summarize the number of permits issued and the number of brown bear, caribou and moose taken by communities with positive C&T determinations for GMU 9C, but these numbers appear to underestimate actual household usage for some species as reported in the State community subsistence information system (Table 3.9).

Subsistence harvest use maps compiled by ADFG (Krieg, et al. 2009) for Igiugig, Kokhanok and Levelock indicate that the communities use specific areas for hunting brown bear, caribou and moose. For Igiugig, the hunting areas identified by residents are all located outside KTPR in close proximity to the village in GMU 9B. Residents of Igiugig reported hunting brown bear in a small area around the confluence of the Kvichak River and Peck’s and Ole Creeks. Hunting areas used for moose and caribou were identified along the Kvichak River and the Kaskanak, Peck’s and Ben Courtney Creek drainages at the east end of Iliamna Lake.

Kokhanok residents reported moose hunting almost exclusively on lands around Iliamna Lake in GMU 9B, but utilized areas in KTPR to the east of Kukaklek Lake for hunting caribou. Kokhanok hunters did not map any areas for taking brown bear; however, the ADFG community subsistence information system indicates the community uses approximately three bears per year (Table 3.6). This apparent inconsistency may be explained—at least in part—by sharing between subsistence users. While Kokhanok residents may use three brown bears per year, those bears may not have been taken by hunters from Kokhanok, but by hunters from other communities who shared or traded brown bear meat with friends and relatives in Kokhanok.

TABLE 3.5 Summary of Federal and State Hunting Regulations in Alaska GMU 9C

Species	Federal Subsistence	State Resident	State Nonresident	State Subsistence
Brown bear	<p><u>Unit 9C—1 bear by Federal registration permit only.</u></p> <p><i>The season will be closed by the Katmai National Park and Preserve Superintendent in consultation with BLM, FWS and ADF&G, when six female or ten bears have been taken, whichever occurs first.</i></p> <p><u>Season:</u> Oct. 1–May 31</p>	<p><u>Unit 9C—1 bear every four regulatory years by permit available online and in person in King Salmon beginning July 1.</u></p> <p><u>Season:</u> Oct. 1–Oct. 21</p> <p>OR</p> <p><u>Unit 9C—1 bear every four regulatory years by permit available online and in person in King Salmon beginning April 1.</u></p> <p><u>Season:</u> May 10–May 25</p> <p><u>Unit 9 Near Villages—1 bear every regulatory years by permit available online and in person in King Salmon beginning July 1.</u></p> <p><u>Season:</u> No Closed Season</p>	<p><u>Unit 9C—1 bear every four regulatory years by permit available online and in person in King Salmon beginning July 1.</u></p> <p><u>Season:</u> Oct. 1–Oct. 21</p> <p>OR</p> <p><u>Unit 9C—1 bear every four regulatory years by permit available online and in person in King Salmon beginning April 1.</u></p> <p><u>Season:</u> May 10–May 25</p>	<p>Same hunt areas, seasons and bag limits as State resident hunt in Unit 9C.</p>
Caribou	<p><u>Unit 9C, that portion within the Alagnak River drainage—</u></p> <p><u>2 caribou; no more than 1 caribou may be a bull, and no more than 1 caribou may be taken Aug. 1–Jan. 31.</u></p> <p><u>Season:</u> Aug. 1–Mar. 15</p>	<p><u>Unit 9C, that portion within the Alagnak River drainage —</u></p> <p><u>2 caribou; no more than 1 bull may be taken; no more than 1 caribou may be taken Aug. 1–Jan. 31.</u></p> <p><u>Season:</u> Aug. 1–Mar. 15</p> <p><u>Unit 9C, that portion north of the</u></p>	<p><u>Unit 9C remainder</u></p> <p><u>Season:</u> No Open Season</p>	<p>Same hunt areas, seasons and bag limits as State resident hunt in Unit 9C.</p>

	<p><u>Unit 9C remainder</u> <i>Federal public lands are closed to the harvest of caribou.</i></p> <p>No Federal Open Season</p>	<p><u>Naknek River and south of the Alagnak River drainage</u> —</p> <p><u>1</u> caribou by permit available in person in King Salmon if a winter hunt is announced.</p> <p><u>Season:</u> May be Announced</p>		
Moose	<p><u>Unit 9C—that portion draining into the Naknek River from the north</u>—1 bull</p> <p><u>Seasons:</u> Sept. 1–Sept. 15 Dec. 1–Dec. 31</p> <p><u>Unit 9C—that portion draining into the Naknek River from the south</u>—1 bull by Federal registration permit only.</p> <p><i>Federal public lands are closed during Dec. to the harvest of moose, except by rural Alaska residents of Units 9A, 9B, 9C, and 9E.</i></p> <p><u>Seasons:</u> Aug. 20–Sept. 15 Dec. 1–Dec. 31</p> <p><u>Unit 9C remainder</u>—1 bull</p> <p><u>Seasons:</u> Sept. 1–Sept. 15 Dec. 15–Jan. 15</p>	<p><u>Unit 9C—that portion draining into the Naknek River</u>—</p> <p>1 bull by permit in person in King Salmon beginning Aug. 17</p> <p><u>Season:</u> Sept. 1–Sept. 30</p> <p>OR</p> <p>1 antlered bull by permit in person in King Salmon beginning Nov. 16</p> <p><u>Season:</u> Dec. 1–Dec. 31</p>	<p><u>Unit 9C—that portion draining into the Naknek River</u>—</p> <p>1 bull with 50-inch antlers or antlers with 3 or more brow tines on at least one side by permit in person in King Salmon beginning Aug. 17</p> <p><u>Season:</u> Sept. 5–Sept. 20</p>	Same hunt areas, seasons and bag limits as State resident hunt in Unit 9C.

Table 3.6: Number of Permits Issued and Brown Bear Taken in GMU 9C in State and Federal Hunts by Communities with C&T in GMU 9C

COMMUNITY	2010		2009		2008		2007		2006		2005		2004		2003		2002		2001	
	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed
King Salmon	15	1	14	2	17	2	20	4	22	1	12	1	19	3	14	5	28	7	7	0
Naknek	5	0	4	0	4	0	8	1	4	0	6	1	2	0	1	0	3	2	3	1
South Naknek	1	0	1	0	1	0			1	0			1	1	2	0	4	2	4	1

Table 3.7: Number of Permits Issued and Caribou Taken in GMU 9C in State and Federal Hunts by Communities with C&T in GMU 9C

COMMUNITY	2010		2009		2008		2007		2006		2005		2004		2003		2002		2001	
	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed
Dillingham					3	3	4	4												
Igiugig													1	1						
Iliamna							1	1									1	1		
King Salmon	6	4	2	0	81	44	90	74	7	3	50	29	77	47	44	26	12	3	53	37
Kokhanok																				
Levelock																				
Naknek	9	2	9	0	92	75	97	76	7	4	94	67	64	40	54	45	19	5	50	35
Port Alsworth			1	1															1	1
South Naknek					12	8	16	11	8	7	8	7	8	4	4	3	7	3	12	9
Togiak																			1	1

Table 3.8: Number of Permits Issued and Moose Taken in GMU 9C in State and Federal Hunts by Communities with C&T in GMU 9C

COMMUNITY	2010		2009		2008		2007		2006		2005		2004		2003		2002		2001	
	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed	Permits	Killed
Igiugig															1	0	1	0		
King Salmon	43	8	25	5	36	7	45	12	43	3	29	10	29	6	35	14	32	13	46	10
Kokhanok													1	1						
Levelock	2	0			1	0														
Naknek	26	8	36	1	21	4	19	4	28	4	21	5	38	7	27	8	22	8	27	11
Port Alsworth					1	1	1	0												
South Naknek	1	0	4	0	1	0	4	0	4	1	4	1	5	0	7	2	6	2	9	0

Table 3.9: Estimated Annual Subsistence Harvest and Utilization of Big Game by Species and Community (ADFG CSIS, 2012)

COMMUNITY	Survey Year	<u>Brown Bear</u>	Percentage Households Using Bn. Bear	Pounds of Brown Bear per capita	<u>Caribou</u>	Percentage Households Using Caribou	Pounds of Caribou per capita	<u>Moose</u>	Percentage Households Using Moose	Pounds of Moose per capita
Igiugig	2005	3	50	26	24	100	90	6	100	85
Iliamna	2004	0	0	0	3	76.9	7	3	76.9	25
King Salmon	2007	4	4	4	16	32.6	9	9	32.6	19
Kokhanok	2005	3	14.3	7	21	80	20	19	82.9	65
Levelock	2005	0	0	0	27	100	120	8	92.9	129
Naknek	2007	0	0	0	67	49.3	20	10	48	11
Newhalen	2004	1	8	3	49	88	59	8	60	37
Nondalton	2004	0	0	0	18	52.6	16	17	68.4	55
Pedro Bay	2004	0	0	0	1	27.8	2	3	77.8	27
Port Alsworth	2004	0	4.5	0	6	86.4	9	1	54.5	6
South Naknek	2007	0	0	0	2	61.9	7	0	28.5	0
TOTAL		11			228			83		

Residents of Levelock reported hunting moose and caribou outside KTPR in GMU 9B along the Kvichak River corridor and upland areas extending north toward New Stuyahok and south toward Naknek and King Salmon. Levelock did not identify any areas for brown bear hunting which is consistent with usage indicated in the ADFG community subsistence information system (Table 3.9) and brown bear permit data (Table 3.6).

The ADF&G community harvest survey (Holen, et al. 2011) conducted in King Salmon, Naknek and South Naknek in 2007 indicated a similar pattern of use for KTPR. Subsistence use maps for King Salmon show that residents concentrate their caribou hunting efforts outside KTPR in areas immediately surrounding King Salmon and north of the Alaska Peninsula Highway. They also reported utilizing areas around Graveyard Creek and the lower end of the Alagnak River below the Alagnak Wild River corridor. Hunting areas for moose are primarily along the King Salmon, Big and Smelt Creek drainages and around Graveyard Creek and north of the Alaska Peninsula Highway. The 2007 study did not include a map indicating areas used for hunting brown bear; however the ADFG community subsistence information system (Table 3.9) and hunt permit reports (Table 3.6) reflect brown bear usage.

Naknek residents reported hunting brown bears along a short segment of the Naknek River between King Salmon Creek and the Katmai National Park boundary. Caribou hunting areas were more extensive and included lands in GMU 9C along Paul's Creek and the Kvichak and Alagnak River drainages, including a small portion of the southwest corner of KTPR from the confluence of the Alagnak and Nonvianuk Rivers to the preserve boundary. Naknek residents also reported caribou hunting in GMU 9B between Levelock and New Stuyahok. Moose hunting takes place in GMU 9C along the Alagnak River from the confluence of the Alagnak and Nonvianuk Rivers through the Alagnak Wild River corridor and in GMU 9B along the Kvichak River between Igiugig and Levelock.

Residents of South Naknek use relatively compact areas north of the Alaska Peninsula Highway and at the confluence of the Alagnak and Kvichak Rivers in GMU 9C for caribou hunting and the Alagnak River corridor from the confluence upstream to the preserve boundary for hunting moose. The 2007 ADFG study did not include a map indicating areas used for hunting brown bear, which is consistent with the community subsistence information system which reports no use of brown bears by South Naknek residents. However, it should be noted that this apparent lack of brown bear use does not match information in the hunting permit reports which shows some brown bear hunting activity.

Permit data show that the communities of Newhalen, Nondalton, Port Alsworth and Pedro Bay each reported hunting brown bears and/or caribou and/or moose in GMU 9C sometime within the past ten years. ADFG conducted community harvest surveys for these villages in 2004 and compiled subsistence use maps which show minimal use of the preserve for hunting big game animals (Fall et al. 2006). According to the 2004 survey, Newhalen residents utilize two large hunt areas located in GMU 9B for brown bear, caribou and moose; one on the north side of Iliamna Lake and another on the south side. The southern area extends into GMU 9C and KTPR north of Kukaklek Lake, but for caribou hunting also includes the northeast corner of the preserve. Nondalton residents utilize areas in GMUs 9B and 17B to hunt brown bears, caribou and moose that include portions of Lake Clark National Preserve and extend north and east

toward the Mulchatna River. Pedro Bay residents reported using the area around Pedro and Pile Bays for moose hunting, but did not identify any hunting areas for brown bear or caribou. This is supported by data in the community subsistence information system that shows no usage of brown bears by Pedro Bay households and a two pound per capita annual consumption of caribou meat. Residents of Port Alsworth use areas inside Lake Clark National Park and Preserve in GMU 9B for hunting brown bear and moose and a large area north of Iliamna Lake in GMU 9B that extends north to the Mulchatna River and west toward the Nushagak River in GMU 17B for hunting caribou.

3.4 Recreational Uses

3.4.1 History

As noted in chapter 1 of this EA, ANILCA established Katmai National Preserve in 1980 to maintain healthy populations of and protect habitat for wildlife species, particularly brown bears (*Ursus arctos*) and moose (*Alces alces*), but also to allow sport and subsistence hunting (ANILCA Sections 203 and 1313). Prior to the establishment of the Preserve, sport hunting and fishing in addition to many subsistence activities were already taking place in the area. The land in the Preserve has been an important subsistence area for many years and has been heavily relied upon for subsistence resources by residents of various communities (Deur and Callaway 2008).

Historically the area was primarily accessed by dog sleds in the winter and by foot in the summer, which restricted visitation to the area to mostly local subsistence users. During the 1960's locals began to access the area by motorized vehicles but were limited by snow, water levels, and/or ground conditions. Currently aircraft are the primary means of access into the Preserve for non-subsistence activities by non-locals.

3.4.2 Trends in Visitation

For the first 20 years after the establishment of the Preserve by ANILCA the primary activities were sport fishing and hunting. Hunting was very popular for caribou (*Rangifer tarandus*) during the 1990's when the Mulchatna herd (the main herd that utilizes the Preserve) was growing rapidly to a population of over 200,000 (Woolington 2011). Since the decline of the Mulchatna herd to a current estimate of 20,000 to 30,000 animals and with caribou hunting restricted to residents of Alaska within the Preserve (Woolington 2011), brown bears and moose have been the primary target of sport hunters recently, especially guided hunters (Figure 3.13). Sport fishing is still very popular (accounts for over 80 percent of visitation) in the Preserve and bear viewing has increased in popularity, especially during the last few years.

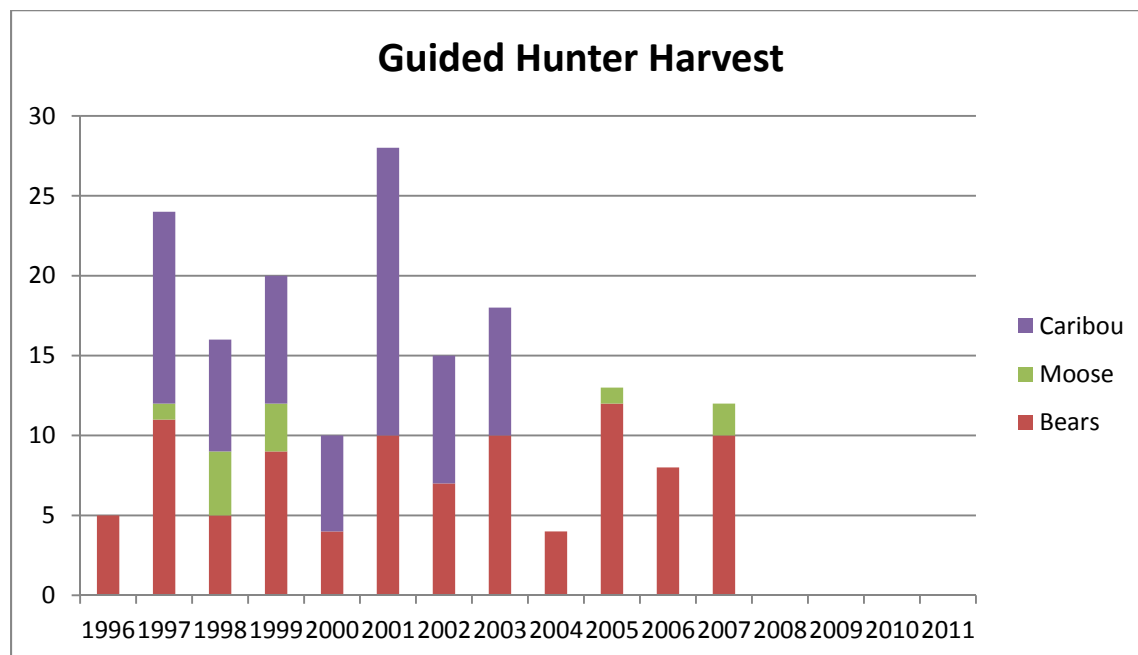


Figure 3.13 - Guided Hunter Harvest in the Preserve for each target game species since 1996

From 2005-2009, Katmai National Park and Preserve (KATM) collected data on visitor use locations and activities through guiding and transport businesses with permits to work within the park units (commercial use authorization holders; CUAs). The majority of visitation within KATM is facilitated by the park's many CUAs. Visitation in the Preserve occurs primarily from June through September, with limited visitation in May and October (Figure 3.14). In all years,

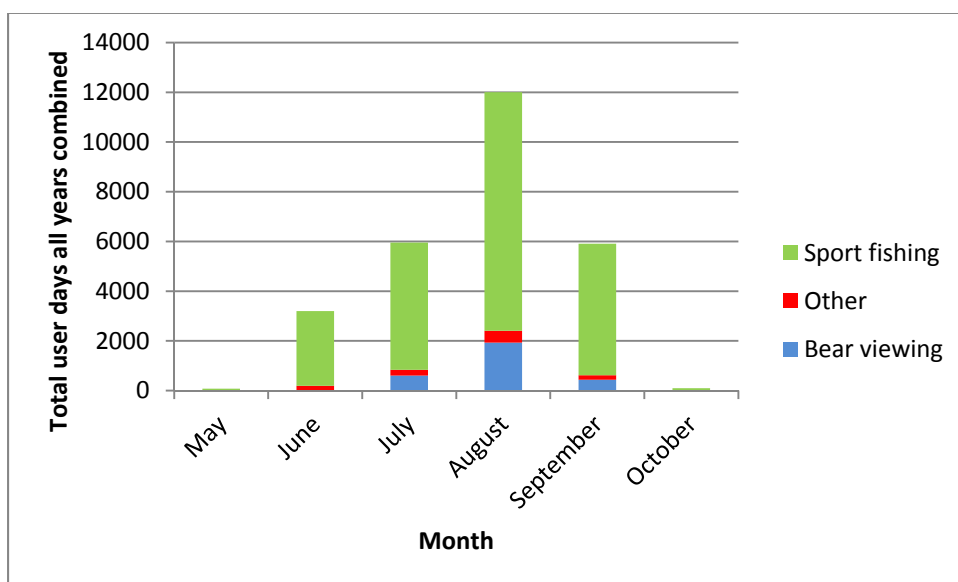


Figure 3.14 - Total user days per month in the Katmai National Preserve, 2005-2009. Values are the total for all years. (Hunters are included in the "Other" category)

August had the highest visitation. From 2005 to 2009, visitation by clients and guides of CUAs ranged from 3,522 to 6,716 visitor days. Sport fishing is the predominant activity in all years and within each of the months from June to September. Bear viewing occurs in July, August, and September. Bear viewing increased steadily from 2005 to 2008, but decreased in 2009. With the large number of sport fishermen and bear viewers, hunters only make up a small percentage (about one percent) of the overall visitation within the Preserve. Hunters that target bears are hunting in May or October, a time period for which there is no record of sport fishing or bear viewing activities.

One area that receives about half the visitation in the Preserve is the Moraine-Funnel Creek area during the month of August when large numbers of spawning salmon attract numerous brown bears and rainbow trout (*Oncorhynchus mykiss*), which attract bear viewers and fishermen. Because of the high numbers of visitors over a short time period, KATM has been collecting detailed visitor use data in this area during the month of August since 2000. Although sport fishing is the most popular activity, bear viewers have increased in numbers and percentage of visitation (Table 3.10). The average number of visitors has increased from a low of 20/day (2004) to a high of 54/day (2011). One of the main reasons for this increase has been the increase in the number of bear viewers from a low of 2/day (2004) to 28/day in 2011 (Figure 3.15). Fishing generally peaks around August 10th and holds fairly steady while bear viewing doesn't peak until mid-August. All visitation in the area decreases dramatically starting about August 20th (Figure 3.16) and remains very low until bear sport hunters start showing up (odd years only) in late September or early October for the fall bear hunt in October.

