Black Bear
Management Report
of survey-inventory activities
1 July 2007–30 June 2010

Patricia Harper, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation

Funded through
Federal Aid in Wildlife Restoration
Grants W-33-6, W-33-7, and W-33-8; Project 17.0
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Please note that this report was released as a complete set in 2012, but is part of the 2011 set of species management reports. We encourage referencing this report as a 2011 report to maintain understanding of when reports were written and ease of locating this particular set of reports.

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DEPARTMENT OF FISH AND GAME
Cora Campbell, Commissioner

DIVISION OF WILDLIFE CONSERVATION
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Acknowledgment: The editor thanks Tom Paul for his excellent editing assistance with this report.

Please note that population and harvest data in this report are estimates and may be refined at a later date.

Cover Photo: A black bear cub climbs a spruce tree near Thorne Bay on Prince of Wales Island. ©2010 ADF&G, photo by Stephen Bethune.

BLACK BEAR MANAGEMENT REPORT

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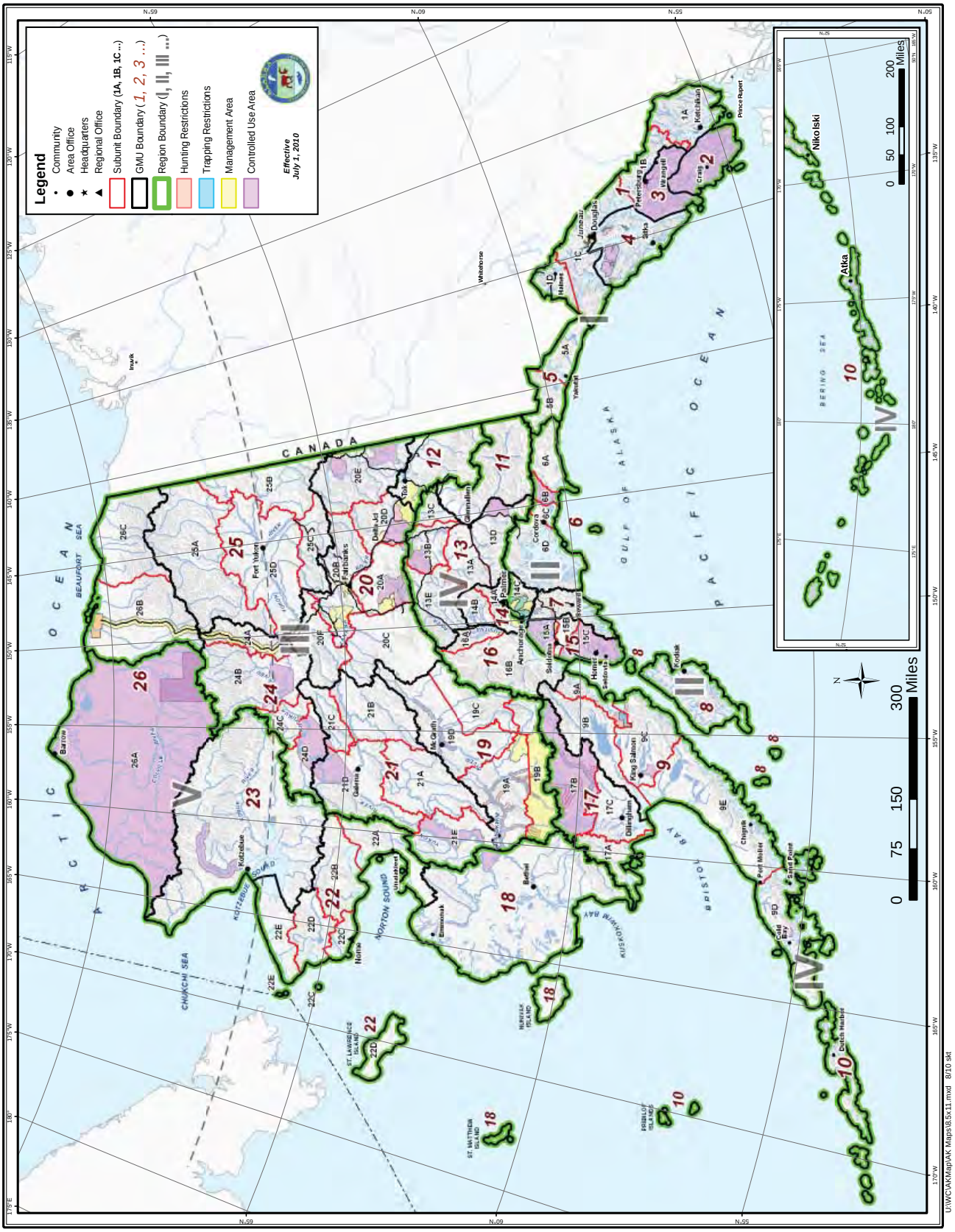
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Headquarters
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WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: Unit 1A (5,300 mi^2)

GEOGRAPHICAL DESCRIPTION: That portion of Unit 1 lying south of Lemesurier Point, including all drainages into Behm Canal and excluding all drainages into Ernest Sound.

BACKGROUND

HABITAT DESCRIPTION

Unit 1A includes portions of the Cleveland Peninsula and Misty Fjords National Monument on the mainland, and Revillagigedo (Revilla), Gravina, Annette, and Duke Islands. Most high quality mainland black bear habitat in Unit 1A is confined to a relatively narrow band of forested landscapes between saltwater and the high elevation peaks and ice fields of the coastal mountains. An exception is the broader bays and lower peaks of southern Cleveland Peninsula. Revilla Island has many productive salmon streams, large tracts of young age clear cut stands, and productive forest that provides high quality habitat. Gravina, Annette, and Duke Islands generally have lower-quality black bear habitat. A few large mainland river valleys, such as the Unuk, Chickamin, Blossom, Wilson, Keta, and Marten, as well as many Revilla Island stream systems, support salmon and other anadromous fish. Black bears compete with coastal brown bears for foraging opportunities along most of the productive salmon streams in the area.