Table 3.10 - Mean daily number and percent of visitors fishing and bear viewing during August at Moraine Creek in Katmai National Preserve

Year	Total Visitors	Fishing	Bear Viewing	Percent Fishing	Percent Bear Viewing
2011	54	23	28	31	62
2009	44	33	9	67	21
2007	37	29	8	71	9
2006	22	20	2	89	8
2004	20	14	2	78	21
2001	35	23	7	75	21
2000	31	19	10	43	52
Average	35	23	9	65	28

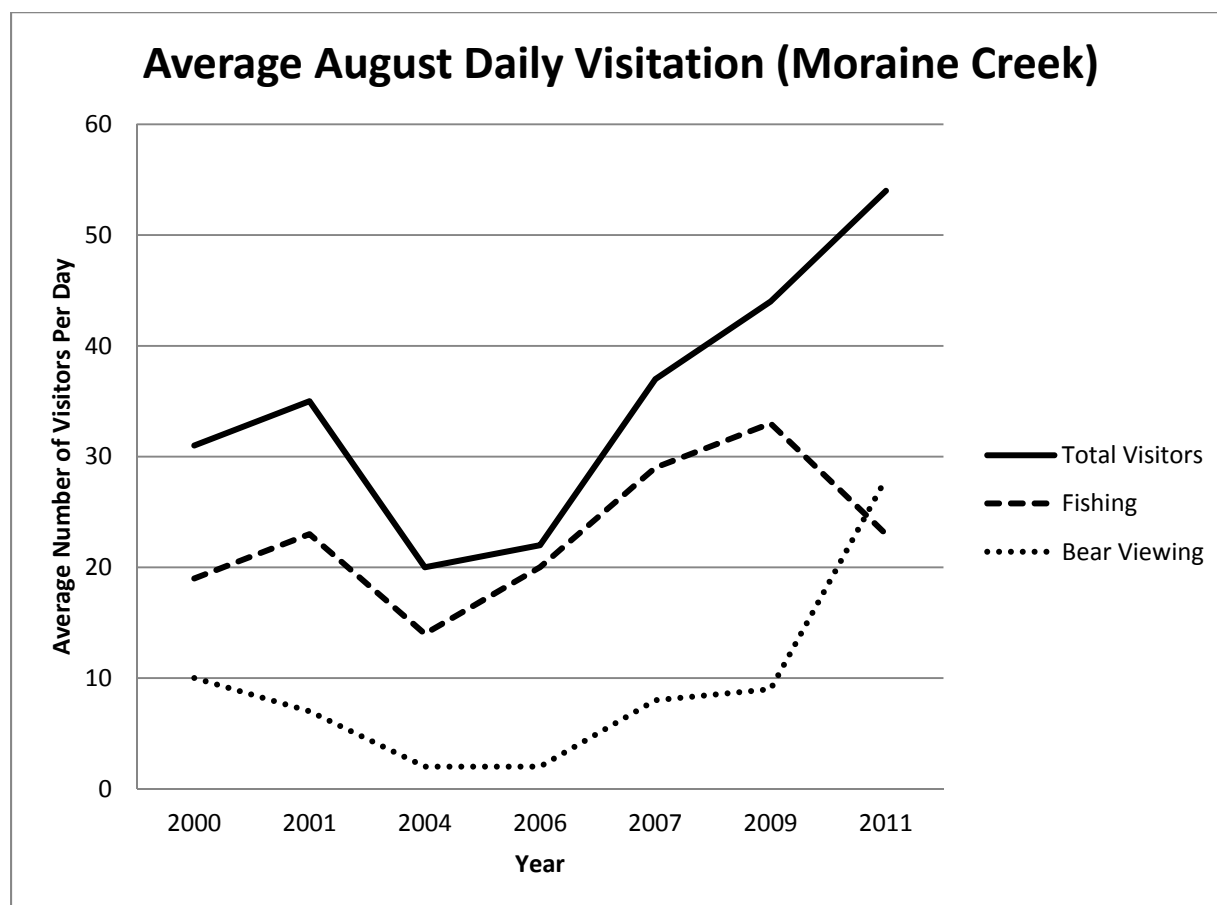


Figure 3.15 - Mean daily number of visitors during August at Moraine Creek in Katmai National Preserve

3.5 Employment Opportunities, Local and Regional Economies

Portions of KATM are located in four sparsely populated boroughs at the northern end of the Alaska Peninsula. The largest segment of KATM is located in the Lake and Peninsula Borough, with substantially smaller segments located in the Bristol Bay, Kodiak Island, and Kenai Peninsula Boroughs. Demographic characteristics for these boroughs for the year 2010 are presented in Table 3-11. Smaller communities immediately surrounding KATM include: Naknek, population 544; South Naknek, population 79; King Salmon, population 374; Levelock, population 69; Igiugig, population 50; and Kokhanok, population 170 (USCB, 2011b). These boroughs along with the Municipality of Anchorage, and the cities of Homer, Kenai, Soldotna, and Kodiak, are the locations of many businesses providing commercial services within the park.

The local economy of the four boroughs that contain Katmai National Park and Preserve is characterized by a mixture of education services, agriculture, forestry, fisheries, retail trade, and transportation activities (USCB, 2009). In July of 2011, the four boroughs supported a combined labor force of 41,216, of which 38,364 were employed. Unemployment rates varied from a low of 1.0 percent in Bristol Bay to 7.8 percent in Kenai Peninsula. July is generally the peak month

for employment in the four boroughs. Employment statistics for the four boroughs are presented in Table 3.12.

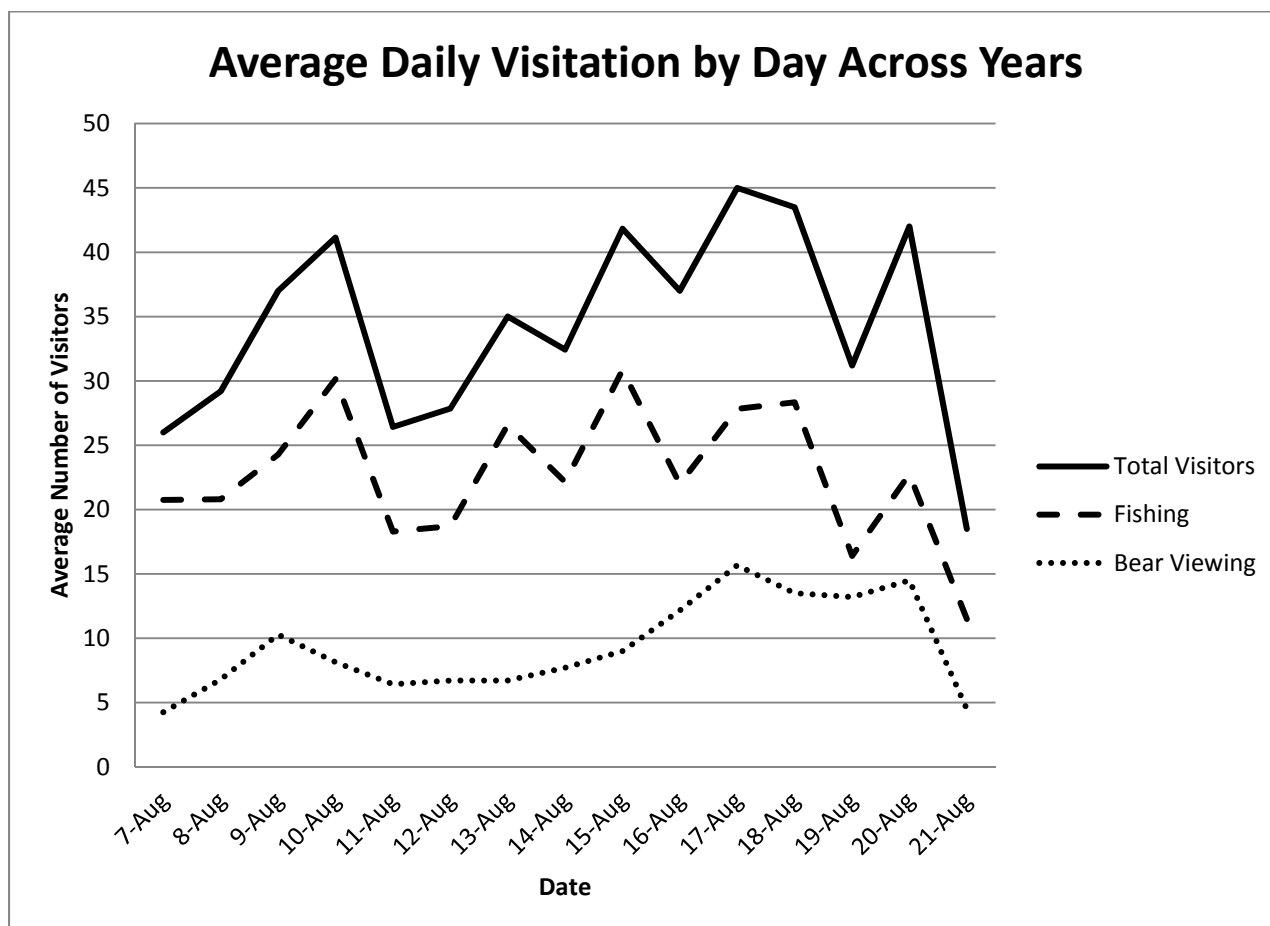


Figure 3.16 - Mean daily visitation activities across study years from 2000 to 2011 at Moraine Creek in Katmai National Preserve

Table 3-11. Demographic Characteristics for Selected Areas in the Katmai Region of Interest.

Borough	Area (sq. mi.)	Population 2009	Persons per sq. mi.	Households	Per capita Income	Below poverty	Minority
Lake and Peninsula	23,652.0	1,399	0.1	465	\$16,450	22.1%	25.5%
Kodiak Island	6,549.6	13,147	2.1	4,6054	\$26,862	10.6%	41.3%
Bristol Bay	503.8	682	2.0	274	\$28,662	5.6%	45.7%
Kenai Peninsula	16075.3	53,052	3.4	19,603	\$26,940	9.7%	14.3%
Anchorage	1,704.7	280,389	171.2	103,602	\$33,436	13.5%	30.3%

Source: USCB, 2009; 2011

Table 3.12 - Employment Statistics for the Katmai Area Boroughs.

Borough	Total Labor force	Total Employment	Unemployment Rate	Leading Economic Sectors by Employment
Lake and Peninsula	1,591	1,516	4.7%	Education Services; Transportation; Agriculture, Forestry and Fisheries
Kodiak Island	7,151	6,690	6.4%	Education Services; Retail Trade; Agriculture, Forestry and Fisheries
Bristol Bay	3,109	3,077	1.0%	Education Services; Retail Trade; Transportation
Kenai Peninsula	29,365	27,081	7.8%	Education Services; Retail Trade; Agriculture Forestry and Fisheries

Source: BLS, 2011; USCB, 2009

Tourism and recreational activity associated with KATM continue to make a major contribution to the local economy of the four boroughs and the municipality of Anchorage, as well as to the larger economy of the State of Alaska. Direct spending by visitors inside KATM in 2007 totaled \$12,335,897, and KATM visitors spent an additional \$38,838,306 in the larger Alaska economy, including hunters to the Preserve. These visitor activities generated an additional \$73 million in industrial output, as well as 647 jobs, \$23 million in labor income and an added value of \$37 million to the Alaska economy (Fay and Christensen, 2010).

3.5.1 Concession Operations and Business Opportunity

Guided hunting services have been in place in what is now Katmai National Preserve well before the ANILCA. As noted in EA section 1.2.1, ANILCA allows sport hunting in areas designated as national preserves. The Preserve portions of KATM are remote, difficult to access, and challenging to hunt. In addition, nonresident hunters of brown bear are required by state law to either 1) use the services of licensed hunting guides when hunting in Alaska, or 2) hunt with a relative within the second degree of kindred who is a state resident at least 19 years old with a hunting license. For these reasons, the National Park Service determined that hunting guide services are a necessary and appropriate visitor service in Katmai National Preserve.

The concessioner(s) selected through a competitive process to operate within Katmai National Preserve contribute to the local and regional economies in a variety of ways. Private businesses that provide guided hunter services in Alaska generate revenue by employing registered guides and assistant guides, as well as other laborers to assist with food, fuel, logistics and transportation. These guides often use services offered by air taxi operators to transport clients into and out of the field. Guides purchase fuel and food at local stores from local vendors, and they bring visitors into local communities, such as King Salmon, who patronize restaurants and gift shops.

The clients that patronize these concessioners often devote considerable financial resources to their trip. As they travel through Anchorage to begin their hunt, they purchase big game tags, Alaska hunting licenses and supplies. Often, friends and family accompany them, and engage in other tourism activities before or after their hunting trip. As noted by Fay and Christensen (2010) the economic effects of these activities are considerable.

In addition to facilitating better resource protection by the NPS, these guided hunter services concession contracts provide private business owners with a stable business opportunity. These 10-year contracts allow concessioners to invest in equipment and staff over the long term to provide high quality services to the visiting public. The concessioners become very familiar with their areas, logistical challenges, big game movements, and develop a vested interest in protecting preserve resources. This benefits resources, assists in the accomplishment of the NPS mission, and boosts the local and regional economy.

3.5.2 Past Concession Operations

At the time of the establishment of the Preserve in 1980, hunting guides were operating within the Preserve under State of Alaska law and regulations. From 1974 until the fall of 1988, the State of Alaska assigned exclusive guide areas to commercial hunting guides through the Guide Licensing and Control Board (the Board). The NPS authorized the state-sanctioned hunting guides to operate in the Preserve. In October 1988, the State of Alaska Supreme Court wrote an Opinion in response to a suit filed by a guide. The court wrote that the state system and the exclusive assignment of guide areas violates the common use clause of the state constitution. As a result of that Opinion, the state system and the Board were dissolved.

The NPS expected that the State of Alaska would develop a new system, and offered the existing hunting guides temporary authorizations in anticipation of a new state system. In the interim the NPS began evaluating guide/outfitter use areas, and solicited input from current guide/outfitters, class-A assistant guides, and other interested individuals and organizations. The NPS received about 35 written comments regarding the Katmai/Alagnak area (February 20, 1992 Memorandum from Superintendent, Katmai to Regional Director, Alaska).

Following the 1998 passage of the Concessions Management Improvement Act of 1998, in 2002 the NPS issued a prospectus to compete two hunting guide business opportunities in Katmai National Preserve. Two concession contracts were awarded for a 10-year period. One of these (Moraine guide area) was terminated in 2009 and is currently vacant, while the second (Sugarloaf guide area) expires on December 31, 2012.

Since 1989, the NPS has limited annual client numbers for hunting guide concessions in Katmai National Preserve. The original numbers of clients permitted for these concession contracts in the 1980's were 35 for the Moraine guide area and three for the Sugarloaf guide area. In 2003, they were reduced to 25 and 3 clients, respectively.

3.5.3 Present Concession Operations

Presently one guided hunter contract is in effect for the Sugarloaf Guide Area encompassing about 44,000 acres in the southwest portion of the Preserve with a client limit of 3 hunters per year. Awarded in 2003, this contract expires at the end of 2012. The other contract for the Moraine Creek Guide Area was also awarded in 2003 but was terminated in 2009. This contract covered the eastern 260,000 acres of the Preserve and allowed up to 25 clients per year.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter provides an evaluation of the potential effects or impacts of each of the alternatives on the resources described in the issue statements presented in Chapter 1, Purpose and Need for Action. This chapter is organized by alternative: no-action, status quo, and NPS proposed action to issue a prospectus for guided hunting services with revised guide use areas and client limits associated with the new guide areas. Effects to each of the impact topics are addressed under each alternative. Table 2.2 summarizes the effects of the alternatives.

4.2 Methods

The impacts will be summarized as either minor, moderate or major as generally described in table 4.1. Cumulative effects from other actions affecting the preserve such as ADFG Board of Game decisions, ongoing subsistence hunting and decisions from the Federal Subsistence Board, other recreational activities, and ongoing climate change effects may be considered in the analyses. This project would not have a measurable effect on local or regional greenhouse gas emissions, so climate change would only be considered in the context of climate change effects on habitat that might affect sustainability of fish and wildlife populations and recreational opportunities affected by seasonal changes. Such changes, however, are not expected to be measurable in the next 10 years.

Table 4.1 Impact Levels

Minor	Moderate	Major
Change in resource would occur, but no substantial impact would result. The change would be perceptible and measurable but not alter resource condition.	Noticeable and measurable change in a resource would occur and would alter resource condition, but the integrity of the resource would remain.	Substantial impact to a resource would occur that is easily defined, highly noticeable, and would measurably alter the integrity of the resource.

4.3 Impacts of Alternative A: No Action

Under this alternative the NPS would not issue a prospectus for guided hunting services and existing contracts would expire at the end of 2012.

4.3.1 Effects on Wildlife in the Preserve

4.3.1.1 Brown Bear

The analysis below shows that there would be minor adverse effects on the brown bear population under the no-action alternative, especially if the salmon escapement remains near

recent high levels. Resident hunters could continue to hunt brown bears in the Preserve. Non-resident hunters (citizens of the USA but not a resident of Alaska for at least a year) would be able to hunt brown bears in the Preserve with an Alaska resident who is at least 19 years of age with a valid hunting license and within second-degree of kindred. Foreign hunters (those who are not citizens of the United States) would not be allowed to hunt brown bears in the Preserve because no guides would be authorized to operate there.

Direct and Indirect Effects:

Annual harvest rates in Katmai National Preserve (KTPR or Preserve) from 1989 -2007 ranged from 2.4% - 8.2% (Loveless in review). Based on successful hunter harvest information collected from 1990 – 2010 by the Alaska Department of Fish and Game (ADFG), the proportion of bears harvested in the Preserve by non-resident hunters was 66% (2011). Alternative A would likely greatly reduce participation of non-resident brown bear hunters in the Preserve from previous periods with licensed guides, and eliminate all nonresident foreign hunters from taking brown bears in the Preserve. The reduced hunting by non-residents could lead to a decline in overall harvest of brown bears in the Preserve. Fewer non-resident hunters in this area may lead to greater resident hunter activity in the area. Harvest by resident and a few nonresident hunters would remove individual bears from the population, but this alternative would have a negligible effect on the brown bear population overall. Effects of this alternative would be seen in a possible change in population demographics and sex/age ratios, which most likely include a population with an increase of older male bears and fewer family groups.

Harvest pressure can result in a larger proportion of family groups within a bear population. In 2006 through 2009, observations in Katmai National Preserve documented more family groups as a proportion of the population compared to earlier surveys (Table 3.1). If harvest level declines under Alternative A, the proportion of family groups in the Preserve bear population could decline. This could result in a brown bear population with more surviving large single male bears, who also prey on cubs, and reduce the percent of family groups, as observed in un-hunted brown bear populations such as McNeil River Sanctuary and Katmai National Park.

Traditionally hunters target large male bears, which cause a population to have fewer older and fewer male bears. Current records indicate, however, that harvest levels are not depleting either older or male bears (Loveless in review; Figures 3.3 and 3.4), which trend is expected to continue under Alternative A.

Cumulative Impacts:

Changes in hunting regulations have previously had large impacts on southwest Alaska bear populations. In the 1960s the Alaska Peninsula was known as a place to hunt trophy size bears and the number of hunters increased. During this time period the escapement numbers of salmon were dropping (Figure 3.10), which combined with higher harvest pressure, caused a decrease in the bear population. A change in hunting regulations allowed the bear population to recover. Current bear populations are increasing due to high salmon escapement numbers and changes in

the state hunt regulations. The abundance of bears has recently led to increases in the number of hunters. This has led to an increase of bears harvested in the Preserve from an average of 13 bears during 1987 -1997 to 24 bears during 1999 – 2009 (Butler 2009). Though the salmon population affects the bear population, salmon returns would not affect the hunts. Bears move as resource availability shifts, and high salmon runs in the Preserve are assumed to be the reason for observed increases in the bear population. If salmon runs decrease, then it would likely result in reduced observations of bears to levels documented in the past when salmon numbers in the Preserve were lower (See Figures 3.2 and 3.10). It is expected that hunter effort would decline if bear numbers decline.

Under Alternative A, the overall number of hunters could likely decrease, as non-residents and foreign hunters would no longer be allowed to hunt in the Preserve. The number of resident hunters, and bears harvested by residents, may actually increase with a lack of guided activities in the Preserve, but this increase is expected to be minimal. Overall there would be reduced harvest pressure on the bear population, potentially allowing the population to grow at a faster rate.

Conclusion:

Under Alternative A, the impacts to the brown bear population would be minor. There would be an expected change in the demographics of the bear population to a reduced proportion of bears in family groups and more single older male bears. More resident hunters are expected to hunt brown bears in the Preserve in the absence of guided non-resident hunters, but the increase in resident hunters and their harvest rates of brown bears are not expected to match the previous harvest rates with guided hunters, resulting in fewer bears harvested from the Preserve. The available number of salmon has a high impact on brown bear population numbers. If salmon numbers decrease, then it is assumed that the bear population would also decline on a local level, but they may be stable on a regional level because bears will seek sources of fish elsewhere.

4.3.1.2 Moose

The analysis below shows that there would be minor impacts on the moose population under the no-action alternative where foreign hunters would not be allowed to hunt.

Direct and Indirect Effects:

According to the ADFG, the number of people hunting moose in the Preserve has been decreasing, which includes resident hunters, yet hunting success rates have been stable since 1985 (Butler 2010, Figure 3.5). Because foreign and other guided hunters would not be allowed to hunt moose in the Preserve, slightly fewer moose might be harvested in the Preserve; however, efforts by non-guided moose hunters may increase. This alternative would likely result in little direct effect on the moose population because participation in moose-hunting in this remote areas is expected to be low and harvest rates for non-guided hunters are around 20% in the area.

Bull:cow ratios calculated for the moose population in the Preserve are considered low, but these ratios fall within the ADFG guidelines (Butler 2010). With a slightly reduced number of hunters, it is possible that this ratio could increase, thereby benefitting the moose population.

Cumulative Effects:

Although non-resident hunters could still hunt without a guide, it is expected that there would not be an increase in the current number of unguided non-resident hunters due to the remoteness of the area, the high cost of access, and low moose densities. With no guided hunters allowed in the Preserve it is possible that the brown bear population would increase. An increase in the brown bear population could affect moose calf:cow ratios because brown bears feed on moose calves (Butler 2010), which may slow population growth. Current calf:cow ratios have been erratic with the trend difficult to follow, but these ratios are not currently a major concern (Butler 2010).

Conclusion:

Alternative A would result in minor effect on the moose population because participation in moose hunting is expected to be low and the number of people hunting moose has been decreasing. With less human harvest pressure there is potential for increased bull:cow ratios, but there is a countervailing possibility that a higher bear population could reduce calf survival leading to a decrease in the moose population.

4.3.1.3 Caribou

The analysis below shows that there would be very minor impacts to the caribou population under the no-action alternative.

Direct and Indirect Effects:

Currently the harvest of caribou is closed to nonresidents, who are most likely to use guide services for hunting in the Preserve. The non-resident season was closed because the herd left the area. ADFG management goals for the caribou herd are to maintain a population of 30,000 to 80,000 animals with a minimum bull:cow ratio of 35:100 (Woolington 2010). The current estimated population is 30,000 animals, but the minimum bull:cow ratio has not been reached. If the caribou season was to reopen in this area for non-resident hunters, then the effects on the caribou population are expected to be minimal and foreign hunters would still not be allowed to hunt in the Preserve without a guide. Under a future scenario with caribou hunting for nonresidents, it is possible that bear and moose hunters may take a caribou in addition to the target species, but any potential harvest would be minimal in relation to current herd size. Past history of caribou harvest rates were never above 5% of the caribou population (ADFG 2011).