Portions of Revilla, Gravina, and Annette Islands have been logged and have clear-cuts with habitats in various stages of regeneration. As is the case elsewhere in Southeast Alaska, habitat changes continue to occur from clear-cut logging. Although early successional stages (3–20 years after logging) provide black bears with an abundance of plant foods, later stages result in the disappearance of understory plants as conifer canopies close and sunlight does not penetrate to the forest floor. Second-growth stands lack large hollow trees and root masses used for denning habitat. Although logging may create food for bears in the short term, the long-term result of logging will likely be a decline in bear numbers (Suring et al. 1988).

ADF&G has estimated approximately 890 square miles of forested habitat on the Unit 1A mainland and 1,600 additional square miles of forested habitat on the Unit 1A islands and a portion of the lower Cleveland Peninsula within Unit 1A. Large portions of Unit 1A are designated wilderness within the Misty Fjords National Monument.

Bear distribution near Ketchikan is significantly influenced by human garbage. Although bears have probably always been numerous locally, the availability of this attractive alternative food source promotes artificially high bear densities. Also, restrictions against firearm discharge within urban areas provide a refugium from harvest near the city, allowing the bear population to remain high in this area. At the same time, the high human density in the area and differing attitudes toward responsible garbage-handling promote a high level of human–bear conflict.

HUMAN USE HISTORY

Black bears have long been hunted in Unit 1A for trophies and food. Sealing of black bears was first required in 1973. From sealing we gather information about successful hunts and collect biological data from hunter's bears. Until 2009, hunters have not been required to obtain a hunt registration permit or harvest report for black bears; thus, effort data for unsuccessful hunters has been unavailable. The Board of Game (BOG) passed a proposal at its 2008 meeting that requires all black bear hunters to submit a harvest ticket/report after their hunts. These harvest reports will provide the department with effort data from unsuccessful, as well as successful hunters. Prior to this, we have only been able to collect information on hunt effort for successful hunters from sealing data. Information from all hunters should shed additional light on the state of bear populations. We can also use hunter contact information from the reports to survey hunters about other aspects of black bear hunting. As expected, compliance from hunters and license vendors was poor the first year the regulation was in effect, but we are optimistic that, with familiarity, compliance will improve and we will begin collecting useful data.

Regulatory history

Since statehood the black bear hunting season has extended from 1 September through 30 June, with a bag limit for residents of 2 bears per regulatory year, only 1 of which can be a blue or glacier bear. Nonresident bag limits were the same as resident limits until 1990, when the nonresident limit was reduced from 2 to 1 black bear per regulatory year. In 1982 it became legal to bait black bears year-round. However, in 1988, the Board of Game limited baiting in Southeast Alaska to the period 15 April–15 June. That same year ADF&G records began to accurately document the number of bait permits issued. Beginning fall 1996, hunters were required to salvage the edible meat of all spring black bears killed in Southeast Alaska during 1 January–31 May. The requirement was adopted as a compromise alternative to a proposal to eliminate bear baiting. The salvage rule and bear baiting in general continue to be contentious issues with proposals for and against these regulations coming before the BOG each cycle.

Historical harvest patterns

Annual harvest in Unit 1A increased from about 25 bears in the 1970s and early 1980s to 60 bears by the late 1980s. During the 1990s the mean annual hunter harvest was 64 bears, with a range of 33 to 97 bears. During 2000–2006 the mean annual harvest increased to 78 bears, with a range of 55 to 103 bears. During this reporting period an average of 89 bears were harvested each year with a range of 77-102 (Table 1).

Fluctuations in annual harvest are probably linked more with human activity and weather during hunting season than to changes in bear numbers. Earlier harvest cycles may have been linked to the amount of commercial logging and road building activity in the unit. The harvest increase in the 1990s may have been linked to an increase in hunting effort by residents and nonresidents

alike and may also have been associated with renewed logging in some areas. Logging activity not only opened up more areas to hunting by providing good access, it also brought more humans in contact with bears. During some of the peak logging years in the mid 1980s and early 1990s, highway vehicles provided more than 25% of the hunter transport. During the past 3 years, vehicles accounted for only 7.5 percent of the hunter transport, slightly higher than the 10-year average of 5.5 percent.

Boats historically have been the favored mode of transport by Unit 1A bear hunters, with highway vehicles ranking a distant second. Many bears frequent the beaches in search of grasses and sedges during the early spring, making them visible and accessible to hunters. The majority of hunters target male bears. By using the spot-and-stalk technique along the many miles of beaches in the spring, hunters are able to observe multiple animals and be selective. Consequently, approximately 75% of the Unit 1A annual bear harvest occurs during spring (April–June).

By state regulation, starting in 1996, edible meat from spring black bears needs to be salvaged for human consumption, but salvage of meat from fall bears is not required. Many Southeast Alaska hunters find meat from spring bears very tasty, whereas they rarely consider meat from fall bears edible because of the salmon component in most bears' diets.

Resident hunters historically accounted for about 75% of the Unit 1A harvest until the late 1990s when nonresidents began harvesting around 50% of the 1A bears. This nonresident pattern has remained similar over the years since 2000 with only slight fluctuation between 40 and 57 percent (Table 2). There is no guide requirement for nonresident hunters, and most out-of-state hunters have historically hunted without a registered guide in this unit. Nonresident hunters must purchase locking tags and must affix them on a bear immediately after it is harvested. The costs of black bear hunting for nonresidents, including a hunting license ($85), tags ($225–$300), and expensive transportation do not seem to limit the number of nonresident hunters who pursue black bears in Unit 1A.

Some logging roads historically open to hunters will soon be closed as part of a statewide effort by the U.S. Forest Service (USFS) to reduce road maintenance costs and liability. The net effect is a more than one third reduction in the number of road miles available to hunters in the Ketchikan area; from more than 300 miles of drivable roads currently available to about 100 miles of roads that will remain open to motorized vehicles. Most of the roads slated to be closed are not connected to the main Ketchikan road system and have required using a boat to transport a truck or 4-wheeler to gain access to them.

Historical harvest locations

Hunters harvest bears throughout the unit, although the highest harvests continue to come from Wildlife Analysis Areas (WAAs) 406 (Carroll Inlet), 407 (George Inlet and the Ward Cove–Harriet Hunt Lake road), and 510 (northwest Revilla Island). On the mainland, WAA 822 (Boca De Quadra) also contributes substantially to the harvest. Because of its proximity to Ketchikan, WAA 406 is a popular recreational area for Ketchikan residents. U.S. Coast Guard personnel stationed at the Shoal Cove Loran Station along Carroll Inlet regularly harvested bears in that area. During 2010 this Loran station was permanently closed and dismantled. Consequently we expect bear harvest in this area to decline. WAA 407 is also easily accessed by Ketchikan

residents, by boat via George Inlet and by vehicle up the Ward Cove–Harriet Hunt Lake road system. Ketchikan residents and personnel from the Neets Bay fish hatchery account for several bears taken in WAA 510 each season. WAA 822 is accessible by boat from Ketchikan and remains a very popular place to hunt.

History of urban bear management in Ketchikan

Responding to "bear calls" in Ketchikan continues to consume large amounts of staff time. Tasks include responding to complaints, explaining proper garbage handling, and providing public safety precautions. We continue to work with the Ketchikan Police Department and Alaska Wildlife Troopers (AWT) to reduce bear–human conflicts. We use all of the available media sources to promote public service messages, and we also conduct several local education programs geared toward awareness and prevention. The combination of these efforts and good cooperation with the other agencies seems to be making a positive change, with fewer nuisance calls and fewer bears being killed each season.

In 2006 ADF&G and the Ketchikan City Council formed a working group to develop a city ordinance to require residents to secure garbage. During late 2007 the Ketchikan City Council passed an ordinance and developed a citation schedule for unsecured garbage. They are currently issuing city residents 1 warning then citing for failure to secure bear attractants. This has improved the bear attractant problems inside the city. We are currently working with the Borough to develop a similar program but nothing has been finalized as of fall 2011.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain a male:female ratio of 3:1 in the harvest.
- Maintain an average male spring skull size of at least 17.5 inches.
- Minimize human–bear conflicts by providing information and assistance to the public and to other agencies.

Age, genetics, and environmental factors such as habitat and forage quality combine to influence black bear skull size. Sealing records indicate that mature Unit 1A black bears generally have smaller skulls than bears from the nearby Unit 2. The skull size management objective of 17.5 inches for males harvested in the spring was established in the early 1990s after harvest data analysis showed this to be the long-term average.

We use skull size as a management tool because we believe that a change in mean skull size may indicate changes in population size and composition and provide some measure of the sustainability of the harvest levels. A decreasing average skull size may indicate a decline in that segment of the population composed of large, older bears and could indicate an overall population decline. An increasing average skull size could indicate a reduction in the proportion of younger bears in the population. Probably the most appropriate use of skull size data at this time is as an indicator of some change in the population or in hunter effort. We use skull size in conjunction with other harvest data to make our best assessment of current bear population trends.

Harvest sex ratio is the other common parameter for monitoring black bear populations. It is relied upon as a primary means of assessing population status in 19 states and provinces and as supporting information for population assessment in another 8 areas (Garshelis 1990). A changing sex ratio in harvest is thought by some bear biologists to reflect changes in the population. As a measure of harvest intensity, we expect the sex ratio to change with cohort age. In the younger age classes, males will outnumber females in the harvest. However, the higher harvest mortality of males causes their numbers to decline more rapidly with age. Males remain more vulnerable and the ratio of males to females in the harvest declines with age because of the progressive depletion of males (Bunnell and Tait 1980). A 3:1 sex ratio in favor of more males in the harvest has been suggested to be a sustainable yield from a healthy bear population (Porter 2008).

METHODS

Black bear hides and skulls taken by successful hunters were sealed by ADF&G staff, public safety staff, and designated sealers. Biological and hunt information collected at the time of sealing included sex, skull size (length and width), pelage color, date and location of kill, number of days hunted, transportation method, guide use, and hunter use of commercial services. A premolar was collected from most bears and sent to Matson's Laboratory for age determination.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Black bear population estimates are not available. Information obtained during sealing cannot be used directly to measure population trends. Although harvest information gained from sealing records, such as average skull sizes, average ages, and sex ratios, may provide some indication of black bear population trends, in the absence of accompanying demographic and life history data correlations between these measures and harvest sustainability will continue to elude us. Research is needed to identify population parameters, so that we might better assess population trends and harvest sustainability.

Population Size

Estimates of population size or density are difficult and expensive to obtain. No black bear population studies have been conducted in Unit 1A. The species generally inhabits forested areas, where aerial surveys and counts are impractical. Vast, remote areas in the unit also make studies logistically difficult and expensive to undertake. Conservative black bear density estimates for Unit 1A are based on studies in similar habitats in western Washington state in the 1960s (Poelker and Hartwell 1973) where they estimated 1.4 bears/mi^2. Wood (1990) and Larsen (1990) calculated a slightly higher density of 1.5 bears/mi^2 for most of the forested islands and mainland, and lower densities for the more barren portions of the mainland and unproductive island habitats. In 1990, they made the following assumptions about bear density and derived a population estimate for all of Unit 1A.