Under this alternative there are no expected changes in the population.

Cumulative Effects:

The reasons for the decline in the caribou population include disease and poor nutrition, neither of which would be effected by the no-action alternative. High numbers of caribou in the past degraded feeding grounds. Until the habitat has a chance to fully recover to provide proper nutrition to the caribou herd, an increase in the population will continue to be slow.

Conclusion:

This alternative would have a negligible effect on the caribou population. Current hunting regulations have already closed caribou hunting to non-resident hunters to allow herd growth. Even if the hunting season were to reopen for non-residents, the expected harvest in the Preserve would be nominal in relation to current herd size.

4.3.2 Effects on Subsistence Resources and Uses in the Preserve

Under this alternative, the NPS would not issue a prospectus for guided sport hunting, which would be suspended in the Preserve. Only unguided sport hunting would continue in the Preserve (as is occurring now in the Moraine Creek guide area where the concession contract was terminated.) State and Federal permit data and subsistence harvest information collected by ADFG are summarized in Chapter 3 and describe the current status and significance of Federal subsistence hunting in KTPR. These data show that residents of communities with C&T in GMU 9C for brown bears, caribou, and moose utilize these species for food, but they generally hunt in areas close to where they live and not in the Preserve.

The potential for user conflicts between Federal subsistence and sport hunters under this alternative is dependent on the relative abundance of target species, and timing and location of hunting activity. There would be no conflict with guided sport hunters because guides would not be authorized. The relative abundance of caribou and moose, the most important big game species used for subsistence, is addressed in Chapter 3. Over the past fifteen years, the population of the Mulchatna Caribou Herd has declined dramatically, primarily due to nutritional stress and disease, with a corresponding decrease in harvest by all users (Table 3.3). The moose population has also declined steadily over time (Table 3.7) along with total harvest (Table 3.8); however, the overall population is currently characterized as stable and low density by ADFG (Butler 2010). According to Butler, the recent declines in moose harvest are a reflection of increased costs to hunt moose in GMU 9, along with declines in the national economy and changes in the availability of caribou, which reduce possibilities for combination hunts. These factors have decreased the number of non-local hunters in recent years and the overall probability of a subsistence hunter encountering a non-local caribou or moose hunter in the preserve.

Table 4.2 summarizes the potential for temporal conflicts by comparing the hunting seasons between user groups in GMU 9C for brown bear, caribou, and moose. Given the low utilization of brown bears in the Preserve for subsistence and long Federal subsistence hunting seasons, the likelihood of a subsistence bear hunter encountering a sport bear hunter in the Preserve is negligible. The likelihood of a subsistence user hunting caribou or moose encountering a sport caribou or moose hunter is much higher, however, because the Federal and State hunting seasons for these species overlap significantly.

Table 4.2: Season Dates for Federal Subsistence and State Hunts in Game Management Unit 9C

Hunt	Brown Bear	Caribou	Moose
Federal Subsistence	<u>October 1–May 31</u>	9C (portion within the Alagnak River drainage): <u>August 1–March 15</u> 9C Remainder: <u>No Federal Open Season</u>	9C (portion draining into the Naknek River from the north): <u>September 1–September 15</u> <u>December 1–December 31</u> 9C (portion draining into the Naknek River from the south): <u>August 20–September 15</u> <u>December 1–December 31</u> 9C Remainder: <u>September 1–September 15</u> <u>December 15–January 15</u>
State Subsistence	<u>No Closed Season</u>		
State Resident	Odd Year Fall Hunt: <u>October 1–October 21</u> Even Year Spring Hunt: <u>May 10–May 25</u>	9C (portion within the Alagnak River drainage): <u>August 1–March 15</u> 9C (portion north of the Naknek River and south of the Alagnak River drainage): <u>May Be Announced</u> 9C Remainder: <u>No Open Season</u>	9C (portion draining into the Naknek River): <u>September 1–September 20</u> <u>December 1–December 31</u> 9C Remainder: <u>September 1–September 20</u> <u>December 15–January 15</u>
State Nonresident	Odd Year Fall Hunt: <u>October 1–October 21</u> Even Year Spring Hunt: <u>May 10–May 25</u>	9C: <u>No Open Season</u>	9C (portion draining into the Naknek River): <u>September 5–September 20</u> 9C Remainder: <u>September 5–September 20</u>

The likelihood of spatial conflicts can be inferred from ADF&G community harvest area maps found in Appendix B, which generally demonstrate very little use of KTPR for subsistence hunting, with two exceptions: the first being the Nonvianuk River corridor from just above the confluence of the Alagnak River and upstream toward Nonvianuk Lake, which is an important moose and caribou hunting area for residents of Naknek and moose hunting area for South Naknek residents; and the second being the northeast corner of the preserve including Moraine and Funnel Creeks and Crosswind, Spectacle and Mirror Lakes, which is used by residents of Kokhanok for hunting caribou and to a lesser extent by Newhalen residents for brown bear, caribou, and moose.

Federal subsistence users have expressed concern for many years that competition with hunters from out of the local area has made it more difficult for local residents to find harvestable moose in easy to access areas along river corridors to satisfy their subsistence needs. This has led to proposals to the Federal Subsistence Board from the Bristol Bay Regional Advisory Council (RAC) and subsistence users requesting regulatory changes to exclude sport hunters from taking moose in subunits of GMU 9. In 2008, the RAC submitted WP08-31 proposing that moose hunting on Federal lands in both GMUs 9B and 9C be closed to hunting by non-Federally qualified hunters. In 2010, the RAC submitted WP10-47 to create buffer zones in GMU 9C extending two miles on either side of waterways within Federal lands and close hunting inside the buffers to non-Federally qualified hunters. Neither proposal was adopted (FWS 2012).

Variations in the way individual hunters record hunt locations make it difficult to determine exactly where in a particular game unit an animal was killed; however, NPS annual hunt report data from guided hunting concessioners does provide general information about the number of animals taken in the Sugarloaf and Moraine Creek guide areas. Table 4.3 summarizes the annual reported harvests of brown bear, caribou and moose taken by guided sport hunters in the Sugarloaf and Moraine Creek guide areas of the Preserve between 2001 and 2011. Table 4.4 shows the total reported harvests for brown bear, caribou and moose over the same period of time by all hunters in GMU 9C.

Between 2001 and 2010, guided sport hunters in the Preserve took 61 brown bears, which represented 56% of the total number of brown bears taken in all of GMU 9C. The high proportion of brown bears taken by guided hunters in the Moraine Creek area illustrates the significance of guided brown bear hunting as a sport hunting opportunity in the Preserve and indicates a concentration of guided brown bear hunting activity in the portion of GMU 9C within the Preserve boundaries. This concentration of guided hunt activity has the greatest potential to impact subsistence users during the October 1–21 odd-year fall hunts and the May 10–25 even-year spring hunts. However, the low level of use of the Preserve for subsistence brown bear hunting by Federally-qualified subsistence users reduces the significance of those potential impacts. In addition, liberal hunting seasons under Federal and State subsistence regulations provide expanded hunting opportunities for subsistence hunters that are not available to non-local brown bear hunters, which enable subsistence hunters to avoid times when they might encounter a sport hunter in the field.

A comparison of the number of caribou and moose taken from the Preserve between 2001 and 2010 to the total harvests from all of GMU 9C shows low levels of guided hunting activity directed toward these two species. During that ten-year time period, the number of caribou taken in the Preserve was 4% of the total GMU 9C harvest. This low rate of guided caribou hunting activity is partly due to population decreases in the Mulchatna Caribou Herd and the closure of caribou hunting to nonresident hunters in 2006; however between 2001 and 2005, guided hunters in the Preserve reported taking 34 caribou, which was about 7% of the total caribou harvest in GMU 9C. Of the three big game species hunted with guides in the Preserve, guided moose hunting has had the lowest harvest level. Between 2001 and 2010, 6 moose were taken in the Preserve which represents 2% of the total GMU 9C moose harvest during that time period. These low levels of guided hunting activity for caribou and moose combined with the closure of caribou hunting to nonresidents and a short nonresident moose hunting season in the fall makes

the likelihood of a subsistence hunter encountering a guided caribou or moose hunter in the field rather low.

Table 4.3: Reported Guided Sport Harvest in the Sugarloaf and Moraine Creek Guide Areas of KTPR 2001–2011 (NPS, 2012)

Guide Area/Species	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	TOTAL
Sugarloaf Caribou	X _b	X _b	X _b	X _b	X _b	0	0	0	0	0	0
Sugarloaf Moose	0	0	0	2	1	1	2	0	0	0	6
Moraine Creek Brown Bear	X _a	X _a	X _c	10	8	12	4	10	7	10	61
Moraine Creek Caribou	X _a	X _a	X _b	X _b	X _b	0	0	8	8	18	34
Moraine Creek Moose	X _a	X _a	0	0	0	0	0	0	0	0	0

^a Guided hunting concession did not operate

^b State caribou hunt closed to nonresident hunters.

^c No report was provided, so the harvest is unknown.

Table 4.4: Total Reported Harvests of Brown Bear, Caribou and Moose by all Hunters in GMU 9C (ADF&G, 2012)

Species	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	TOTAL
Brown Bear	5	4	9	13	9	4	15	14	23	12	108
Caribou	6	2	153	190	11	117	105	86	27	119	816
Moose	19	17	21	28	22	29	34	40	43	37	290

Furthermore, a few subsistence hunters in local communities have expressed concern that the brown bear population in the area has increased to the point they think moose and caribou numbers are depressed from predation. Some have expressed support for guided bear hunting because they prefer to hunt moose and caribou over bear, and the No-Action alternative could decrease the successful harvest of brown bears in the area.

This analysis assumes duration of impacts resulting from the No-Action Alternative would be 10 years or longer. This alternative represents conditions without guided nonresident and resident hunters but with general sport hunters. The preceding analysis and information described in Chapter 3 and the maps included in Appendix B indicate little use of the Preserve by communities with Federal C&T use determinations for brown bears, caribou, and moose, making the intensity of potential impacts to Federal subsistence use low.

Cumulative Effects:

Other recreational activities within the KTPR, such as sport fishing, bear viewing, and recreational boating, could have adverse effects on subsistence hunting in the Preserve. These activities generally occur in summer months and do not overlap with the bulk of the subsistence

hunting seasons, except possibly on the early end of the hunt seasons for caribou and moose (see Table 4.2). Again because the number of subsistence hunters entering into the Preserve from those communities with C&T for caribou and moose is small, the potential for adverse impacts from recreational users other than sport hunters would also be small. Coupled with the minor effects from sport hunting in the preserve without authorized guided hunting under the No-Action Alternative, the overall cumulative effect on subsistence hunting would still be minor.

Conclusions:

The No Action Alternative would have a minor effect on Federal subsistence harvests of brown bears, caribou, or moose in Katmai National Preserve.

4.3.3 Effects on Recreational Uses in the Preserve

The analysis below shows that there would be a minor effect on recreational uses and visitation under the no-action alternative where there would be no guided hunting.

Direct and Indirect Effects:

If no guided hunting was allowed, there would be a decrease in the number of non-resident bear hunters because most non-resident bear hunters in the preserve utilize the services of a guide. Per state regulations, individuals who are not residents of Alaska would not be able to hunt brown bears in Katmai National Preserve unless they are hunting with a closely related Alaska resident. Nonresident foreign hunters would have no opportunities to hunt any big game species in the Preserve without a guide, nor would guided hunter services be available for any hunter, regardless of the hunter's residence or the species being hunted. With the low number of clients being guided for other species over the last few years, even though the option was there, it would be unlikely that there would be much of a decrease in hunting effort for species other than bears. Without guided activities there may be more non-guided hunters in the Preserve, but this would be expected to be less than the number of guided clients resulting from alternative B or C.

Fishing is by far the most popular activity in the Preserve, although bear viewing is also popular during August. However, these activities rarely occur during times when guided hunting would be occurring. Without guided hunting, the bear population and composition may change over time, but is not expected to change enough to be noticed by any visitors.

Cumulative Effects:

Over the years guided hunting has accounted for only a fraction (less than one percent) of the visitation within the Preserve, so there are no expected cumulative effects in total visitation from this alternative.

Conclusion:

This alternative would have minor adverse effects on overall visitation and visitor experiences within the Preserve, but opportunities for nonresidents to hunt bears or other species with a licensed guide would be eliminated for a small number of hunters (10-28) annually.

4.3.4 Effects on Local and Regional Economies

Overall, the “No-Action” alternative would have a minor negative impact on the local and regional economies of the Lake and Peninsula Borough, Bristol Bay Borough, the Kenai Peninsula Borough, and the municipality of Anchorage. The economic activity associated with hunting guide services includes revenue to guides and associated transportation, lodging, game processing, and tourism revenue. No concession contracts for hunting guides in Katmai National Preserve would result in no economic activity associated with these services. Revenue to the State of Alaska would also be affected. All of these would be a change from the status quo and reduction from the economic activity under the Status Quo Alternative. (Alternative B).

Revenue to Hunting Guides: Rates currently being advertised by Alaska guides suggest that individual hunts could generate gross revenue from approximately \$5,000 to \$15,000 depending on hunt location and big game species. Considering current advertised rates and historical client numbers, this alternative would result in estimated lost revenue (in 2012 dollars) in the range of \$100,000 to \$200,000 annually.

Associated lodging, transportation, and hunting-related revenue: A loss of transportation, lodging, and hunting related revenue to local and regional economies would occur under this alternative. In general, clients transport themselves to a pick-up point with the guide and pay for lodging, meals, and incidental expenses that occur before and after the hunt. Revenue from hunting related activity, such as taxidermy services, is also assumed to be generated. This revenue would vary per person and individual preferences, but a minimum of \$1,000 per person would be expected. This estimate results in a range of regional expenditures from \$10,000 to \$30,000 or more per year.

State licenses and tags: Under this alternative, the State of Alaska would not collect nonresident tag fees for clients utilizing guide services within the Preserve. Based on 2012 tag fees, the potential revenue loss to the State of Alaska is estimated up to \$15,000 per year.

This alternative could result in an indirect effect on resident sport hunters and their effect on the local and regional economy. Resident sport hunters may replace some of the hunt effort vacated by guided sport hunters in the Preserve, but their travel costs, lodging, supplies, and licensing expenditures would be less than those generated by non-resident hunters, which would have much less effect on local and regional economies than the revenues generated from nonresident hunters (Marcus Hartley, pers. com.).

Cumulative Effects:

As noted in chapter 3, the primary economic drivers in the Lake and Peninsula and Bristol Bay Boroughs are commercial fishing, education, government services, tourism, and mining exploration, resulting in hundreds of millions of dollars per year. For example, the area's commercial salmon fishery alone earned \$165 million in 2010 (Alaska Economic Trends, November 2011), and the wholesale value of seafood produced in the Bristol Bay region was estimated at about \$250 M/year (Marine Conservation Alliance 2009). Services related to visitation and tourism to KATM alone amount to about \$30 M/year in the region and nearly \$50M/year in Alaska with about \$10M/year expended within the boundaries of KATM (Fay and Christensen 2011). The no-action alternative would result in a loss of an estimated \$110,000 to 245,000/year to the local and regional economies, which is a minor impact when considering the economy of the region.

Conclusions:

Under Alternative A – No Action (No Guided Hunting) - Guided sport hunting would not be authorized, resulting in a potential loss to the local and regional economies of \$110,000 to \$245,000 per year. The overall impact to local and regional business opportunities and economies would be negative and minor.

4.4 Impacts of Alternative B: Status Quo

Under this alternative the NPS would issue a prospectus for guided hunting services for the existing small Sugarloaf and large Moraine Creek guide areas with client limits of 3 and 25, respectively.

4.4.1 Effects on Wildlife in the Preserve**4.4.1.1 Brown Bear**

The analysis below shows that there would be minor impacts to the brown bear population overall under the status quo alternative, but the degree of impact may be highly dependent on salmon escapement.

Direct and Indirect Effects:

Although guided and non-guided hunting under Alternative B would remove individual bears from the population, this alternative would have minor effects on the brown bear population overall. Effects of this alternative would be expressed with possible changes in population demographics and sex/age ratios. Currently, as stated in Chapter 3, studies have shown that the brown bear population in the Preserve indicates moderate harvest levels of older male bears because the percent of bears in family groups has increased from about 40 to 60 percent (Table 3.1). Even though this demographic structure appears to have changed, the percent harvest of male bears eight years and older from the Preserve area has been stable or increased slightly

since 2003 (Figures 3.4a & b). This could mean that the overall bear population has increased with more of that increase in family groups (sows with cubs).

The regulations and bag limits for Game management Unit 9C are set by the Alaska Board of Game, which are determined from the annual monitoring procedures and the state-set harvest objective of 60% males, with 50 males 8 years or older taken during the regulatory season (Butler 2009). If conditions of the bear population were to change such that the percent of bears in family groups exceeded 70% for one or more years, then the State, NPS, or both may need to take appropriate action to assure the conservation of brown bears in the Preserve.

To take a more detailed look at the effects of Alternative B, the guide areas must be looked at separately. Based on concession guided hunt reports, the Sugarloaf guide area is primarily used to hunt moose. Since 1996 twelve moose have been successfully taken from this guide area concession, but zero bears. Assuming this trend continues, the effects of Alternative B on the brown bear population in the Sugarloaf guide area would be negligible.

In the Moraine Creek guide area most of the guided hunters would be bear hunters because very few moose occur in this area and caribou hunting for non-resident hunters is closed for the foreseeable future. Even if more caribou hunting opportunities develop in the future, the take of caribou would likely be an add-on for a guided bear hunt. Under this alternative, the harvest of brown bears on guided hunts could reach 25 bears in some years. An average of 17 bears were harvested per regulatory year based on hunting reports from 2001-2006 (Butler 2007).

At current brown bear harvest rates the population demographics indicate moderate hunting pressure. This has been observed in the Preserve where the proportion of family groups detected in 2006 -2009 was significantly higher than the number of family groups detected in 2004-2005 (Loveless et al. in review). The portion of single bears seen in the Preserve was 38% indicating moderate hunting pressure. Although harvest levels have generally remained within what is recommended for sustainable populations, demographics suggest that the higher harvest rates may have affected the population. If the status quo were to stay in effect, then the proportion of bears in family groups would likely remain elevated as a consequence of moderate harvest of single bears with many of those being large males.

When harvest pressure becomes great, the ratio of males to females decreases. Current research shows that this is not the case in the Preserve, even though the ADFG has recorded that the percent of male bears harvested averages 69% (Butler 2007). From the guided concessions reports from 1996 – 2007, 69 males were harvested compared to 14 females. If guided harvest rates would increase, then the male to female ratio is expected to decrease indicating high harvest pressure.

Cumulative Impacts:

Though the number of guided hunts is limited to 28 per year, ADFG records show an increase in resident hunters harvesting bears (2011). The local villages that use the Preserve are increasing in population, which if this trend continues could further increase the number of resident hunters

(Callaway 2008). If salmon escapement remains high, bear densities are expected to remain high to allow for recent levels of bears harvested by guided hunters (See Figures 3.2 and 3.12). Because brown bear populations are strongly correlated with availability of salmon (Hilderbrand et al. 1999; Mowat and Heard 2006), the higher than historical average salmon escapements during the last few years has resulted in recent high numbers of bears in the area. Salmon escapement is expected to decrease in the area at some time in the future, and the bear population is likely to decrease then too. If salmon escapement decreases and/or resident harvest of bears continues to increase, then the State, NPS, or both may need to take appropriate action to prevent overharvest of brown bears in the Preserve.

Conclusion:

This alternative is expected to result in up to 25 guided bear hunters each regulatory year. The proportion of family groups could remain high or increase and there may be a decrease in the ratio of males to females. If the salmon escapement remains high, then Alternative B could have a minor effect on the brown bear population if harvest rates stay at current levels. If salmon escapement decreases and/or resident harvest of bears continues to increase, then the State, NPS, or both may need to take appropriate action to prevent overharvest of brown bears in the Preserve.

4.4.1.2 Moose

The analysis below shows that there would be a minor effect on the moose population under the current status quo, allowing 3 clients in the Sugarloaf area and 25 clients in the Moraine Creek area.

Direct and Indirect Effects:

As stated under Alternative A, moose hunters have been decreasing. With the status quo in place, it is expected that the moose population would remain stable as it has been since 1985 (Butler 2010).

Bull:cow ratios under current regulations have remained within ADFG guidelines, and it is assumed that this would continue to be the case if no changes were to be made.

Cumulative Effects:

Calf:cow ratios have been considered low in the past, even when the population was high. If brown bears continue to be harvested by guided hunters under this alternative, then there would be fewer bears to feed upon young calves. It is assumed that calf:cow ratios would remain low but not be detrimental to the overall population status of moose.

Conclusion:

The effects on the moose population would be minor as under current regulations the moose population has been stable. Calf:cow ratios may continue to be low but probably would not fall beneath ADFG guidelines.

4.4.1.3 Caribou

The analysis below shows that there will be a minor effect on the caribou population under the current status quo situation, allowing 3 clients in the Sugarloaf area and 25 clients in the Moraine Creek area if the hunting season remains closed to non-residents and minor if the hunting season is reopened.

Direct and Indirect Effects:

Currently the harvest of caribou is closed to those who are most likely to utilize guide services for hunting in KTPR (non-residents). If the hunting season was to open for non-residents, then it is possible that bear and moose hunters may take a caribou in addition to the target species, though any potential harvest would be minimal in relation to current herd size. Past history of caribou hunts harvest rates were never above 5% of the caribou population (ADFG 2011).

Cumulative Effects:

The reasons for the decline in the caribou population include disease and poor nutrition. High numbers in the past degraded feeding grounds. Until the habitat has a chance to fully recover to provide proper nutrition to the caribou herd, an increase in the population will continue to be slow.

Conclusion:

Effects of this alternative would be negligible if the season is kept closed to non-residents. If the season were to reopen with a return of caribou to the area, the effects of harvest by guided hunters would be minor.

4.4.2 Effects on Subsistence Resources and Uses in the Preserve

The potential impacts of Alternatives B on Federal subsistence use of brown bears, caribou, and moose in the Preserve are similar to those described for the No Action Alternative; but historically Alternative B has generally resulted in no more than three clients per year who were guided for moose. This minimal take of moose in the Sugarloaf area away from river corridors addresses local concerns regarding the potential for an increased take of moose by guided nonresident hunters, who have a significantly higher level of hunting success over local resident hunters. Table 4.4 shows the moose harvests in GMU 9C for the past six years by local residents, non-local state residents, and nonresidents and the rate of hunting success for each group. The traditional maximum of three clients for guided moose hunts does not apply to non-local state resident hunters who may also hunt in the Preserve and have a similarly high hunt success rate as

guided moose hunters. This alternative could result in slightly higher harvest levels of brown bear in the preserve due the higher client limits for brown bear, which could result in a slightly higher reproductive rate of moose in the region with fewer predators in the area. This could have a slightly beneficial effect on subsistence users seeking moose in the vicinity.

Table 4.4: Reported Moose Hunter Residency and Hunt Success Rates in GMU 9C

Year	Local Resident			Nonlocal State Resident			Nonresident			Total
	HUNTED	KILLED	SUCCESS RATE	HUNTED	KILLED	SUCCESS RATE	HUNTED	KILLED	SUCCESS RATE	Killed
2005	54	16	29.6%	15	4	26.6%	30	8	26.6%	28
2006	75	8	10.6%	20	5	25%	22	9	40.9%	22
2007	69	16	23.1%	15	9	60%	10	3	30%	34
2008	60	12	20%	22	5	22.7%	11	4	36.3%	21
2009	65	6	9%	18	5	27.7%	7	5	71.4%	16
2010	71	16	22.5%	13	3	23%	6	0	0	19
MEAN	65.5	12.3	19.1%	17.1	5.1	30.8%	14.3	4.8	34.2%	23.3

The context, importance, and impact levels of this alternative are similar to the No Action Alternative; the only difference being the duration of any impacts, which would be long-term and likely to persist throughout the 10-year contract period of the hunting guide concessions. The summary impact level of Alternative B to Federal subsistence harvests of brown bears, caribou, or moose is considered to be minor.

Cumulative Effects:

Other recreational activities within the Preserve could have adverse effects on subsistence hunting success in the Preserve, such as sport fishing, bear viewing, and recreational boating. These activities generally occur in summer months and do not overlap with the bulk of the subsistence hunting areas and seasons, except possibly on the early end of the hunt seasons for caribou and moose (see Table 4.2). Again because the number of subsistence hunters entering into the Preserve from local rural communities with C&T for caribou and moose is small, then the potential for adverse impacts from recreational users other than sport hunters would also be small. Coupled with the minor effects from guided and unguided sport hunting in the preserve without authorized guided hunting under the No Action Alternative, the overall cumulative effect on subsistence hunting for moose, caribou, and brown bears would still be minor.

Conclusions:

Alternative B would have a minor effect on Federal subsistence harvests of brown bears, caribou, or moose in Katmai National Preserve.

4.4.3 Effects on Recreational Uses in the Preserve

The analysis below shows that there would be a minor effect on visitation under the current status quo allowing 3 clients in the Sugarloaf area and 25 clients in the Moraine Creek area.

Direct and Indirect Effects:

With the status quo in place, it is expected that the number of visitors and hunters would remain about the same as in recent years. Because sport fishing and bear viewing generally do not overlap in time with brown bear hunting, impacts to other recreational users is expected to be minor at most.

Cumulative Effects:

Over the years guided hunting has accounted for only a fraction (less than one percent) of the visitation within KTPR, so there are no expected cumulative effects in total visitation from this alternative.

Conclusion:

This alternative would have minor effects on visitation within the Preserve. Because hunting accounts for a small portion of visitation, occurs during times with very little visitation from other users, and any changes in wildlife numbers and/or composition due to guided hunting would result in a minor effect on visitor numbers and recreational opportunities within the Preserve.

4.4.4 Effects on Local and Regional Economies

Overall Alternative B (Status Quo) would result in a positive impact to the local and regional economies of the Lake & Peninsula Borough, Bristol Bay Borough, the Kenai Peninsula Borough, and the Municipality of Anchorage because the number of guided hunting clients and associated expenditures would continue as in past decades. Active concession contracts for hunt guides would be issued with historical client limits (28 total clients with no limits on species). Guided hunt activity levels and associated economic activity would be similar to those observed from 2003 through 2008, when both guide units in the preserve were actively utilized.

The economic activity associated with hunting guide services includes revenue to guides and associated transportation, lodging, and tourism revenue. Furthermore, guided hunting occurs on the shoulder seasons (spring and fall) mostly not overlapping the busier commercial fishing and tourism seasons, which extends the activity periods for supporting businesses. Revenue to the State of Alaska is also considered.

Revenue to Hunting Guides: Considering current advertised rates and client numbers analogous to past concession contracts (10-28 annually) generated revenue could range from \$100,000 to \$200,000 (in 2012 dollars).

Associated lodging, transportation, and hunting related revenue: In general, clients transport themselves to a pick-up point with the guide and pay for lodging, meals, and incidental expenses that occur before and after the hunt. Revenue from hunting related activity, such as taxidermy services, is also assumed to be generated. Under this Alternative, the associated revenue would continue at levels observed in 2003 – 2008, estimated in the range of \$10,000 - \$30,000 annually, in 2012 dollars.

State licenses and tags: Under this alternative, the State of Alaska would continue to collect nonresident tag fees for hunters utilizing guide services within KTPR. This revenue is estimated to be up to \$15,000 per year.

Cumulative Effects:

As noted in chapter 3 and under Alternative A – No Action, the primary economic drivers in the Lake and Peninsula and Bristol Bay Boroughs are commercial fishing, education, government services, tourism, and mining exploration resulting in hundreds of millions of dollars per year. Alternative B would result continued revenue of about \$110,000 to \$240,000/year to the local and regional economies, which is minor when considering the economy of the region.

Conclusions:

Alternative B – (Status Quo) would result in a positive impact to the business opportunities in the local and regional economies similar to past decades. Guided sport hunting would be authorized for up to 28 clients per year in the two former guide areas, resulting in potential expenditures of about \$110,000 to \$245,000 per year in the local and regional economies. There would be a positive overall impact to local and regional business opportunities and local and regional economies under the status quo.

4.5 Impacts of Alternative C: NPS Proposed new Guide Use Areas with associated Client Limits

Under this alternative the NPS would issue a prospectus for revised guided hunting services with new guide areas and client limits associated with these new areas.

4.5.1 Effects on Wildlife in the Preserve

4.5.1.1 Brown Bear

The analysis below shows that there would be a minor negative effect under the preferred alternative where the Sugarloaf concession area would be expanded and be allowed to have 12 guided clients each year and a reduced-size Moraine Creek guide area would allow 16 guided clients per year.

Direct and Indirect Effects:

The expanded Sugarloaf guide area includes high bear density habitats, which would divide the harvest of brown bears between two guide areas in the Preserve. Most of the guided clients in both guide areas in the Preserve would probably hunt for brown bear, the key species in the area, which could result in up to 28 brown bear harvested each year. As in the status quo alternative, hunting under Alternative C would remove individual bears from the population, but this alternative would have minor effects on the brown bear population overall. Effects of this alternative would be expressed with possible changes in population demographics and sex/age ratios similar to those for alternative B. The brown bear population in the Preserve would continue to indicate moderate harvest levels of older male bears because the percent of bears in family groups would remain at or near 60 percent (see Table 3.1). The regulations and bag limits for the entire Game Management Unit are set by the Alaska Board of Game, which are determined from the annual monitoring procedures and the state-set harvest objective of 60% males, with 50 males 8 years or older taken during the regulatory season (Butler 2009). If conditions of the bear population were to change such that the percent of bears in family groups exceeded 70% for one or more years, then the State, NPS, or both may need to take appropriate action to assure the conservation of brown in the Preserve.

The harvest of brown bears with guided hunters under this alternative would likely be spread out across a broader geographic range, thereby dispersing impacts to brown bears over several drainages within the Preserve.

Cumulative Effects:

Though the number of guided hunts is limited to 28 brown bears per year, ADFG records show an increase in resident hunters harvesting bears (2011). With salmon being a major food resource for brown bears, continued high escapement would mean continued high bear populations that can sustain projected harvest levels. If salmon escapement were to decrease causing bears to move to other areas and/or resident harvest continues to increase in the area, then projected levels of guided harvest could result in shifts in brown bear demographics to a higher percentage of family groups or temporary high harvest of the brown bears in the Preserve. Then it may become necessary for the State, NPS, or both, to take appropriate action to prevent overharvest of brown bears in the Preserve.

Conclusion:

Alternative C would have a minor effect on the brown bear population while still allowing for a healthy brown bear population for the future. By expanding the harvest over the landscape, in time localized pressure on the brown bear population would lessen. If salmon escapement decreases and/or resident harvest of bears continues to increase, then the State, NPS, or both may need to take appropriate action to prevent overharvest of brown bears in the Preserve.

4.5.1.2 Moose

The analysis below shows that this alternative will have minor impacts on the moose population under an alternative where the overall client limits remain the same, but the guide area boundaries are changed.

Direct and Indirect Effects:

The Preserve has a low but stable moose population as stated in Alternative A and B. This alternative could lead to more moose being hunted. The regulations and bag limits set by the Alaska Department of Fish and Game are determined by the annual monitoring procedures and the state set guidelines of managing for a moose population for a bull:cow ratio of 25:100. The Branch River Trend Area currently meets this objective. If conditions of the moose population were to change, then NPS would reduce harvest through the state regulatory process, or if necessary through the superintendent's compendium and the concession annual operating plan.

Cumulative Effects:

Calf:cow ratios have been considered low in the past, even when the population was high. It is assumed that calf:cow ratios would remain low but not be detrimental to the overall population status, as hunters harvest only bull moose. Because brown bears would continue to be harvested by guided hunters under this alternative, there would be fewer bears to feed upon young calves. Under Alternative C there may be even less predation on moose calves as more bears are expected to be harvested by guided hunters closer to the moose hunting area than in the past. The calf:cow ratios would remain low but not be detrimental to the overall moose population status.

Conclusion:

The effects of this alternative would be minor as the Preserve has a low but stable moose population. If changes to the population were to occur, then annual monitoring by the ADFG would allow for regulation and bag limit changes for moose in the area.

4.5.1 3 Caribou

The analysis below shows that there would be a minor effect on the caribou population under the proposed alternative C, allowing up to 28 clients in both guide areas. There would be no effect on caribou if the hunting season remains closed to non-residents and foreigners, and a minor effect if the hunting season is reopened.

Direct and Indirect Effects:

Currently the harvest of caribou is closed to nonresidents, who are most likely to utilize guide services for hunting in the Preserve. If the hunting season was to open for non-residents, then the effects on caribou would be minimal. It is possible that bear and moose hunters may take a caribou in addition to the primary big game species, though any potential harvest would be

minimal in relation to the herd size. Past history of caribou harvest rates were never above 5% of the caribou population (ADFG 2011). The Alaska Department of Fish and Game sets take based on current population studies. If the hunt reopens for non-resident hunters in the area, then ADFG would maintain harvest levels to meet objectives for a population size of 30,000 – 80,000 caribou.

Cumulative Effects:

The reasons for the decline in the caribou population include disease and poor nutrition. High numbers in the past degraded feeding grounds. Until the habitat has a chance to fully recover to provide proper nutrition to the caribou herd, an increase in the population will continue to be slow.

Conclusion

This alternative would have a negligible effect on the caribou population. If the hunting season remained closed to non-residents no effects would be observed. If the hunting season were to reopen for non-residents after caribou return to the area, the effect would be minimal due to the expected large size of the herd.

4.5.2 Effects on Subsistence Resources and Uses in the Preserve

The potential impacts of Alternative C on Federal subsistence use of brown bears, caribou, and moose in the Preserve are similar to those described for Alternative B. Local concerns may continue over the potential take of moose by guided nonresident hunters, who have a significantly higher level of hunting success over local resident hunters. Table 4.4 shows the moose harvests in GMU 9C for the past six years by local residents, non-local state residents, and nonresidents and the rate of hunting success for each group. This alternative could result in slightly higher harvest levels of brown bear in the Preserve than alternative B, and much higher than in alternative A because a few more guided hunters may target brown bears. This could result in a slightly higher reproduction rate of moose in the Preserve with fewer predators in the area than in the No-Action alternative, which could have a slightly beneficial effect on subsistence users seeking moose in the vicinity.

The context, importance, and impact level of this alternative is similar to the Status Quo Alternative; where the only difference being the effects on predators of moose, which would be long-term and likely to persist throughout the 10-year contract period for the hunting guide concessions. The analysis provided in the No-Action Alternative section demonstrates that the likelihood of potential impacts to Federally-qualified local subsistence users is low. The summary impact level of Alternative C to Federal subsistence harvests of brown bears, caribou, or moose is considered to be minor and adverse.

Cumulative Effects:

Subsistence hunting in the Preserve could be adversely affected by other recreational activities within the Preserve, such as sport fishing, bear viewing, and recreational boating. These

activities generally occur in summer months and do not overlap with the bulk of the subsistence hunting seasons, except possibly on the early end of the hunt seasons for caribou and moose (see Table 4.2). Again because the number of subsistence hunters entering into the Preserve from local rural communities with C&T for caribou and moose is small, then the potential for adverse impacts from recreational users other than sport hunters would also be small. Coupled with the minor effects from sport hunting in the Preserve, with or without authorized guide concessions, the overall cumulative effect on subsistence hunting would still be minor.

Conclusions:

Alternative C would have a minor adverse effect on Federal subsistence harvests of brown bears, caribou, or moose in Preserve.

4.5.3 Effects on Recreational Uses in the Preserve

The analysis below shows that there would be a minor effect on visitation under the preferred alternative where the Sugarloaf concession area would be increased in area with up to 12 clients annually and Moraine Creek concession area would be decreased in area and limited to 16 clients annually.

Direct and Indirect Effects:

Even though the number of clients allowed in each concession area would change, it is expected that the overall number of guided hunters would remain about the same in the Preserve as in the recent past years because this alternative is meant to spread out harvest between the areas and over time while keeping the overall number of hunters similar to what was authorized during the last 10-year concession contract period.

Cumulative Effects:

Over the years guided hunting has accounted for only a fraction (less than one percent) of the visitation within KTPR, so there are no expected cumulative effects in total visitation from this alternative.

Conclusion:

This alternative would have minor effects on visitation within the Preserve. Because hunting accounts for a small portion of visitation, and occurs during times with very little visitation from other users, and any changes in wildlife numbers and/or composition due to guided hunting would be unnoticeable, the effects would be minimal on visitor numbers and experience within the Preserve.

4.5.4 Effects on Local and Regional Economies

Overall Alternative C, (Preferred Alternative) would result in a positive impact to the local and regional economies of the Lake & Peninsula Borough, Bristol Bay Borough, the Kenai Peninsula

Borough, and the Municipality of Anchorage because the number of guided hunting clients and associated expenditures would continue as in past decades. Active concession contracts for hunt guides would be issued with historical client limits (28 total clients with no limits on species). Guided hunt activity levels and associated economic activity would be similar to those observed from 2003 through 2008, when both guide units in the Preserve were actively utilized.

The economic activity associated with hunting guide services includes revenue to guides and associated transportation, lodging, and tourism revenue. Revenue to the State of Alaska is also considered.

Revenue to Hunting Guides: Considering current advertised rates and client numbers analogous to past concession contracts (10-28 annually) we estimate the level of revenue generated to range from \$100,000 to \$200,000 (in 2012 dollars).

Associated lodging, transportation, and hunting related revenue: In general, clients transport themselves to a pick-up point with the guide and pay for lodging, meals, and incidental expenses that occur before and after the hunt. Revenue from hunting related activity, such as taxidermy services, is also assumed to be generated. Under this Alternative, the associated revenue would continue at levels observed in 2003 – 2008, estimated in the range of \$10,000 - \$30,000 annually, in 2012 dollars.

State licenses and tags: Under this alternative, the State of Alaska would continue to collect nonresident tag fees for hunters utilizing guide services within KTPR. This revenue is estimated to be up to \$15,000 per year.

Cumulative Effects:

As noted in chapter 3 and under Alternative A – No Action, the primary economic drivers in the Lake and Peninsula and Bristol Bay Boroughs are commercial fishing, education, government services, tourism, and mining exploration resulting in hundreds of millions of dollars per year. Alternative C would result continued revenue of about \$110,000 to \$240,000/year to the local and regional economies, which is minor when considering the economy of the region.

Conclusions:

Alternative C – (Preferred Alternative) would result in a positive impact to the business opportunities in the local and regional economies similar to past decades. Guided sport hunting would be authorized for up to 28 clients per year in the two revised guide areas, resulting in potential expenditures of about \$110,000 to \$245,000 per year in the local and regional economies. There would be a positive overall impact to local and regional business opportunities and local and regional economies under the Preferred Alternative.

Conclusion:

Alternative C would result in very minor adverse impacts to wilderness from guided hunt operations in designated and eligible wilderness in the Preserve.

5.0 CONSULTATION and COORDINATION

5.1 Public Involvement

The NPS distributed a newsletter in May 2011 to various interested parties in Alaska regarding an NPS proposal to adjust guide areas in Katmai National Preserve to two more equally-sized areas and the clients numbers authorized in each of the two new areas. Several parties responded and some requested the NPS provide a public review of the considerations going into the client numbers for guided bear hunters among other issues identified in chapter 1 of the EA. Judging from the interests and concerns identified, the NPS decided to consider reasonable alternatives and to issue this EA.

Some organizations and individuals requested NPS prepare an EA or EIS to evaluate the biology and rationale for changes in guided hunting client limits and areas, particularly in view of the ANILCA provision in Section 202(2) to protect ... “high concentrations of brown bears/grizzly bears and their denning areas....” Other groups and individuals requested the NPS to authorize the guided hunting without delay.

The NPS also sent letters to tribes in communities closely affiliated with the Katmai National Preserve in December 2011 to elicit their concerns on the NPS proposal and alternative actions before the NPS completed a public review EA. A few of these tribes responded, indicating they are not opposed to guided hunting for brown bear, but they are concerned about competition in the area for moose as indicated by several recent proposals to the Alaska Board of Game to limit the take of moose by non-local hunters. One tribal representative proposed that three guides be authorized in the Preserve, and that local residents be afforded an opportunity to compete for a guide concession in the area or at least assistant guide opportunities.

No public meetings are planned during a 30-day public review period.

5.2 Intra-agency and Interagency Coordination

Internally the NPS coordinated closely and regularly with biologists, concession managers, and subsistence managers of park staff and the NPS Alaska Regional Office. Project members briefed the NPS Alaska Regional Directorate several times.

Furthermore, NPS Biologists communicated periodically with wildlife managers with the Alaska Department of Fish and Game.

5.3 List of Preparers and Consultants

A project agreement identified the key issues and resources specialists needed to complete a reasonable analysis of the impacts of the alternatives as described in the following list of preparers (table 5-1). Other NPS personnel reviewed the internal review EA and consulted with the interdisciplinary team (table 5-2).

Table 5-1 List of Preparers (Interdisciplinary Team)

Name	Office Location	Position
Bud Rice	NPS Alaska Regional Office, Anchorage, AK	Environmental Protection Specialist, NEPA Project Manager
Troy Hamon	NPS Katmai National Park & Preserve HQ, King Salmon, AK	Chief, Natural Resources Management
Lisa Fox	NPS Katmai National Park & Preserve, Anchorage, AK	Concessions Manager
Mary McBurney	NPS Lake Clark National Park and Preserve, Field Office, Homer, AK	Subsistence Manager for Aniakchak National Monument and Preserve, Katmai Preserve, Alagnak Wild River, and Lake Clark National Park and Preserve
Jill Morgan	NPS Alaska Regional Office, Anchorage, AK	Concessions Specialist
Grant Hilderbrand	NPS Alaska Regional Office, Anchorage, AK	Wildlife Biologist and Threatened and Endangered Species Coordinator
Sherri Anderson	NPS Katmai National Park & Preserve HQ, King Salmon, AK	Wildlife Biologist
John Campbell	NPS Lake Clark National Park & Preserve HQ, Port Alsworth, AK	Wildlife Biologist
Whitney Rapp	NPS Katmai National Park & Preserve HQ, King Salmon, AK	Biologist, Interim Wilderness Coordinator, and Graphics

Table 5-2 List of Project Consultants

Name	Office Location	Position
Clarence Summers	NPS Alaska Regional Office, Anchorage, AK	Subsistence Manager
Kevin Apgar	NPS Alaska Regional Office, Anchorage, AK	Concessions Program Manager
Joan B. Darnell	NPS Alaska Regional Office, Anchorage, AK	Environmental Planning & Compliance Team Manager
Glen Yankus	NPS Alaska Regional Office, Anchorage, AK	Environmental Planning & Compliance NEPA Project Manager
Guy Adema	NPS Alaska Regional Office, Anchorage, AK	Natural Resources Science Team Manager
Adrienne Lindholm	NPS Alaska Regional Office, Anchorage, AK	Wilderness Program Coordinator
John Quinley	NPS Alaska Regional Office, Anchorage, AK	Public Information Officer

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Appendix A

ANILCA Section 810 (a) Subsistence Evaluation

INTRODUCTION

This section was prepared to comply with Title VIII, section 810 of the Alaska National Interest Land Conservation Act (ANILCA) of 1980. It summarizes the evaluations of potential restrictions to subsistence activities that could result from issuing concession contracts for guided hunting services in Katmai National Preserve.

EVALUATION PROCESS

Section 810(a) states:

“In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands... the head of the head of the federal agency... over such lands ... shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency—

- (1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to Section 805;
- (2) gives notice of, and holds, a hearing in the vicinity of the area involved; and
- (3) determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity will involve the minimal amount of public lands necessary... and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.”

ANILCA created new units and additions to existing units of the national park system in Alaska. Katmai National Park and Preserve was created by ANILCA Section 202(2) for the following purposes, among others: “To protect habitats for, and populations of, fish and wildlife including, but not limited to, high concentrations of brown/grizzly bears and their denning areas; to maintain unimpaired the water habitat for significant salmon populations; and to protect scenic, geological, cultural and recreational features.”