- Revilla Island – 1,176 mi^2 x 1.5 bears per mi^2 = 1,764 bears
- Gravina Island – 96 mi^2 X 0.50 bears per mi^2 = 48 bears
- Cleveland Peninsula south of Yes Bay – 203 mi^2 X 1.0 bears per mi^2 = 203 bears
- Duke and Annette Islands – 140 mi^2 X 0.10 bears per mi^2 = 14 bears

- Remainder of Unit 1A – 890 forested mi^2 X 1.5 bears per mi^2 = 1,344 bears for a total estimated Unit 1A population of 3,520 black bears (Larsen 1990)

Population Composition

Our management objective of a 3:1 male-to-female harvest ratio is aimed at assuring a minimal harvest of female bears. We lack reliable information on the composition of the bear population, but use the harvest sex ratio for insight into the availability of male bears in the population. On a very gross scale, if the harvest of females increases, we may interpret that to suggest there are fewer large male bears available to hunters. This is more difficult recently because our hunter population seems to be changing. Recently we have noted more nonresident hunters anxiously harvesting the first bear they see rather than waiting for a good trophy male or even a representative specimen.

Distribution and Movements

Black bears are thought to be more numerous on the islands of Unit 1A than on the mainland; however, population estimates or quantitative information about home ranges and movement patterns of Unit 1A black bears are not available.

Black colored pelage is most common and occurs throughout the bears' range. The cinnamon color phase occurs mostly in mainland portions of the unit and occasionally on Revilla Island. Black bears with slight glacier (blue) pelage are also found in Unit 1A. Kermode bears, or those with pure white pelage, have been reported occasionally in extreme southern mainland portions of the unit along the Portland Canal.

MORTALITY

Harvest

Season	Bag Limit
1 Sep–30 Jun	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear
1 Sep–30 Jun	Nonresident hunters: 1 bear

Game Board Action and Emergency Orders: During this reporting period the BOG passed a proposal for game management units 1-5 requiring all bear hunters to obtain a bear harvest ticket prior to hunting.

Hunter harvest. Hunters harvested 102, 88, and 77 bears during 2007, 2008, and 2009 seasons respectively. The most recent 3-year average ($\bar{x}$ = 88 bears) was just slightly higher than the 2000-2010 10-year average ($\bar{x}$ = 81 bears) and higher than the previous 3-year average of 80 bears (Table 1).

Miller (1990) suggested it would be more important to monitor the number of females in the harvest than percentage of males. Taylor (1986) noted the effect of hunting pressure on breeding females was critical in sustained yield management. Males typically compose over 75% of the bears killed in Unit 1A, and during the past 10 years 80% (range 73–88%) of the harvest has

been male bears. The 3-year male average for this reporting period is 83% (range 78–88%) (Table 1).

The average male skull size during this report period was 18.0 inches. We continue to meet our management objective of 17.5-inch average for male bears during the spring harvest. The skull size data for all seasons shows only a slight variation between yearly and spring-only male skull size. Female skull size average for this reporting period was 16.2 inches and has remained virtually identical to the 10 year average of 16.1 inches (range 15.9–16.7 inches) (Table 2).

The annual average number of successful hunters during this report period (88) was higher than the 2000-2010 10-year average of 79 (range 52–103). The number of successful hunters in 2007 (102) nearly matched the historic peak of 103 obtained in 2006. The 2007 season did break the record for hunter days with 277. Days in the field per successful hunter remained similar at 2.6 days (Table 2).

Hunter residency and success. The nonresident harvest of black bears in Unit 1A has ranged during the past 2 decades between 22 and 57 percent of the take annually. During the 2007, 2008 and 2009 seasons, 50%, 38% and 41% respectfully, of successful hunters were nonresidents. The harvest of 57% by nonresidents in 2002 was the highest on record for this unit. Alaska residents not living in Unit 1A (nonlocal) historically harvest only 5–10% of the bears in this area. During this report period, non-local residents harvested just 4% of Unit 1A bears, slightly lower than the 13-year long term average of 6% (Table 3).

Harvest chronology during report period. Unit 1A bears are most visible and accessible during the spring, when many bears are on the beaches feeding on sedges and grasses. The hides are also most prime and in the best condition during this same period. During this report period, May continued to be the most popular month for Unit 1A harvest (54%), followed by September (22%) and June (17%). The May trend during the past 3 years (54%), was similar to the 2000-2010 10-year average of 48% (range 33–61) (Table 4).

Harvest in particular areas (WAAs). Hunters harvest bears throughout the unit, however more than 60% of the Unit 1A harvest has historically been taken from Wildlife Analysis Areas 0406 (Carroll Inlet), 407 (George Inlet and the Ward Cove–Harriet Hunt Lake road), 0822 (Boca De Quadra), and 0510 (northwest Revilla Island). On the mainland, WAA 822 also contributes substantially to the harvest. Because of its proximity to Ketchikan, WAA 406 is a popular recreational area for Ketchikan residents. U.S. Coast Guard personnel at the Shoal Cove Loran station in Carroll Inlet have regularly harvested bears in this WAA. This harvest is expected to decline with the permanent closure of this facility. WAA 407 is also easily accessed by Ketchikan residents, by boat via George Inlet and by highway vehicle up the Ward Cove–Harriet Hunt Lake road system. Ketchikan residents and personnel from the Neets Bay fish hatchery account for several bears taken in WAA 510 each season. Most defense of life or property (DLP) and reported vehicle collisions occur in WAA 408 along the Ketchikan road system (Table 5).

Bait stations. Bear baiting has never been popular in Unit 1A. Only 2–5 bait permits are issued annually and bears are occasionally harvested using this method. During the three years of this report period only 1 bear was reported killed in Unit 1A using bait (Table 1).

Hunting with dogs. Hunting bears with dogs in Unit 1A requires a permit. Hunting with dogs has never been popular in this unit, and permits are issued only occasionally. No permits were issued to hunt bears with dogs in Unit 1A during this report period.

Guided hunter harvest. Guided black bear hunts are not as popular in Unit 1A as in some other nearby units such as 2 and 3, but most that are conducted are sold as part of mixed bag hunts. Five guides are currently permitted under state guiding regulations to conduct hunts in Unit 1A. During the past 3 years, guides have conducted an average of 7 successful hunts (range 6-8) in Unit 1A. This is lower than the 10-year average of 9 successful guided hunts per season. The highest harvest by guided hunters on record was during the 1999 and 2002 seasons, when 14 guided clients took bears in each of these years.