The potential for significant restriction of subsistence uses must be evaluated for the proposed action’s effect upon “...subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use” (Section 810, ANILCA).

PROPOSED ACTION ON FEDERAL PUBLIC LANDS

The National Park Service (NPS) is proposing to issue a prospectus for revised guided hunting services in Katmai National Preserve. The following three alternatives are being considered:

Alternative A: No Hunting Guide Concessions Authorized (*No Action*)

Alternative B: Authorize Hunting Guide Concessions for the Original Sugarloaf Guide Area and the Moraine Creek Guide Area in the Preserve (*Status Quo*)

Alternative C: License Two Hunting Guide Concessions for the Revised Sugarloaf and Moraine Creek Guide Areas in the Preserve (*NPS Preferred Alternative*)

These alternatives are described in Chapter 2 of the EA and analyzed for their potential impacts to subsistence activities in Chapter 4.

AFFECTED ENVIRONMENT

This section summarizes the affected environment as it pertains to subsistence resources and use.

Katmai National Preserve (KTPR) is on the northern end of the Alaska Peninsula approximately 225 miles southwest of Anchorage, 90 miles southwest of Homer and 35 miles northeast of King Salmon in the Lake and Peninsula Borough. KTPR contains 333,401 acres and is located within Game Management Unit (GMU) 9C. The landscape in KTPR is dominated by numerous large and small lakes—including Kukaklek and Nonvianuk Lakes—wetlands and open tundra, stands of black spruce and thickets of alder and dwarf birch. The area's primary subsistence resources include sockeye salmon, silver salmon, whitefish, pike, rainbow trout, moose, caribou, brown bear, bird eggs, ptarmigan, ducks, snowshoe hare, furbearing animals, berries and various plants.

ANILCA authorizes subsistence uses within KTPR and on other Federal public lands in Alaska where specifically permitted. ANILCA also permits sport hunting in areas designated as national preserves. The Alagnak Wild River corridor and lands managed by the Bureau of Land Management share common boundaries with the Preserve and are the closest Federal public lands to the proposal area where Title VIII subsistence activities occur. Subsistence uses in Katmai National Park are not permitted. Regional subsistence activities in the KTPR include hunting, fishing, trapping, berry picking and plant gathering; however, subsistence hunting for brown bears, moose and caribou are the activities most likely to be impacted by the proposed alternatives under consideration.

Eligibility for the Federal Subsistence Program in KTPR is determined primarily through customary and traditional (C&T) use determinations by the Federal Subsistence Board. When communities or areas have a positive C&T determination for a species in a particular game unit, only residents of those communities or areas have a Federal subsistence priority and are eligible to hunt or trap that species in that unit under Federal subsistence regulations. The following areas and communities have positive C&T use determinations for one or more of these three species.

Species	Communities with Positive Customary and Traditional Use Determinations
Brown Bear	Rural residents of 9C, Igiugig, Kakhonak, and Levelock
Caribou	Rural residents of Units 9B, 9C, 17 and Igiugig
Moose	Rural residents of Units 9A, 9B, 9C and 9E

In addition to Federally-qualified subsistence hunters, residents of the State of Alaska and nonresidents are permitted to hunt in the Preserve under State of Alaska regulations, consistent with authorized methods and means, seasons and bag limits.

The NPS recognizes that patterns of subsistence use vary temporally and spatially depending on access, proximity to villages and traditional use areas, and the availability wildlife, fish and other renewable natural resources. A subsistence harvest in a given year may vary considerably from previous years because of difficulties accessing subsistence use areas due to increased fuel costs or poor travelling conditions. They are also influenced by factors that affect animal abundance such as weather, migration patterns, changes in habitat and natural population cycles. Chapter 3 of the EA describes the current status of big game species in KTPR that may be impacted by the proposed alternatives; namely, brown bear, caribou and moose. The reported harvest of big game by guided hunters in the Preserve between 2001 and 2011 is provided in table 1 below.

Table 1: Reported Harvest by Guided Sport Hunters in KTPR by Authorized Guided Hunting Concessionaires 2001–2011

Year	Brown Bear			Caribou			Moose		
	CLIENTS	KILLED	SUCCESS RATE	CLIENTS	KILLED	SUCCESS RATE	CLIENTS	KILLED	SUCCESS RATE
2001	10	10	100%	18	18	100%	0 _d	0 _d	0 _d
2002	7	7	100%	16	8	50%	0 _d	0 _d	0 _d
2003	10	10	100%	15	8	53.3%	0 _d	0 _d	0 _d
2004	6	4	66.6%	0 _c	0 _e	0 _e	4	2	50%
2005	12	12	100%	0 _c	0 _e	0 _e	3	1	33.3%
2006	10	8	80%	X _b	X	X	3	1	33.3%
2007	11	10	90.9%	X _b	X	X	2	2	100%
2008	0 _d	0 _d	0 _d	X _b	X	X	0 _d	0 _d	0 _d
2009	X _a	X	X	X _b	X	X	3	0	0
2010	X _a	X	X	X _b	X	X	3	0	0
2011	X _a	X	X	X _b	X	X	0 _d	0 _d	0 _d
MEAN	9.4	8.7	91%	16.3	11.3	67.8%	3	1	36.1%

^a No brown bear guided hunting concession in Moraine Creek hunt area.

^b State caribou hunt closed to nonresidents.

^c Client numbers coincide with 2003 Board of Game reduction in nonresident caribou bag limit from 2 caribou to 1.

^d Years with no reported clients are not included in calculating mean values.

SUBSISTENCE USES AND NEEDS EVALUATION

To determine the potential impact on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources which could be impacted.

The evaluation criteria are:

- the potential to reduce important subsistence fish and wildlife populations by (a) reductions in numbers; (b) redistribution of subsistence resources; or (c) habitat losses;
- what affect the action might have on subsistence fisherman or hunter access;
- the potential for the action to increase fisherman or hunter competition for subsistence resources.

1) The potential to reduce populations:

No Action Alternative

The No Action Alternative would not authorize guided hunting concessions in KTPR, so there is no potential for reductions in populations of brown bears, caribou or moose due to guided hunting activity. Table 1 summarizes guided hunting activity in the preserve from 2001 to 2011 and includes the numbers of clients, animals taken by guided hunters and the relative hunter success rates for each species (NPS 2012). Since 2008, there has been no reported take of brown bears, caribou or moose by guided sport hunters, which simulates the effects of the No Action Alternative.

Alternative B:

Alternative B would use the original area descriptions for the Moraine Creek and Sugarloaf hunt areas. The sport hunting guide concession for the Sugarloaf guide area would be allowed to guide up to three clients annually and the Moraine Creek concession would be allowed up to 25 clients per year. This alternative would result in a maximum of 28 clients a year and guides would be allowed to guide for all species their clients are eligible to hunt under State of Alaska hunting regulations. Historically, those species have included brown bears, caribou and moose. In order to address concerns by local residents regarding the potential for increased take of moose by non-local sport hunters, Alternative B includes a cap on each concessionaire which would limit them to guiding no more than three clients a year for moose. This provision would cap the maximum number of moose that could be taken by guided sport hunters at six animals annually. This alternative does not change the level of State of Alaska resident sport hunting activity under State general hunting regulations.

Guided brown bear hunting was most active in the Moraine Creek hunt area up through 2007 when the contract was terminated. Between 2001 and 2007 concessionaires guided an average of 9.4 hunters who took an average of 8.7 bears per year, for a mean hunter success rate of 91%. Guided caribou hunting was active in the Preserve in 2001, 02 and 03 until the State of Alaska Board of Game (BOG) reduced the bag limit for nonresident hunters from two caribou to one to address a steady population decline in the Mulchatna Caribou Herd. In 2006, the BOG closed caribou hunting in GMU 9C to nonresidents to further reduce hunting pressure on the herd. During the period of active guided hunting for caribou between 2001 and 2001, concessionaires guided an average of 16.3 hunters each year who took an average of 11.3 caribou, for a mean hunter success rate of 67.8%. Guided moose hunting became more of a focus in the Preserve following the BOG's actions to reduce nonresident caribou hunting opportunities. Between 2004 and 2011, an average of three guided clients took one moose per year with a mean hunter success rate of 36.1%.

The overall potential for Alternative B to reduce important subsistence fish and wildlife populations is minor, however the allocation of 25 clients in the Moraine Creek hunt area and the three clients allowed in the Sugarloaf area would concentrate more hunting activities in the northeastern portion of KTPR. The 28 guided hunters per year would result in an increased brown bear take of up to 28 bears and increase the take of moose to a maximum of six animals; however, based on past success rates, the actual takes may be closer to 25 brown bears and two moose per year. The maximum annual number of guided clients in either guide area is not expected to significantly redistribute subsistence resources or result in any losses of habitat.

While the impacts of Alternative B are minor, provisions of ANILCA and NPS regulations include measures to protect fish and wildlife populations within KTPR and ensure a subsistence priority for local rural residents. If necessary, the superintendent may enact closures and/or restrictions to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population. These provisions could be enacted to address any significant reductions to fish or wildlife populations important for subsistence that might result from guided hunting activities allowed under Alternative B.

Alternative C:

Alternative C is similar to Alternative B but would enlarge the Sugarloaf hunt area and reduce the size of the Moraine Creek area. This proposal would also change the allocation of clients between the two areas by increasing the Sugarloaf guide area client limit to 12 and reducing the Moraine Creek area limit to 16. The total number of clients allowed is identical to Alternative B—28 clients.

As with Alternative B, provisions of ANILCA and NPS regulations include measures to protect fish and wildlife populations within the preserve and ensure a subsistence priority for local rural residents. If necessary, the superintendent may enact closures and/or restrictions to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population. These provisions could be enacted to address any significant reductions to fish or wildlife populations important for subsistence that might result from guided hunting activities allowed under Alternative C.

The potential for Alternative C to reduce important subsistence fish and wildlife populations is minor; however the reallocation of clients between the Moraine Creek and Sugarloaf hunt areas would spread hunting activity over a much larger area and reduce the concentration of guided hunters in the northeastern portion of the Preserve, which could reduce the likelihood of any localized impacts.

2) Restriction of Access:

Rights of access for subsistence activities on NPS lands are granted by Section 811 of ANILCA. None of the proposed alternatives will restrict access of Federally-qualified subsistence users to areas of KTPR used for hunting and other authorized subsistence activities. Provisions of ANILCA Federal subsistence regulation and NPS regulations include measures to protect subsistence access in the Preserve while ensuring a subsistence priority for local rural residents. If necessary, the superintendent may enact closures and/or restrictions to protect access to subsistence opportunities and address any restriction of access that might result from guided hunting activities allowed under Alternatives B or C.

3) Increase in Competition:

No Action Alternative

The No Action Alternative would not authorize guided hunting concessions in KTPR, so there is no potential for an increase in competition between Federally-qualified subsistence users and guided hunters.

Alternatives B and C

Issuing concession contracts for guided hunting services in KTPR would not increase competition with Federally-qualified subsistence users for brown bears, caribou and moose. Information provided in Chapters 3 and 4 and included in Appendix B indicate little use of KTPR by communities with positive customary and traditional use determinations for brown bears, caribou, and moose, making the likelihood of increased competition between guided hunters and Federally-qualified subsistence hunters very low.

Provisions of ANILCA and NPS regulations mandate that if and when it is necessary to restrict taking of fish or wildlife on NPS lands, subsistence users will have priority over other user groups. Implementation of this subsistence preference would reduce or eliminate any increased competition for big game species in KTPR. In addition, the superintendent may enact closures and/or restrictions if necessary to protect subsistence opportunities or to assure the continued viability of a particular fish or wildlife population.

AVAILABILITY OF OTHER LANDS

The Alagnak Wild River corridor and lands managed by the Bureau of Land Management share a common boundary with the KTPR and are the closest Federal public land to the proposal area where Title VIII subsistence occurs. There are other lands outside the Preserve where local rural residents may harvest subsistence resources including State, tribal and private lands. As noted in Chapter 4 and subsistence area use maps included in Appendix B, subsistence users from communities that have C&T for resources in the preserve generally hunt in areas closer to their homes and use preserve lands on a limited basis.

ALTERNATIVES CONSIDERED

Information in Chapters 3 and 4 and Appendix B show that KTPR is not heavily used by Federally-qualified subsistence users, who generally hunt in areas closer to their communities that can be accessed more easily. The three proposed alternatives described in the EA all pose similar levels of potential adverse impacts to Federally-qualified subsistence hunters, but the level of subsistence hunting in the Preserve is low, which reduces the overall significance of those impacts.

The No Action Alternative poses the lowest level of direct potential impacts to subsistence users, but the likely reduced take of brown bears by guided hunters could result in higher predation on moose and a depressed moose population. Local subsistence users expressed this concern.

The potential impacts of Alternatives B and C to Federally-qualified subsistence users are similar to those described for the No Action Alternative. Alternative B did not specify species that could be hunted in

each guide area, but very few moose are available in the larger Moraine Creek guide area, and the only guide area that produced moose was the relatively smaller Sugarloaf guide area in the southwestern part of KTPR. Alternative C concession areas and associated client limits include good bear habitat in both areas, which would probably result in greater effort to hunt brown bears because they are more lucrative than moose. Based on guided hunter success rates in KATM NP from 2001 to 2011, the actual take of moose would be no more than about two per year.

FINDINGS

Information in Chapters 3 and 4 and Appendix B shows that KTPR is not heavily used by Federally-qualified subsistence users with positive C&T findings to hunt in GMU 9C. This analysis concludes that issuing the proposed contracts to provide sport hunting guide services in KTPR as outlined in Alternatives B and C will not result in impacts significantly greater than those likely to occur under the No Action Alternative. Furthermore, the redefined hunt area boundaries and new client limits proposed in Alternative C reduce the overall likelihood of localized impacts caused by a concentration of hunting activity in one area.

This analysis concludes that the proposed action outlined in C will not result in a significant restriction of subsistence uses.

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Harvest Statistics for State and Federal Registration Hunts
Brown Bear Unit 9C 1995-2009

Regulatory Year	Killed	Kill Resident	Kill Nonresident	Male	Female	Unk Sex
2009	4	3	1	3	1	0
2008	8	5	3	8	0	0
2007	12	7	5	8	3	1
2006	8	2	6	4	4	0
2005	4	3	1	3	1	0
2004	15	5	10	12	3	0
2003	13	6	7	11	2	0
2002	23	13	10	17	5	1
2001	12	3	9	10	2	0
2000	12	3	9	10	2	0
1999	10	4	6	7	3	0
1998	11	6	5	8	3	0
1997	8	2	6	7	1	0
1996	16	9	7	11	4	1
1995	9	7	2	7	2	0
TOTAL	165	78	87	126	36	3

Hunter Residency for State and Federal Registration Hunts
Brown Bear Unit 9C 1995-2009


Residency	Guided	Killed	Male	Female	Unk Sex
Non-Resident	0	87	68	18	1
Unknown	0	0	0	0	0
Out of State Res	0	0	0	0	1
Ketchikan	0	0	0	0	0
Juneau	0	0	0	0	0
Haines	0	0	0	0	0
Petersburg	0	0	0	0	0
Sitka	0	0	0	0	1
Seward	0	0	0	0	0
Moose Pass	0	0	0	0	0
Newhalen	0	0	0	0	0
Port Alsworth	0	0	0	0	0
Naknek	0	11	10	1	0
King Salmon	0	39	29	9	1
South Naknek	0	6	5	1	0
TOTAL	0	143	112	29	2


APPENDIX B – ADFG SUBSISTENCE DIVISION
SUBSISTENCE USE AREAS BY COMMUNITY AND SPECIES IN AND
NEAR KATMAI NATIONAL PRESERVE

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 Iliugig Brown Bear Hunting 2005

 Community

 National Park

 National Preserve

 Pebble Mine Site

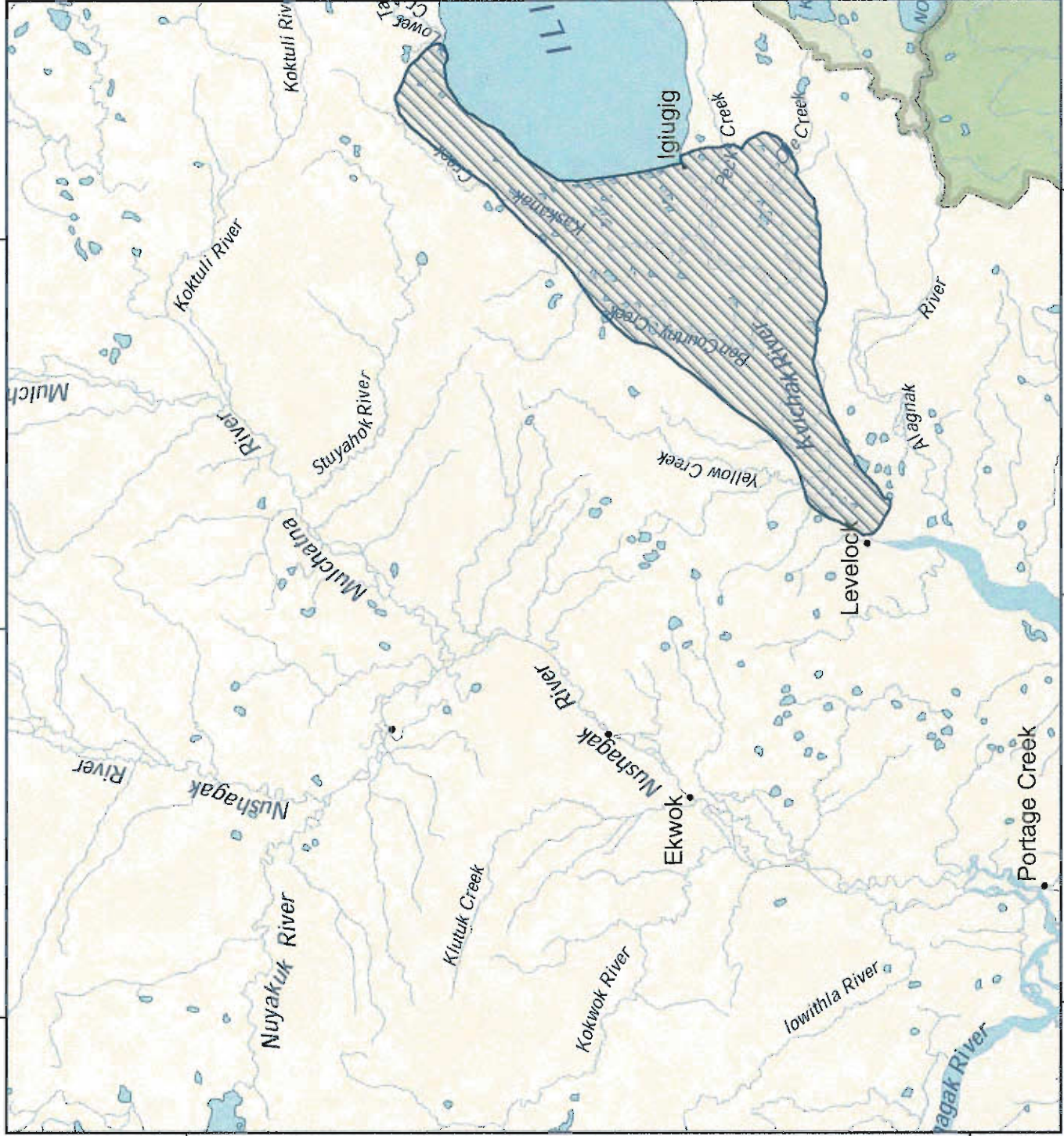
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Northern Dynasty Mines Inc., through Stephen R. Braund & Associates (SRB&A) provided funding to the Alaska Department of Fish and Game (ADF&G) for this study. SRB&A digitized the data and prepared the maps.

Source:
T.M. Krieg, D.L. Holen, and D. Koster.
2009. Subsistence harvests and uses of wild resources in Iliugig, Kokhanok, Koliganek, Levelock, and New Stuyahok, Alaska, 2005. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 322, Dillingham.

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Igigig Caribou
Hunting 2005

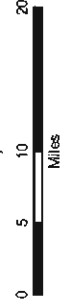
Community

National Park

National Preserve

Pebble Mine Site

SCALE: 1:800,000

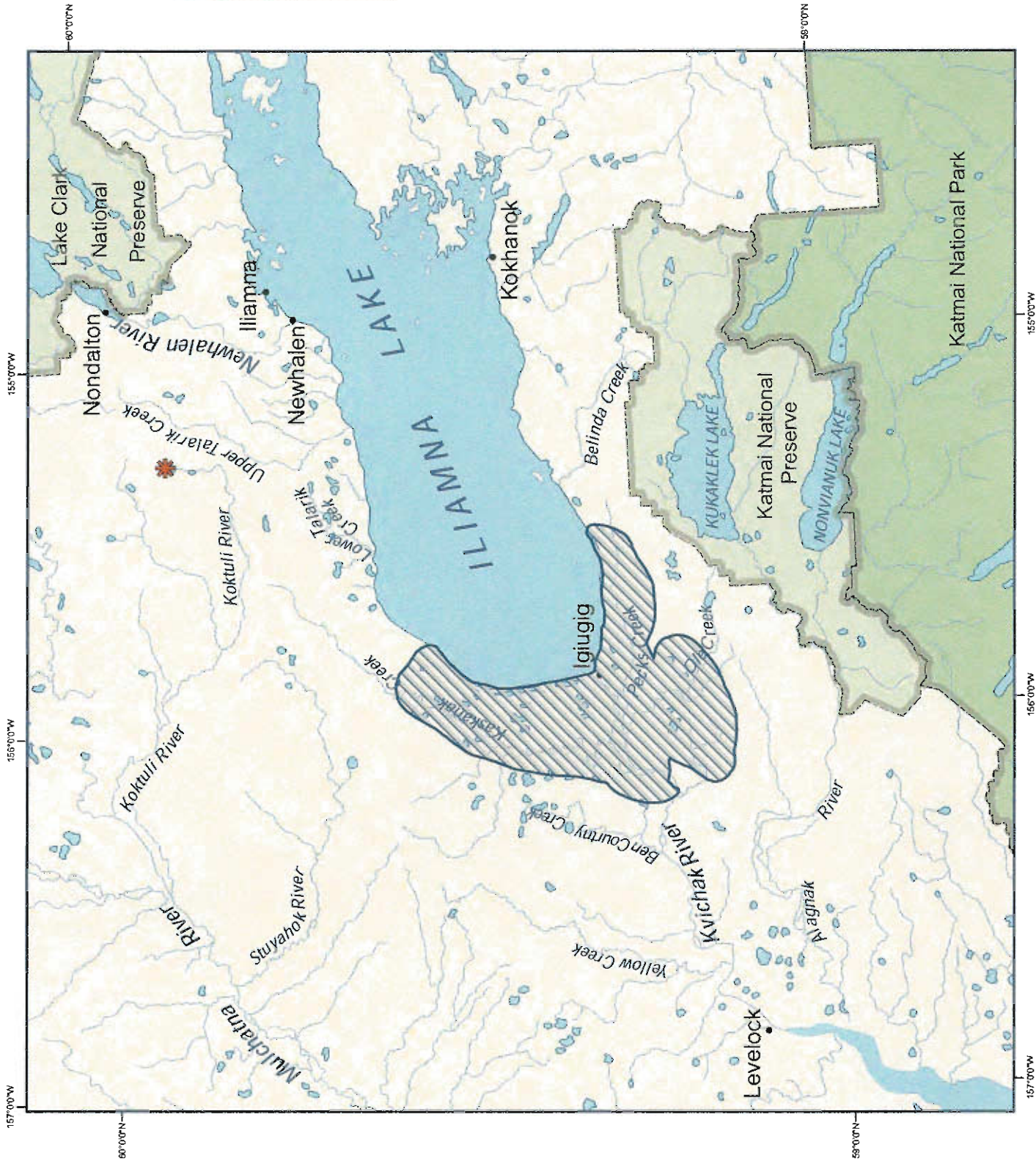


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Source:

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2009. Subsistence harvests and uses of
wild resources in Igigig, Kokhanok,
Kolliganek, Levelock, and New Stuyahok,
Alaska, 2005. Alaska Department of Fish
and Game, Division of Subsistence
Technical Paper No. 322, Dillingham.

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Iliamna Moose
Hunting 2005

Community

National Park

National Preserve

Pebble Mine Site

SCALE: 1:800,000

0 5 10 20
Miles

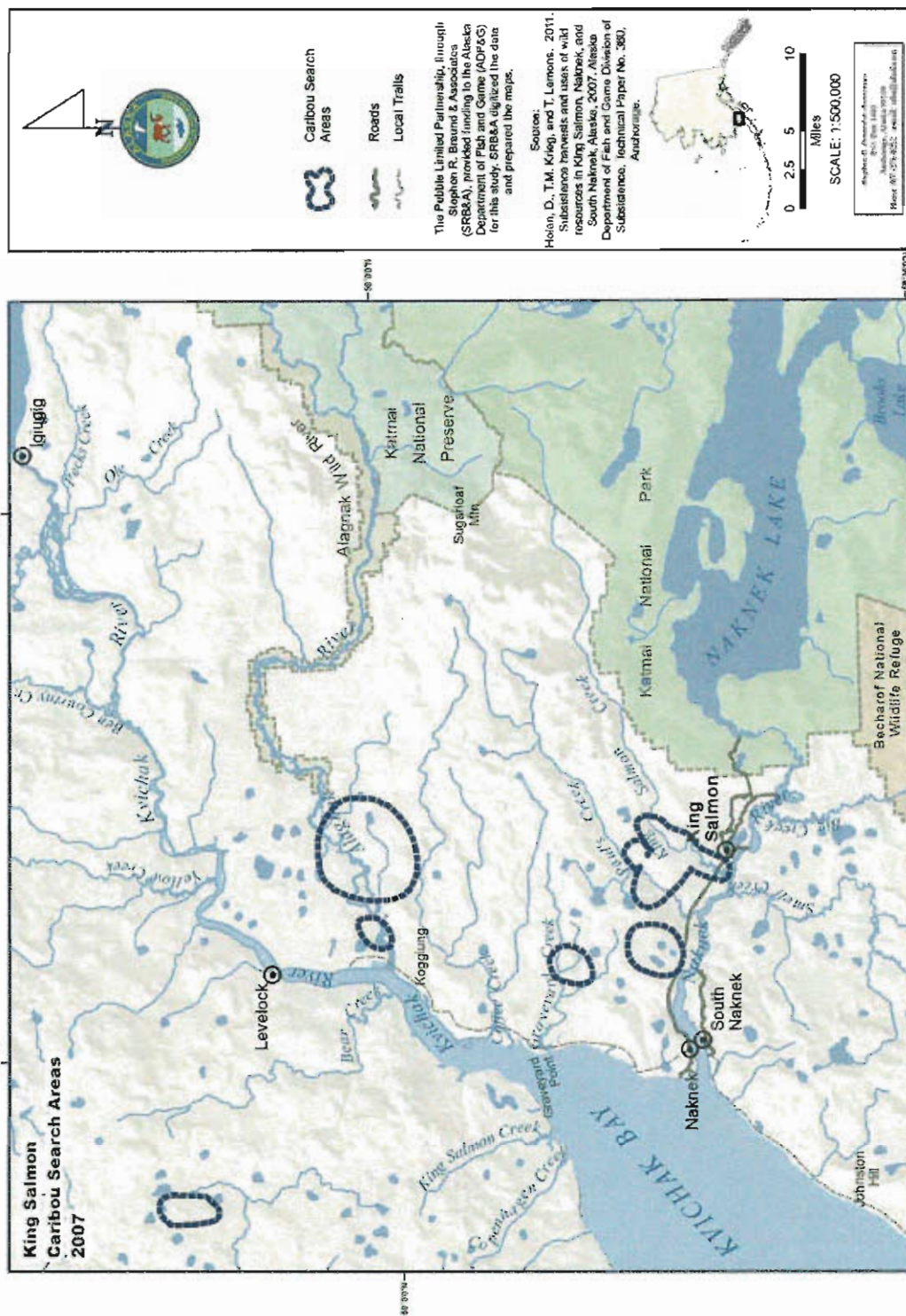
Northern Dynasty Mines Inc., through
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Source:

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2009. Subsistence harvests and uses of
wild resources in Iliamna, Kokhanok,
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Alaska, 2005. Alaska Department of Fish
and Game, Division of Subsistence
Technical Paper No. 322, Dillingham.

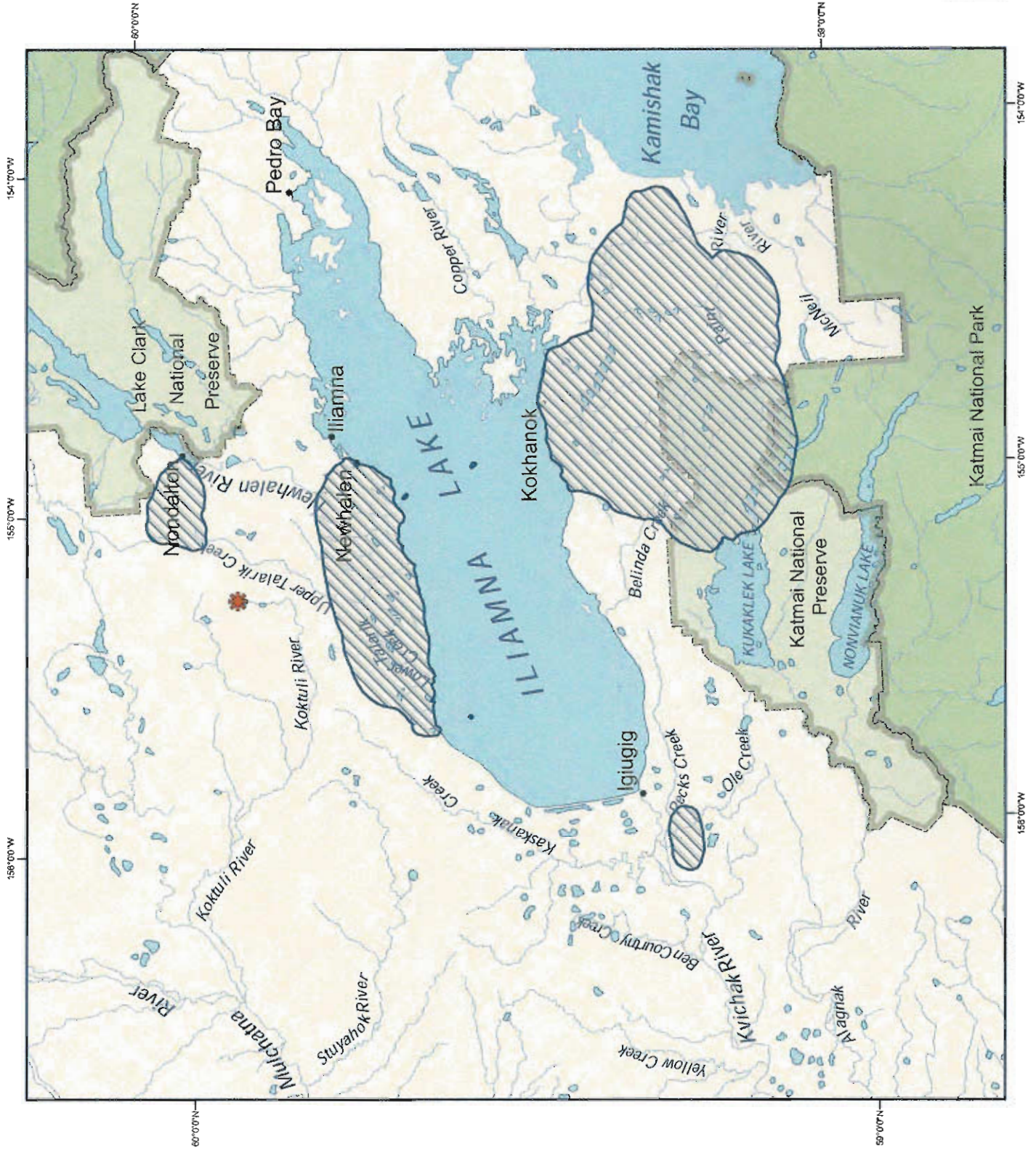
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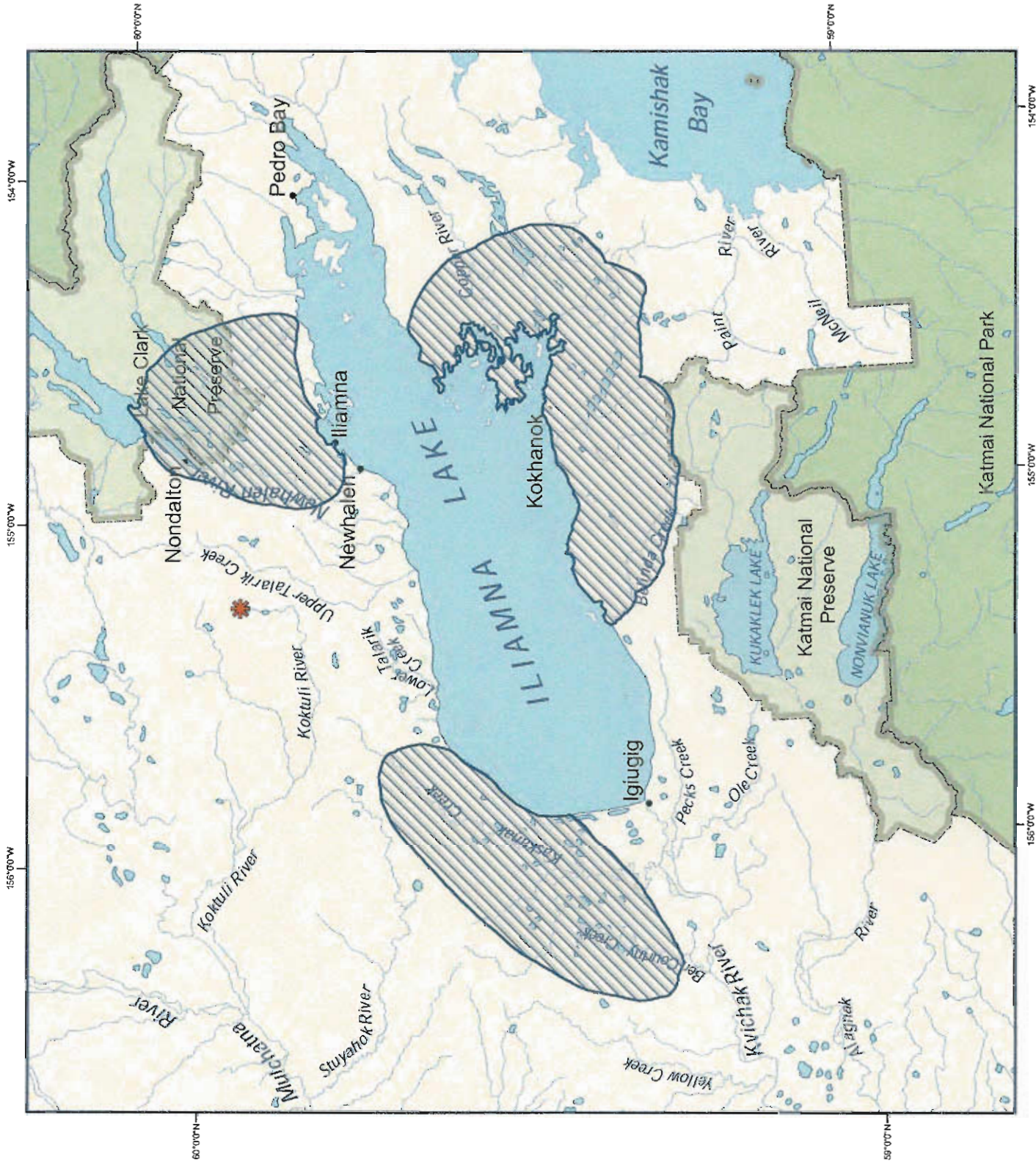


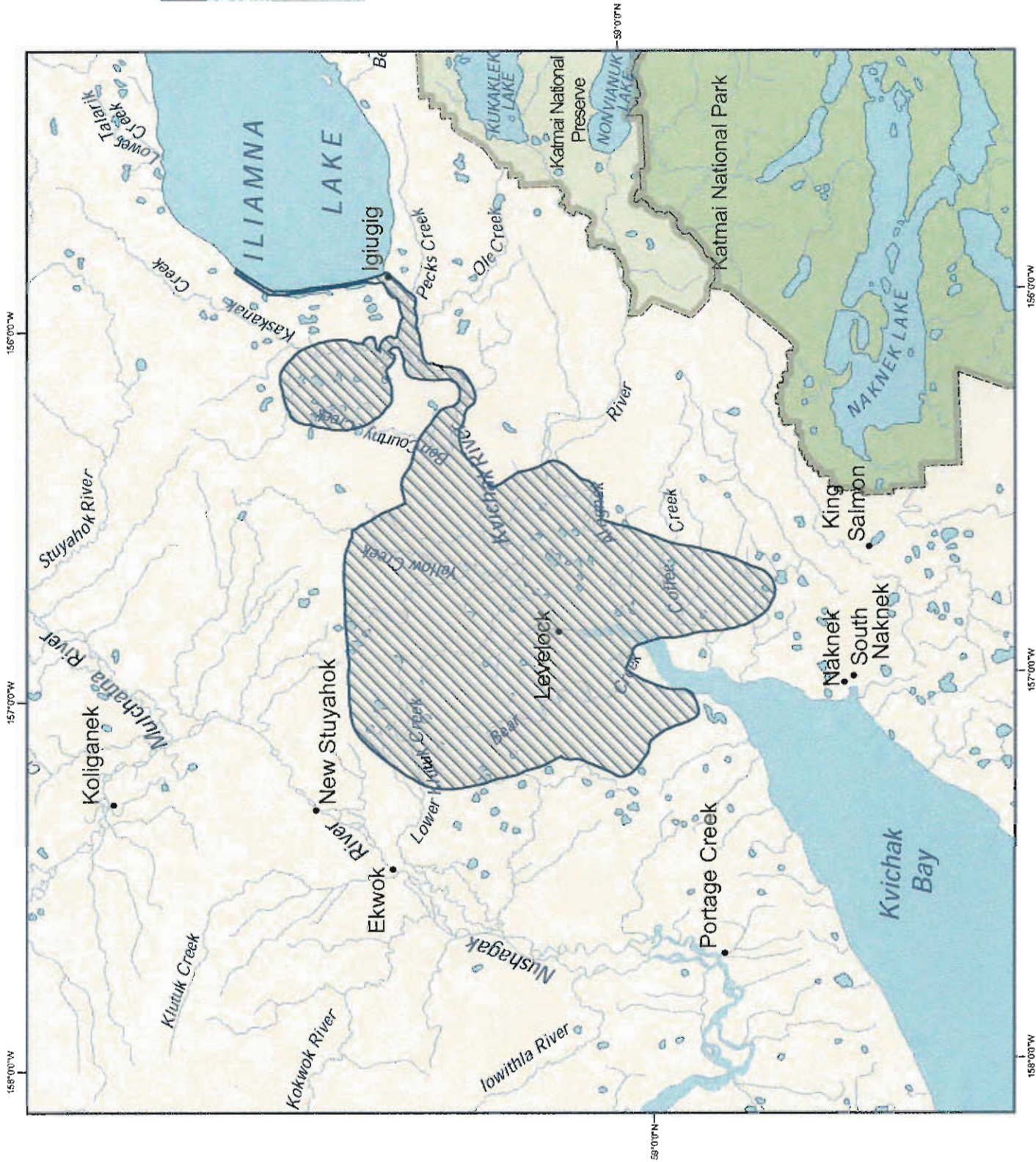
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Levelock Caribou
Hunting 2005



Community



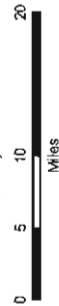
National Park



National Preserve



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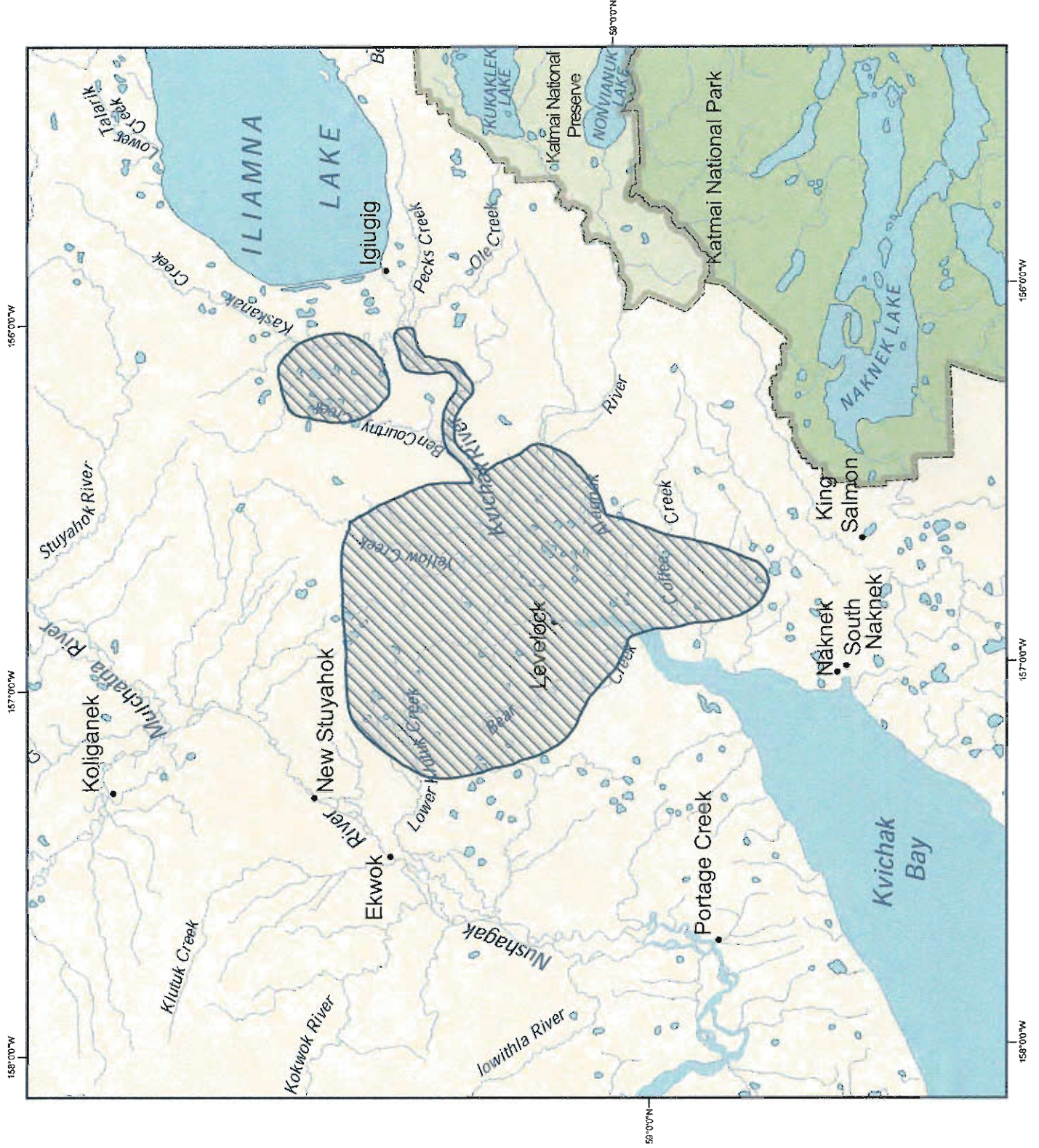