Transport methods. The use of transporters in Unit 1A is increasing, and at this time all licensed transporters other than air guides are using boats to take hunters to the field. Boats continue to be the most popular mode of transportation used by all types of bear hunters in Unit 1A. This was especially true during the past 3 years, when 84% of the successful hunters used boats to access hunting areas in Unit 1A (range 82–93%). This most recent percentage of boat use is nearly identical to the 2000-2010 10-year average of 88% (Table 6).

Other mortality

Wounding loss. Wounding loss may be a significant source of mortality for Unit 1A bears, but this is based on anecdotal information with little documentation. Forest understory is dense, and frequent rainfall complicates the task of tracking wounded animals. At the time of sealing, hunters sometimes volunteer that they shot at additional bears while hunting but were unable to determine if they hit the animal. Nonresident hunters probably wound more animals than residents because of unfamiliarity with local conditions and vegetation, distance, and bear behavior.

HABITAT

Assessment

Several more timber sales are planned in Unit 1A. Proposed sales on Gravina Island include construction of additional roads into the interior of the island. The Alaska Mental Health Trust Authority completed selective cutting using helicopters on the north side of Gravina Island during 2005. This timber harvest removed much of the large cedar stands from the north face of the island. The State of Alaska also released a large timber sale in the center of Gravina and that timber volume was removed during 2006 and 2007. Currently the Forest Service has prepared several timber sales targeting most of the remaining large timber on the central and northern half of Gravina Island and adding additional miles of road. Most of the remaining sales are included in the new federal roadless areas and consequently will not be cut unless exceptions are made for individual timber sales. Collectively these timber sales target some of the most important old-growth areas that are very important bear and deer habitat on this island. With better access and more hunters, we anticipate a higher harvest of black bears from that area as road access and visibility improves, but probably long term declines in both bear and deer populations as habitat is degraded.

Second-growth stands at many previously logged Revilla Island sites are now reaching the closed canopy stem-exclusion stage, and we expect the productivity of the old timber sales to decline and result in lower bear densities. However, the new clearcut areas will provide a flush of open habitat and higher carrying capacity for bears during the next 10–20 years post logging resulting in good forage for bears. After that period we expect bear numbers to decline as the clearcut areas reach the stem exclusion habitat growth stage and Gravina Island will support very few black bears. Closed canopy second growth stands are also difficult to hunt because what few bears are there are hard to find. Consequently most hunters look elsewhere.

Enhancement

No habitat enhancement projects specifically meant to benefit black bears have been attempted in the unit. Precommercial thinning and pruning has been performed in some young second-growth stands. Although intended to enhance silviculture, this action benefits wildlife too by permitting sunlight to reach the forest floor increasing understory forage production. However, these benefits are short-lived (20–25 years), after which canopy closure again results in loss of understory vegetation. The long-term effects of clearcut logging even with pre-commercial thinning will be detrimental to Unit 1A black bear populations.

NONREGULATORY MANAGEMENT PROBLEMS AND NEEDS

Non-hunting issues. Margaret Creek, located on Revilla Island approximately 26 miles north of Ketchikan, has been a contentious area for over a decade. The site is remote, requiring a boat or float plane to access. The site was developed by the US Forest Service in the late 1990s in response to a guide who wanted to take clients there for bear viewing opportunities. At the time, only a weir and small platform used for fish surveys was there, but facilities were not suitable for large numbers of recreational users. The USFS constructed a large viewing platform and trail improvements, which gave a significant boost to the site's popularity. Additional improvements since the initial 1 include a covered rain shelter, interpretive signs and a restroom (USDA 2011). Several air charter services are now providing bear viewing trips from Ketchikan for visiting cruise ship passengers. Clashes between hunters and bear viewers are increasing. Signs are now posted and the immediate area around the bear viewing platform and access trail are closed to all firearm discharge by Forest Supervisor order. At the 2010 Board of Game meeting following extensive public discussion regarding bear viewing and appropriate buffer zones near this established bear viewing site, bear hunting regulations were changed. Starting September 2010 it is illegal to hunt bears 1/4 mile either side of Margaret Creek from salt water upstream to Margaret Lake.

The Neets Bay Hatchery, also on Revilla Island, has also developed into a substantial bear viewing site. Tours started there in 1998. Southern Southeast Regional Aquaculture Association (SSRAA) operates the salmon hatchery at this site and contracts with air charter services to transport cruise ship passengers there for bear viewing. SSRAA provides a natural history/bear guide who escorts tourists from the dock to the viewing site. SSRAA employees have reported observing up to 40 or more bears in 1 evening feeding in the salmon stream and estuary near this viewing site. Neets Bay, like Margaret Creek is also experiencing more conflict between consumptive and non-consumptive users. We expect to see more BOG proposals concerning bear viewing areas like these in the future.

Nuisance bear problems/urban bear management activities. Household garbage, bird feeders, and pet foods continue to attract bears to urban locations. We are working with the police departments, city managers, and AWT to provide educational material on how to reduce bear encounters by residents of Unit 1A. Combined, AWT, Ketchikan Police Department, and the Ketchikan ADF&G office receive 200–600 calls annually from residents asking for help with food-conditioned bears. While responding to these calls, we inform the public about their responsibilities and options. The City of Ketchikan has distributed approximately 2,000, 90-gallon roller-cans to residents in an attempt to reduce the availability of garbage to bears. Fish and Game staff also spent time talking to school classes about bear safety and bear awareness. All of these efforts seem to be paying off recently. Nuisance bear calls are down by about 25%, and the number of bears killed under defense of life or property is also down during this report period.