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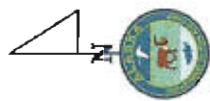
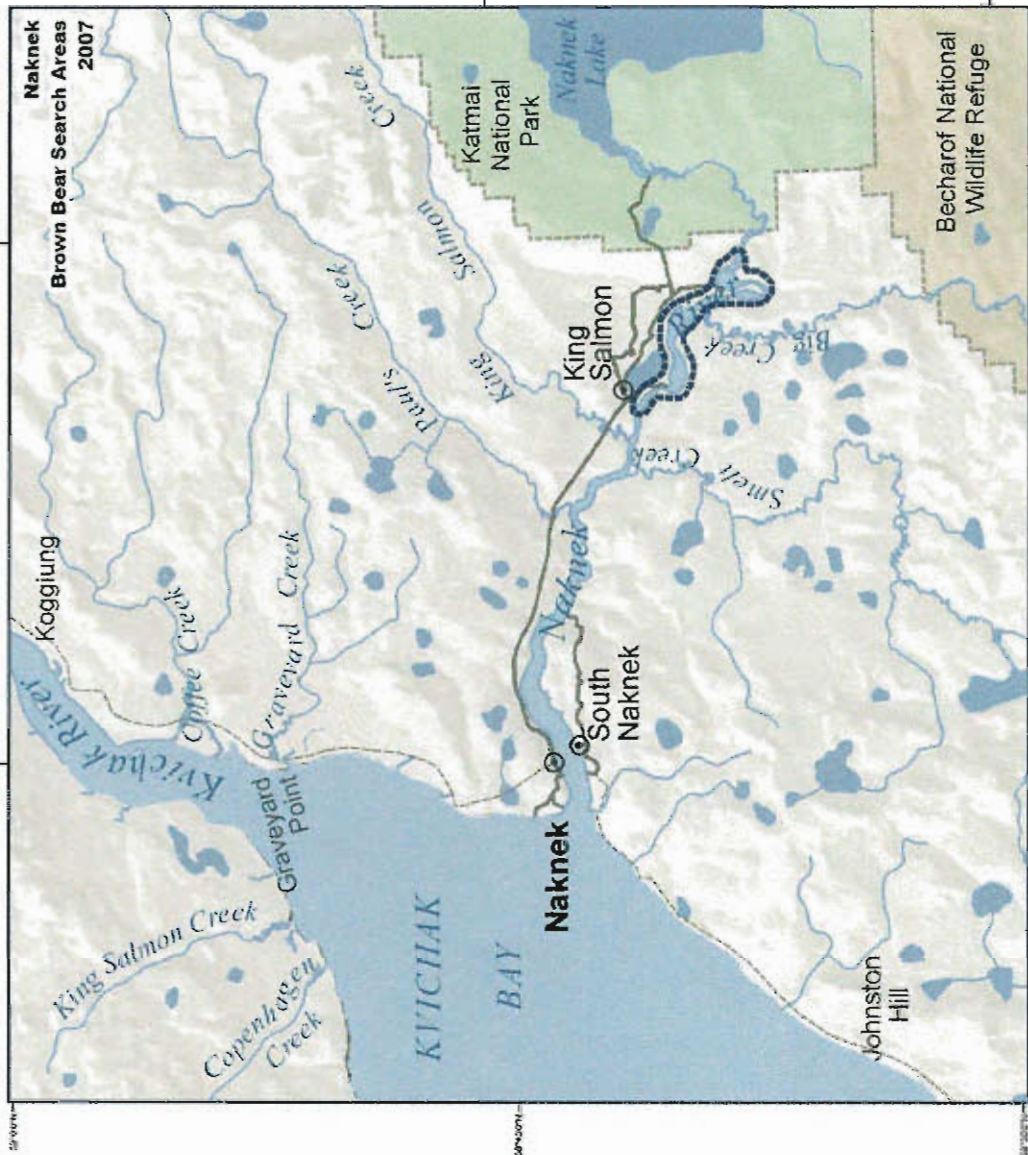
Source:

T.M. Krieg, D.L. Holen, and D. Kostler. 2009. Subsistence harvests and uses of wild resources in Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok, Alaska, 2005. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 322, Dillingham.

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME



Brown Bear
Search Areas



Roads



Local Trails



The Public Limited Partnership, through Stephen R. Braund & Associates (SR&A), provided funding to the Alaska Department of Fish and Game (ADF&G) for this study. SR&A digitized the data and prepared the maps.

Source:
Holen, D., T.M. King, and T. Lomone. 2011.
Sustenance harvests and uses of wild
resources in King Salmon, Naknek, and
South Naknek, Alaska, 2007. Alaska
Department of Fish and Game Division of
Subsistence. Technical Paper No. 360.
Anchorage.

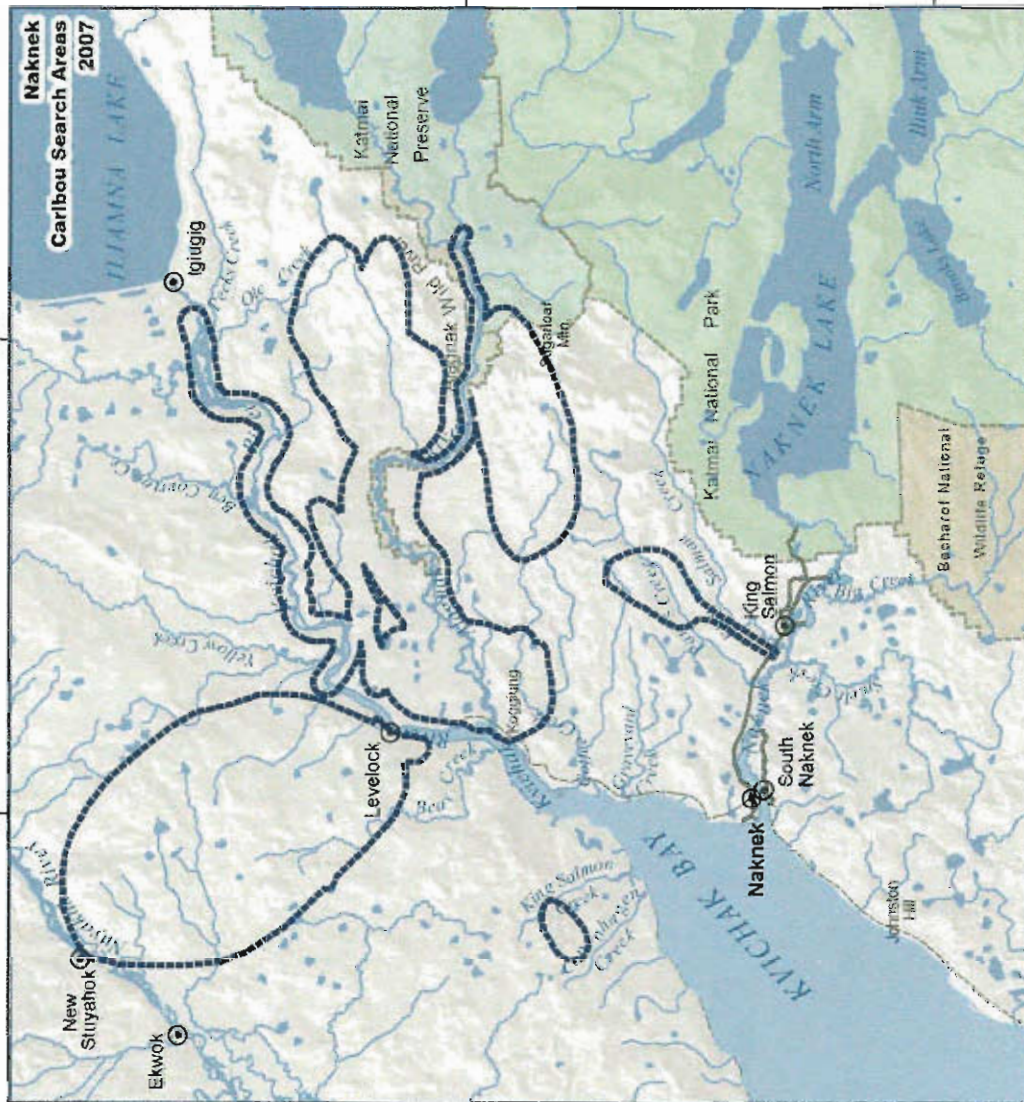


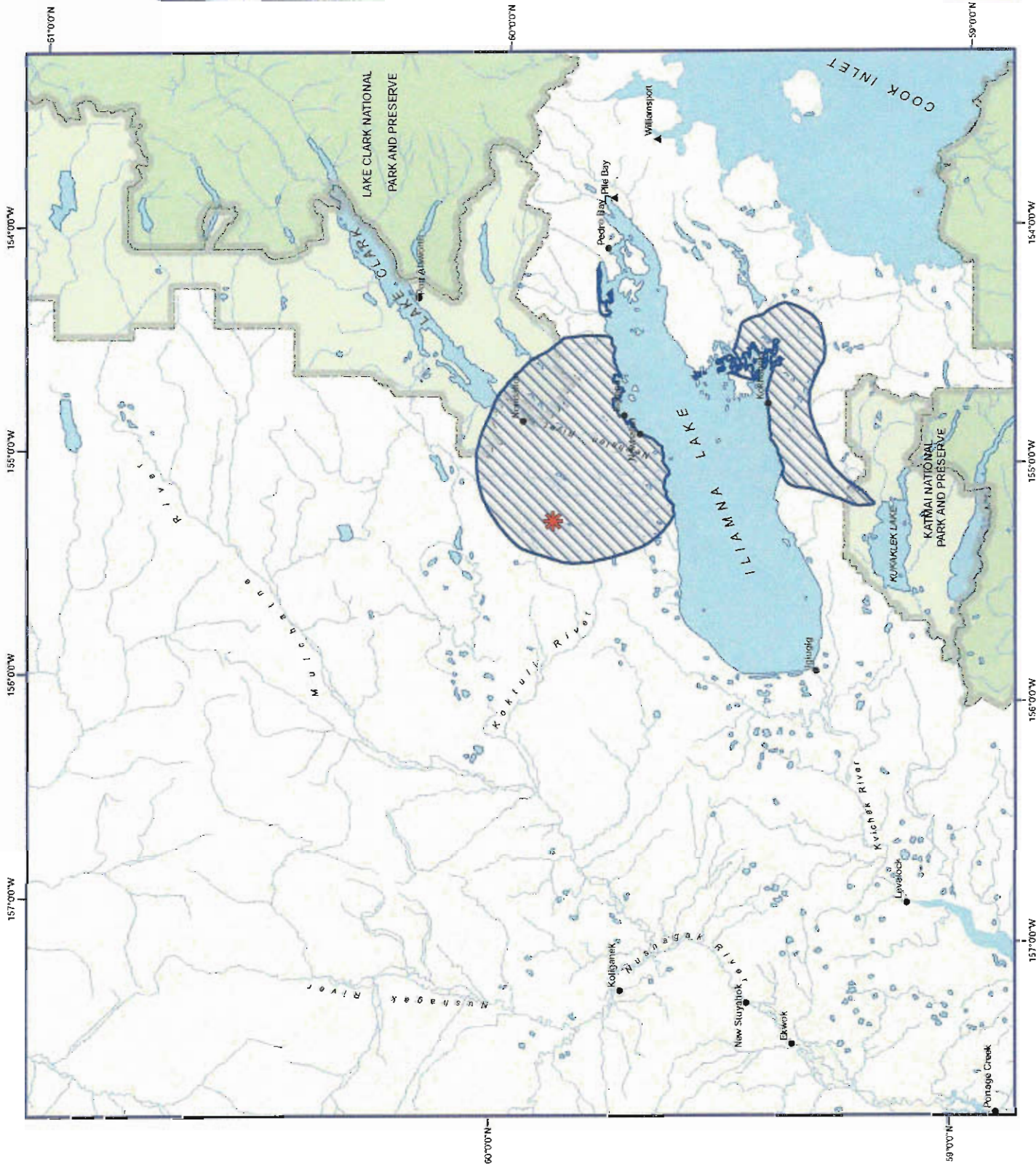
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Miles

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DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME





- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Brown Bear Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20
Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:

Division of Subsistence, ADF&G
Household Interviews, 2005.
See Division of Subsistence Technical Paper No. 302, Subsistence Harvests and Uses of Wild Resources in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth, Alaska, 2004, for background on sample sizes and mapping methods.

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Figure 3-4

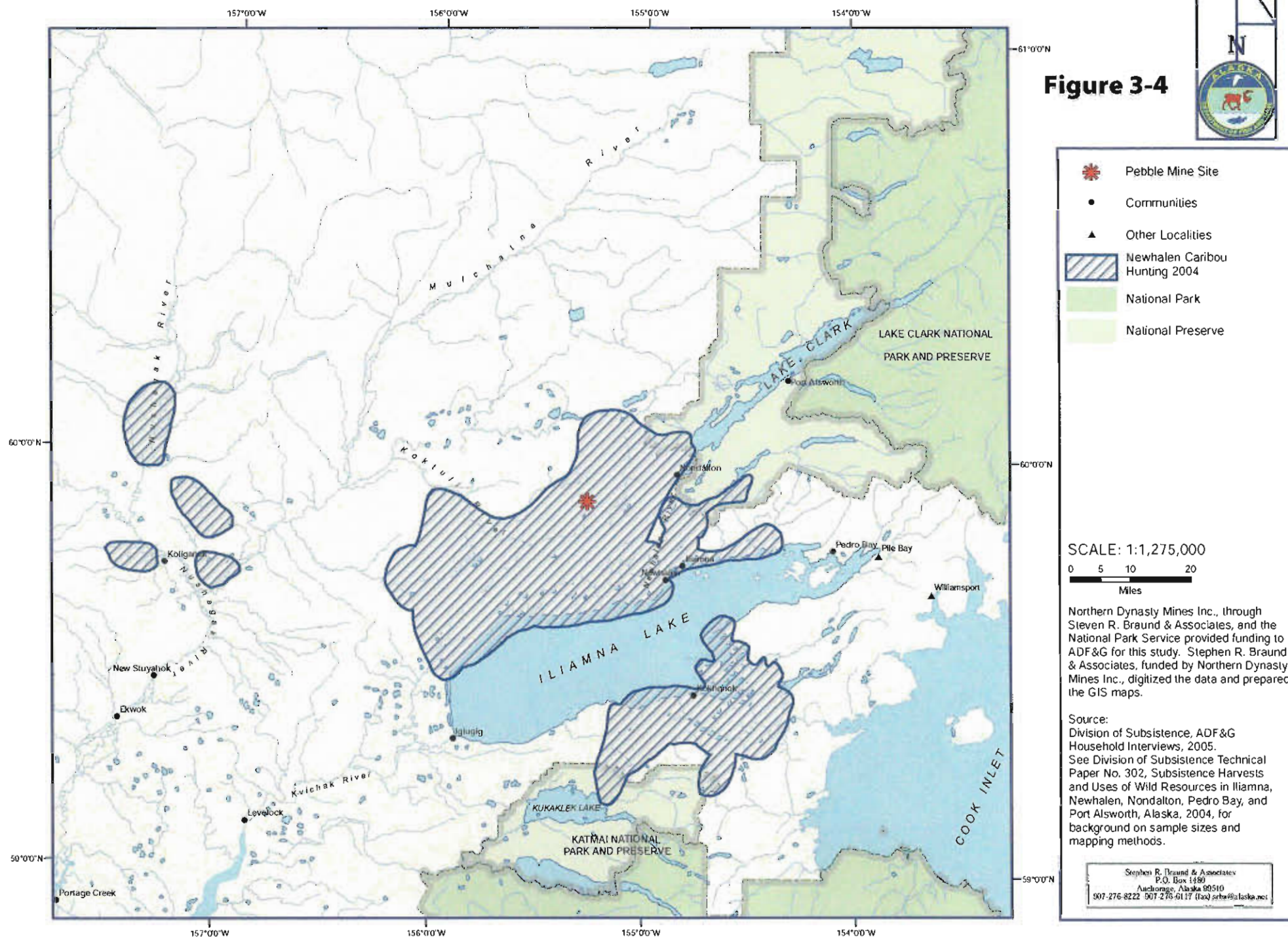
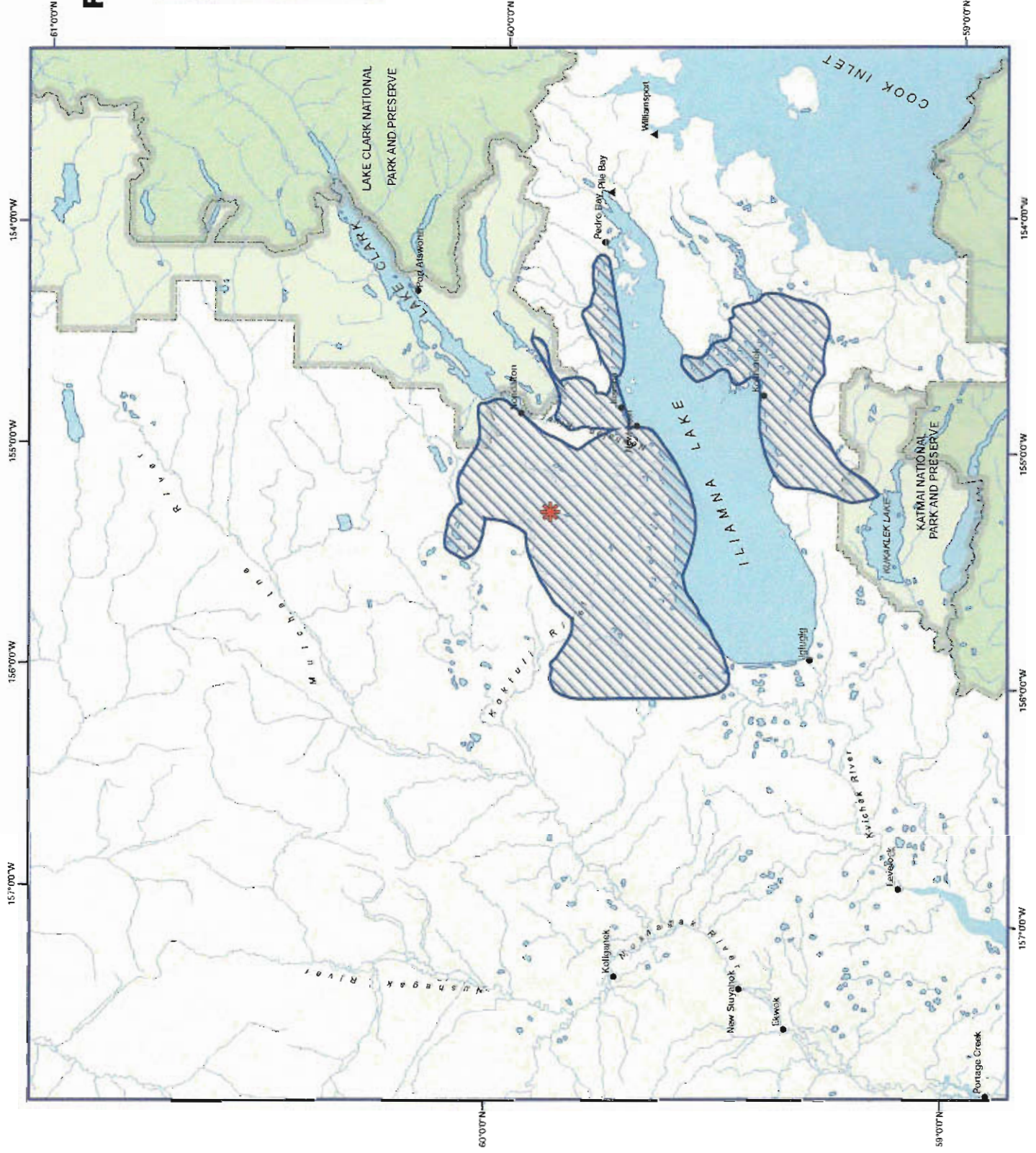




Figure 3-3



- Pebble Mine Site
- Communities
- Other Localities
- Newhalen Moose Hunting 2004
- National Park
- National Preserve

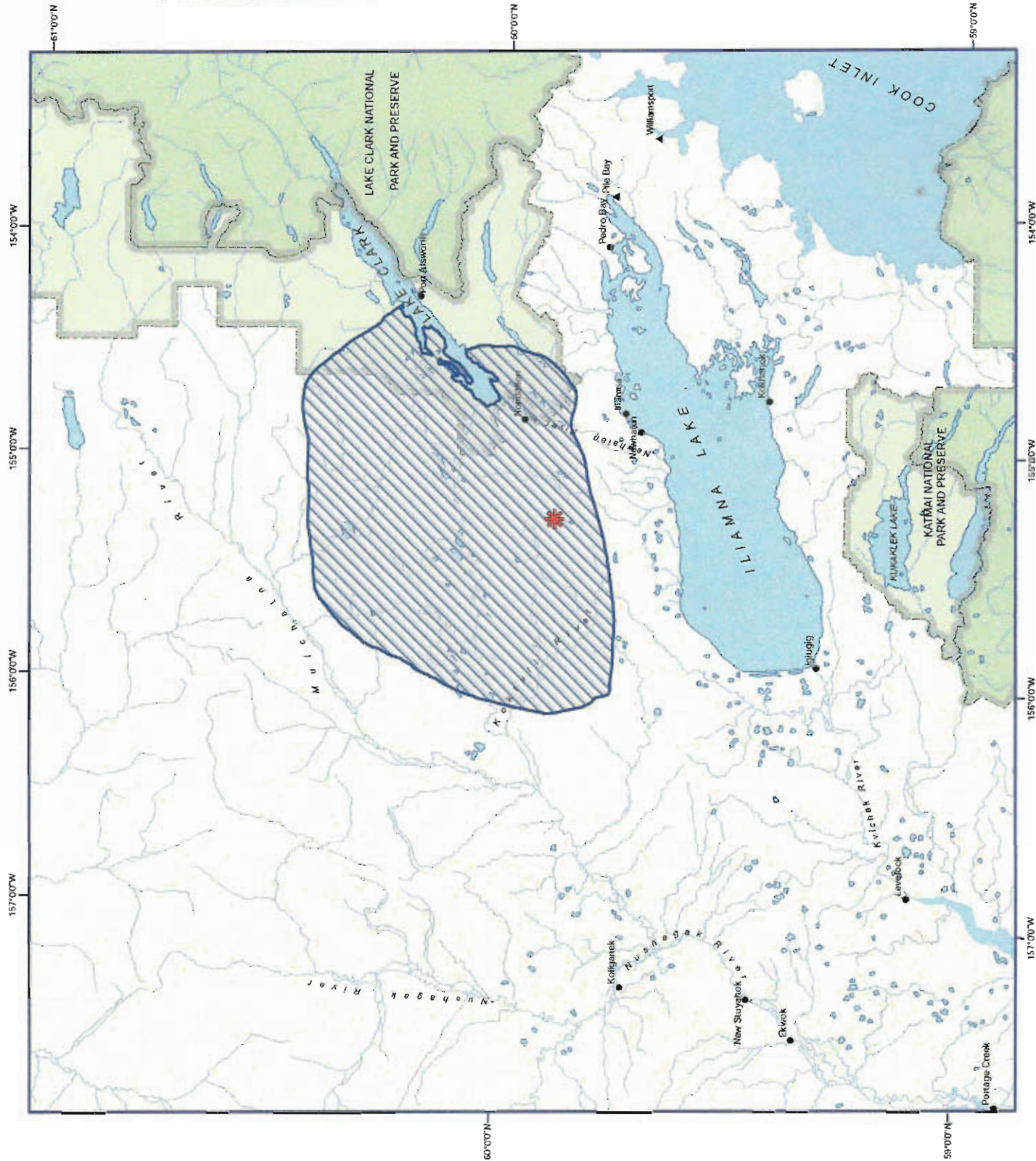
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0 5 10 20 Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