The Ketchikan landfill site was closed in 1994, and many food-conditioned bears near town were either relocated or killed. Prior to that closure an average of 2–8 bears per year were killed in Ketchikan; since 1997 an average of 10 bears (range 5–20) have been killed annually, some of which could be bears (or their offspring) that frequented the dump prior to 1994. Residents continue to provide opportunities for bears to access human foods and are likely educating new bears. Consequently, bears are common around town in the summer and fall, and are periodically killed either by ADF&G, enforcement officers, or local residents. A total of 8 bears were killed under DLP situations across the entire unit during this report period, slightly more than the 7 listed as DLP and nuisance bear kills during the last report period (Table 1). We continue efforts to educate the public about handling garbage properly so food-conditioned bears don't cause public safety issues and bears aren't needlessly killed.

CONCLUSIONS AND RECOMMENDATIONS

Black bears are an important big game species in Southeast Alaska, and the Unit 1A harvest continues to increase because of a long hunting season, liberal bag limit, and because bear hunting continues to be an attractive source of meat for unit hunters.

The 2007 season had the most days hunted, the second most number of successful hunters, and the second highest bear harvest on record for Unit 1A, trailing the 2006 harvest by just 1 bear. We expect this increasing harvest trend to continue as long as tourism is strong, and Alaska is selected as a popular and safe tourism and hunting destination.

The current harvest ratio, proportion of females, average skull size, and age structure of the harvest all suggest a stable bear population. Harvest records indicate the annual kill remains low relative to our rough population estimate. Harvest records also indicate a healthy male component and have not shown any discernible changes in skull size, age, or sex parameters. We continue to see increasing numbers of nonresident hunters, some unguided nonresidents renting boats and vehicles, and other nonresidents employing transporters or licensed big game guides.

As local bear viewing interest continues to grow with commercial tourism, we will undoubtedly be faced with allocation issues related to both human safety and bear preservation, requiring compromise by hunters and wildlife watchers. Urban bears continue to occupy staff time, although we are making some headway in this arena, and public education efforts continue. The

only effective way to address this issue is to involve city decision makers so the responsibility of managing bear attractants is placed on each member of the community.

As logging continues, and large tracts of previously logged habitat rapidly convert to second-growth forest, hunters will lose the visibility in these areas that early on allowed successful spotting and stalking of bears. We also anticipate reductions in Unit 1A bear numbers and fewer bears available for harvest. Research is needed to better identify and understand the dynamics of Unit 1A black bears.

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Table 1. Unit 1A black bear harvest, regulatory years 1997 through 2009.

Regulatory Year	Reported																
	Hunter kill					Nonhunting kill[a]				Estimated kill		Total estimated kill					
	M	F	Unk	Total	Baited[b]	M	F	Unk	Total	Unrep	Illegal	M	(%)	F	(%)	Unk	Total
1997																	
Fall 1997	13	3	0	16		0	1	0	1	0	0	13	(76)	4	(24)	0	17
Spring 1998	52	5	0	57		0	0	0	0	0	0	52	(91)	5	(9)	0	57
Total	65	8	0	73	1	0	1	0	1	0	0	65	(88)	9	(12)	0	74
1998																	
Fall 1998	19	11	0	30		0	0	0	0	0	0	19	(63)	11	(37)	0	30
Spring 1999	48	5	1	54		2	2	0	4	0	0	50	(88	7	(12)	1	58
Total	67	16	1	84	1	2	2	0	4	0	0	69	(79)	18	(20)	1	88
1999																	
Fall 1999	15	21	0	36		4	0	0	4	0	0	19	(48)	21	(52)	0	40
Spring 2000	54	5	0	59		1	0	0	1	0	0	55	(92)	5	(8)	0	60
Total	69	26	0	95	2	5	0	0	5	0	0	74	(74)	26	(26)	0	100
2000																	
Fall 2000	18	11	0	29		2	1	0	3	0	0	20	(63)	12	(37)	0	32
Spring 2001	57	11	0	68		1	1	0	2	0	0	58	(83)	12	(17)	0	70
Total	75	22	0	97	2	3	2	0	5	0	0	78	(76)	24	(24)	0	102
2001																	
Fall 2001	13	14	0	27	0	5	1	0	6[c]	0	0	18	(55)	15	(47)	0	34
Spring 2002	50	5	0	55	0	0	0	0	0	0	0	50	(91)	5	(9)	0	55
Total	63	19	0	82	0	5	1	0	6[d]	0	0	68	(77)	20	(22)	0	88
2002																	
Fall 2002	14	13	0	27	0	1	0	0	1	0	0	15	(54)	13	(46)	0	28
Spring 2003	40	7	0	47	0	0	0	0	0	0	0	40	(85)	7	(15)	0	47
Total	54	20	0	74	0	1	0	0	1[e]	0	0	55	(73)	20	(27)	0	75
2003																	
Fall 2003	6	7	0	13	1	2	0	0	2	0	0	8	(53)	7	(47)	0	15
Spring 2004	34	8	0	42	1	1	0	0	1	0	0	35	(81)	8	(19)	0	43
Total	40	15	0	55	2	3	0	0	3[f]	0	0	43	(74)	15	(26)	0	58
2004																	
Fall 2004	13	8	0	21	0	1	0	0	1	0	0	14	(64)	8	(36)	0	22
Spring 2005	25	5	0	30	1	2	0	0	2	0	0	27	(84)	5	(16)	0	32
Total	38	13	0	51	1	3	0	0	3	0	0	41	(76)	13	(24)	0	54
2005																	
Fall 2005	13	13	0	26	2	2	0	0	2	0	0	15	(54)	13	(46)	0	28
Spring 2006	53	8	0	61	3	1	1	0	2	0	0	54	(89)	9	(11)	0	63
Total	66	21	0	87	3	3	1	0	4	0	0	69	(76)	22	(24)	0	91

Table 1. continued.