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- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Brown Bear Hunting 2004
- National Park
- National Preserve

SCALE: 1:1,275,000

0 5 10 20 Miles

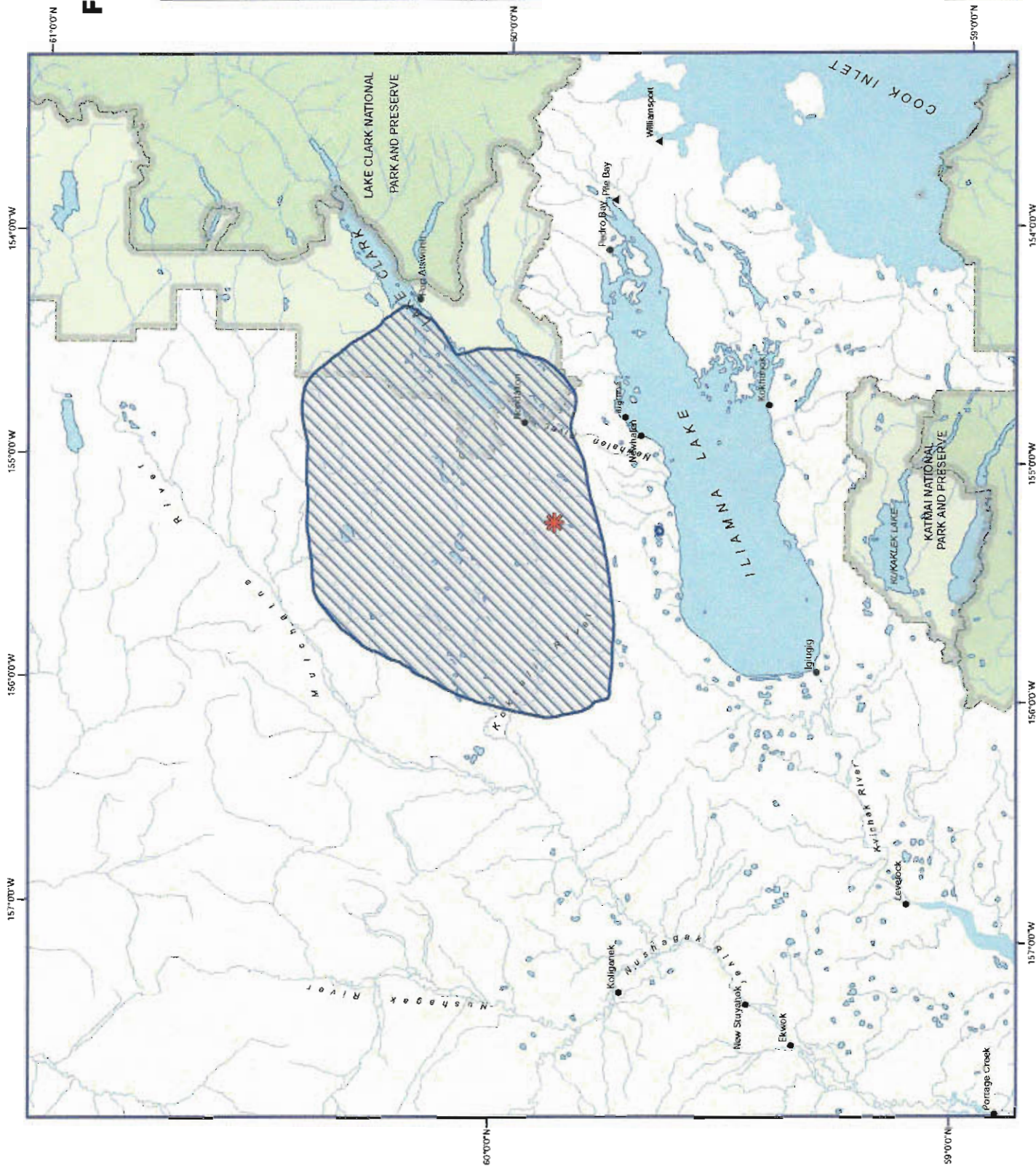
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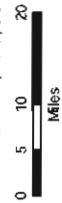


Figure 6-4



- Pebble Mine Site
- Communities
- Other Localities
- Nondalton Caribou Hunting 2004
- National Park
- National Preserve

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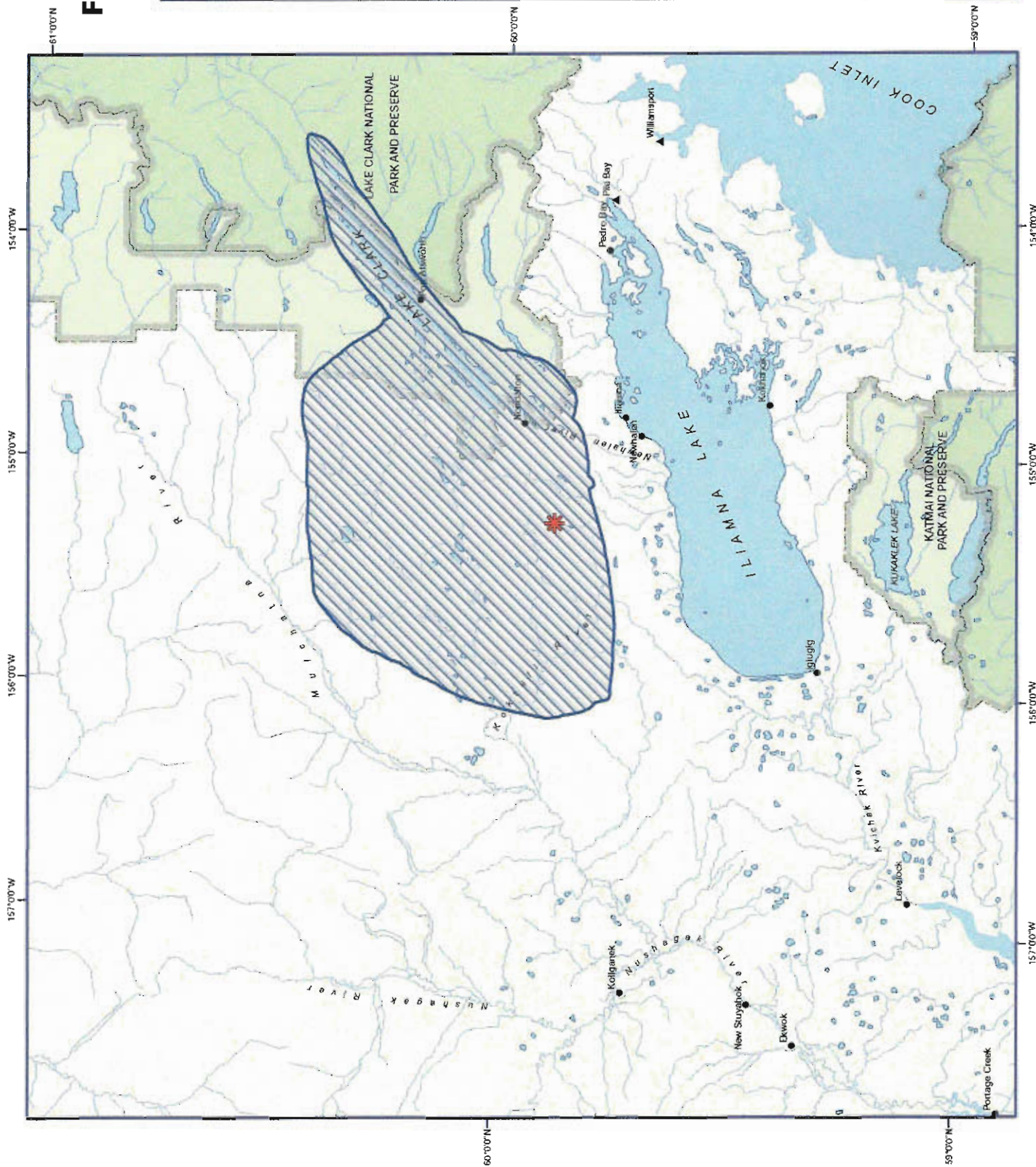
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Source:

Division of Subsistence, ADF&G Household Interviews, 2005.
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Figure 6-3



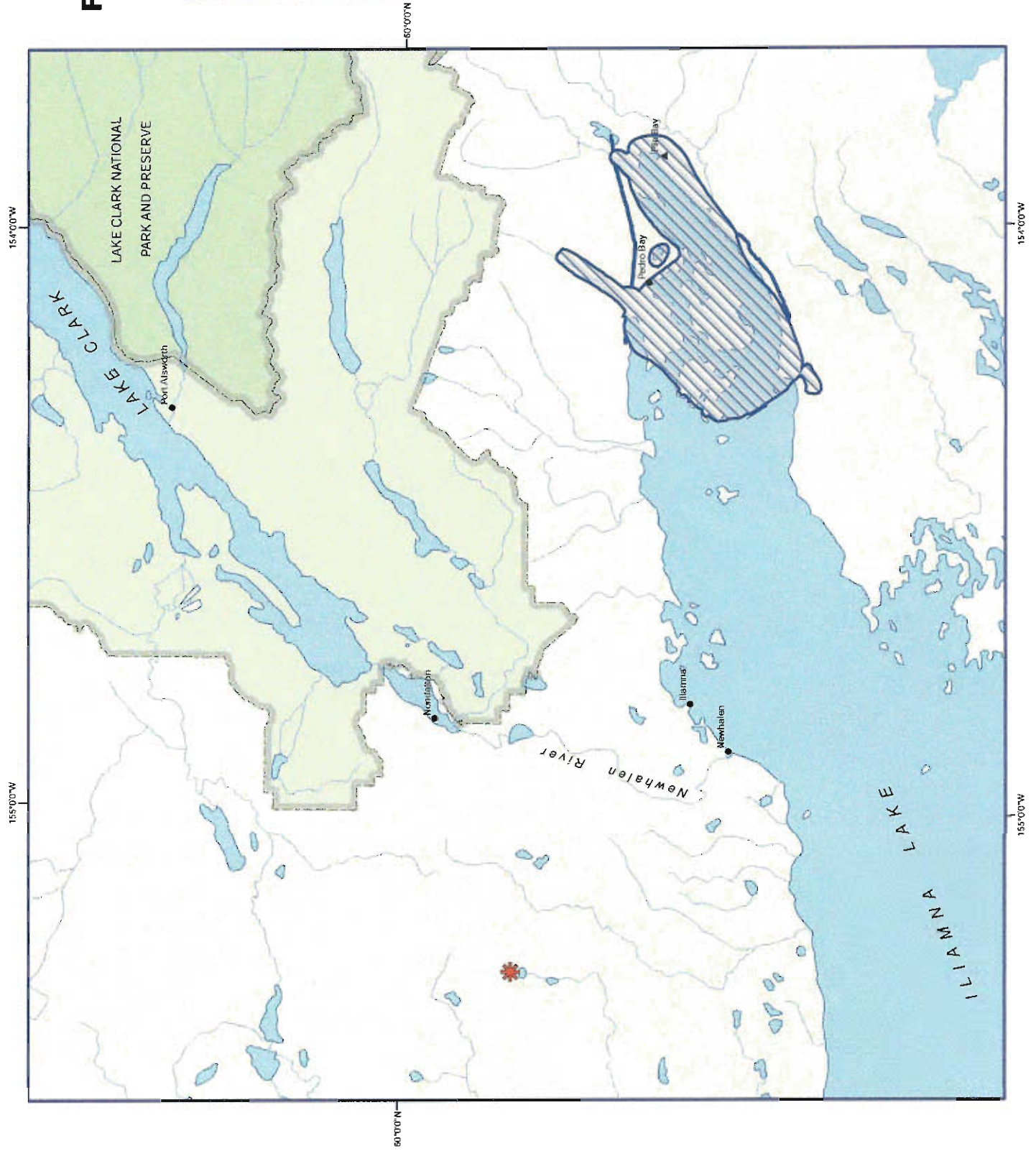
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Source:
Division of Subsistence, ADF&G
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See Division of Subsistence Technical
Paper No. 302, Subsistence Harvests
and Uses of Wild Resources in Ilamna,
Newhalen, Nondaton, Pedro Bay, and
Port Alsworth, Alaska, 2004, for
background on sample sizes and
mapping methods.

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Figure 4-4



- Pebble Mine Site
- Communities
- Other Localities
- Pedro Bay Moose Hunting 2004
- National Park
- National Preserve

SCALE: 1:500,000

0 2.5 5 10
Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

Source:

Division of Subsistence, ADF&G
Household interviews, 2005.
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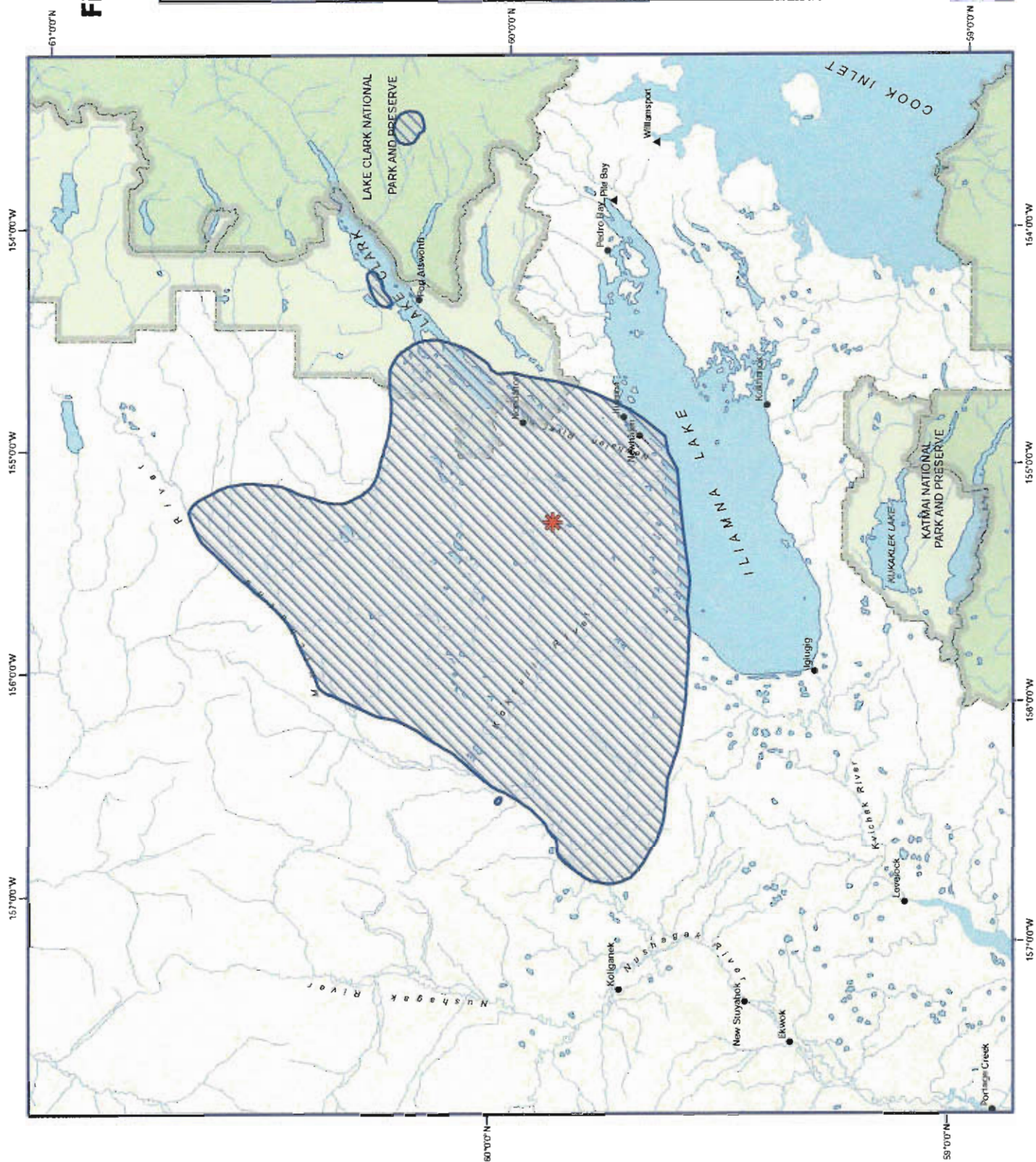
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Source: Division of Subsistence, ADF&G Household Interviews, 2005.
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Figure 5-4



- Pebble Mine Site
- Communities
- Other Localities
- Port Alsworth Caribou Hunting 2004
- National Park
- National Preserve

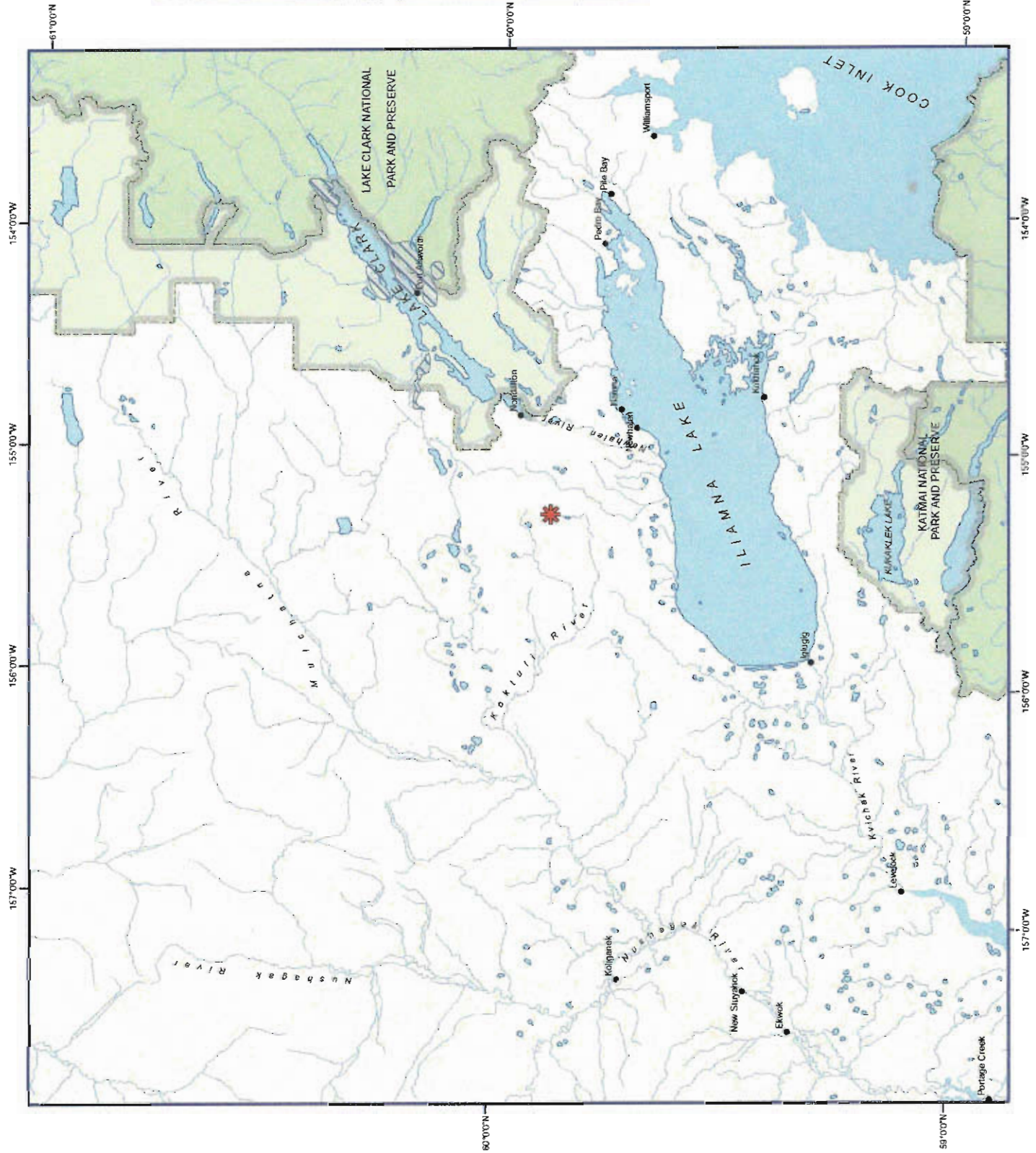
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Miles

Northern Dynasty Mines Inc., through Steven R. Braund & Associates, and the National Park Service provided funding to ADF&G for this study. Stephen R. Braund & Associates, funded by Northern Dynasty Mines Inc., digitized the data and prepared the GIS maps.

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