Regulatory Year	Reported																
	Hunter kill					Nonhunting kill[a]				Estimated kill		Total estimated kill					
	M	F	Unk	Total	Baited[b]	M	F	Unk	Total	Unrep	Illegal	M	(%)	F	(%)	Unk	Total
2006																	
Fall 2006	17	8	0	25	0	0	1	0	1	0	0	17	(65)	9	(45)	0	26
Spring 2007	71	7	0	78	2	0	1	0	1	0	0	71	(90)	8	(10)	0	79
Total	88	15	0	103	2	0	2	0	2	0	0	88	(84)	17	(16)	0	105
2007																	
Fall 2007	19	8	0	27	0	5	2	0	7	0	0	24	(70)	8	(30)	0	27
Spring 2008	61	14	0	75	1	0	0	0	0	0	0	61	(81)	14	(19)	0	75
Total	80	22	0	102	1	5	2	0	7[g]	0	0	80	(78)	22	(22)	0	102
2008																	
Fall 2008	16	5	0	21	0	2	1	0	3	0	0	18	(74)	6	(26)	0	24
Spring 2009	59	5	0	64	0	1	0	0	1	0	0	60	(92)	5	(8)	0	65
Total	75	10	0	85	0	2	1	0	3[h]	0	0	77	(88)	11	(12)	0	88
2009																	
Fall 2009	12	6	0	18	0	0	0	0	0	0	0	12	(67)	6	(33)	0	18
Spring 2010	52	7	0	59	0	0	0	0	0	0	0	52	(88)	7	(12)	0	59
Total	64	13	0	77	0	0	0	0	0	0	0	64	(83)	13	(17)	0	77

[a] Includes defense of life or property kills (DLP), research mortalities, and other known human-caused mortality. Some DLP/ nuisance mortalities do not show up in Winfonet files. These are tracked in separate files in the Ketchikan office.
[b] Bears reported harvested over bait.
[c] One female bear killed by vehicle
[d] Includes 5 DLP and one killed by vehicle.
[e] Includes 1 DLP.
[f] Includes 3 DLP.
[g] Includes 6 DLP and 1 vehicle kill.
[h] Includes 2 DLP and 1 vehicle kill.

Table 2. Unit 1A successful black bear hunter effort, mean skull size, and mean age, regulatory years 1997 through 2009.

Regulatory Year	Hunter effort			Mean skull size[a] (inches)				Average age (years)			
	Total days	Nr hunters	Mean days per hunter	Male	n[b]	Female	n[b]	Male	n	Female	n
1997–1998											
Fall 1997	47	17	2.8	17.2	12	15.6	4				
Spring 1998	139	56	2.5	17.9	52	15.9	3				
Total/ $\bar{x}$	186	73	2.5	$\bar{x}$ =17.8	64	$\bar{x}$ =15.7	7	$\bar{x}$ =9.0	65	$\bar{x}$ =10.0	8
1998–1999											
Fall 1998	62	30	2.1	17.1	19	16.3	11				
Spring 1999	172	54	3.2	17.9	50	15.1	7				
Total/ $\bar{x}$	234	84	2.8	$\bar{x}$ =17.7	69	$\bar{x}$ =15.8	18	$\bar{x}$ =7.8	64	$\bar{x}$ =10.0	16
1999–2000											
Fall 1999	71	37	1.9	17.5	15	16.0	21				
Spring 2000	154	58	2.7	18.1	54	16.6	5				
Total/ $\bar{x}$	225	95	2.3	$\bar{x}$ =17.9	69	$\bar{x}$ =16.1	26	$\bar{x}$ =8.1	69	$\bar{x}$ =9.9	26
2000–2001											
Fall 2000	64	29	2.2	17.7	18	15.8	11				
Spring 2001	201	66	3.0	18.5	53	16.0	10				
Total/ $\bar{x}$	265	85	3.1	$\bar{x}$ =18.3	71	$\bar{x}$ =15.9	21	$\bar{x}$ =9.0	72	$\bar{x}$ =9.8	24
2001-2002											
Fall 2001	57	25	2.3	18.9	9	16.1	11	10.0	9	11.9	12
Spring 2002	135	53	2.6	18.1	50	16.0	5	9.5	46	9.8	5
Total/ $\bar{x}$	192	78	2.7	$\bar{x}$ =18.5	59	$\bar{x}$ =16.1	16	$\bar{x}$ =9.8	52	$\bar{x}$ =10.9	17
2002–2003											
Fall 2002	74	26	2.9	17.7	13	16.3	13	9.7	12	10.1	11
Spring 2003	130	43	3.0	18.3	38	17.0	7	9.0	40	10.1	7
Total/ $\bar{x}$	204	69	3.0	$\bar{x}$ =18.0	51	$\bar{x}$ =16.7	20	$\bar{x}$ =9.4	52	$\bar{x}$ =10.1	18
2003–*2004*											
Fall 2003	32	14	2.3	18.4	6	16.2	8	9.8	6	5.1	8
Spring 2004	105	42	2.5	18.4	34	15.8	8	9.8	34	5.1	8
Total/ $\bar{x}$	137	56	2.4	$\bar{x}$ =18.5	59	$\bar{x}$ =16.1	16	$\bar{x}$ =9.8	55	$\bar{x}$ =10.9	17

Table 2. continued.

Regulatory Year	Hunter effort			Mean skull size[a] (inches)				Average age (years)			
	Total days	Nr hunters	Mean days per hunter	Male	*n*[b]	Female	*n*[b]	Male	*n*	Female	*n*
2004–*2005*											
Fall 2004	61	22	2.8	18.4	14	15.6	8	8.5	11	5.1	7
Spring 2005	73	30	2.4	18.9	24	16.2	4	11.6	25	11.3	4
Total/ $\bar{x}$	134	52	2.6	$\bar{x}$ =18.7	38	$\bar{x}$ =15.9	12	$\bar{x}$ =10.0	36	$\bar{x}$ =8.2	11
2005–2006											
Fall 2005	45	28	1.6	17.4	13	15.7	13	7.5	13	7.9	13
Spring 2006	162	59	2.7	18.7	52	16.5	8	10.3	51	11.1	8
Total/ $\bar{x}$	207	87	2.4	$\bar{x}$ =18.1	65	$\bar{x}$ =16.1	21	$\bar{x}$ =8.9	64	$\bar{x}$ =9.0	21
2006–2007											
Fall 2006	50	25	2.0	16.9	17	15.9	9	7.2	17	11.3	7
Spring 2007	198	78	2.5	18.5	67	16.7	7	10.7	68	15.3	14
Total/ $\bar{x}$	248	103	2.4	$\bar{x}$ =17.7	84	$\bar{x}$ =16.3	16	$\bar{x}$ =9.0	85	$\bar{x}$ =13.3	14
2007–2008											
Fall 2007	49	27	1.8	17.5	19	16.1	8	7.2	17	12.1	8
Spring 2008	228	75	3.0	18.1	60	16.4	14	9.9	58	12.4	14
Total/ $\bar{x}$	277	102	2.7	$\bar{x}$ =18.0	79	$\bar{x}$ =16.3	22	$\bar{x}$ =9.3	75	$\bar{x}$ =12.3	22
2008–2009											
Fall 2008	58	21	2.8	17.2	16	16.1	5	7.8	15	7.8	4
Spring 2009	151	64	2.4	18.1	58	16.2	5	8.1	58	12.2	5
Total/ $\bar{x}$	209	85	2.5	$\bar{x}$ =17.9	74	$\bar{x}$ =16.1	10	$\bar{x}$ =8.0	73	$\bar{x}$ =10.2	9
2009–2010											
Fall 2009	46	18	2.6	17.2	12	16.0	6	--[c]	--[c]	--[c]	--[c]
Spring 2010	151	59	2.6	18.1	52	15.8	7	10.9	51	14.3	7
Total/ $\bar{x}$	197	77	2.6	$\bar{x}$ =17.9	64	$\bar{x}$ =15.9	13	--	--	--	--

[a] Skull sizes equal length plus zygomatic width.
[b] *n* represents sample size. Not all skulls sealed can be measured.
[c] Awaiting lab results for age data at time of printing.

Table 3. Unit 1A successful black bear hunter residency, regulatory years 1997 through 2009.

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Unknown residency[b]	(%)	Total
1997–1998	38	(51)	11	(15)	24	(32)	1	(2)	74
1998–1999	51	(58)	14	(16)	19	(22)	4	(4)	88
1999–2000	48	(48)	8	(8)	39	(30)	5	(5)	100
2000–2001	45	(44)	2	(2)	50	(49)	5	(5)	102
2001–2002	41	(49)	5	(6)	36	(43)	1	(1)	83
2002–2003	28	(38)	4	(5)	42	(57)	0	(0)	74
2003–2004	25	(45)	5	(9)	25	(46)	0	(0)	55
2004–2005	21	(41)	3	(5)	28	(55)	0	(0)	52
2005–2006	39	(45)	2	(2)	46	(53)	0	(0)	87
2006–2007	50	(49)	3	(3)	50	(48)	0	(0)	103
2007–2008	43	(39)	4	(4)	55	(50)	7	(6)	109
2008–2009	46	(51)	7	(8)	35	(38)	3	(3)	91
2009–2010	42	(55)	1	(1)	34	(44)	0	(0)	77
Average	40	(47)	5	(6)	37	(44)	2	(2)	84

[a] Local hunters are those hunters that reside in Unit 1A.
[b] Includes DLP kills, research mortalities, and other known human-caused mortality.

Table 4. Unit 1A black bear harvest chronology by month[a], regulatory years 1997 through 2009.

Regulatory Year	Month												
	Sep	(%)	Oct	(%)	Nov	(%)	Apr	(%)	May	(%)	Jun	(%)	*n*
1997–1998	10[b]	(14)	7	(9)	0	(0)	11	(15)	43	(58)	3	(4)	74
1998–1999	26	(30)	4	(4)	0	(0)	3	(3)	35[b]	(40)	20[c]	(23)	88
1999–2000	21	(21)	14[b]	(14)	1	(1)	4	(4)	46	(46)	10[b]	(10)	96
2000–2001	22	(22)	7	(7)	1[b]	(1)	8[b]	(8)	42	(43)	19	(19)	99
2001–2002	26	(29)	6	(7)	0	(0)	0	(0)	37	(42)	19	(21)	88
2002–2003	24	(32)	4	(5)	7	(0)	0	(0)	25	(33)	21	(28)	81
2003–2004	13	(24)	1	(1)	0	(0)	0	(0)	34	(61)	9	(16)	57
2004–2005	17[b]	(33)	4	(8)	0	(0)	1	(2)	24	(47)	5	(10)	51
2005–2006	23	(26)	3	(3)	0	(0)	2	(2)	39	(45)	21	(24)	88
2006–2007	22[b]	(22)	2	(2)	1	(1)	1	(1)	55	(53)	22[b]	(21)	103
2007–2008	23	(23)	1	(1)	1	(1)	3	(3)	55	(56)	17	(17)	99
2008–2009	20	(23)	1	(1)	1[b]	(1)	6	(7)	43[d]	(49)	16	(18)	87
2009–2010	16	(21)	2	(3)	0	(1)	2	(3)	44	(57)	13	(17)	77
Average	20	(24)	4	(5)	1	(1)	3	(4)	41	(49)	15	(18)	84

[a] Does not include bears killed during closed season.
[b] Includes 1 DLP.
[c] Includes 3 DLPs.
[d] Includes 1 illegal kill.

Table 5. Unit 1A black bear harvest[a] by Wildlife Analysis Area (WAA), regulatory years 1997–2009.

WAA	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0101			1	1		1	1	2	1		4	5	2
0303					1			2	2		1		
0404	1	4	6	8	5	6	3	1			8	3	3
0405		2	4		1	1		9	18	10	1	3	5
0406	20	25	22	22	11	12	8	8	12	13	20	17	18
0407	5	13	15	12	13	15	7			6	9	7	8
0408		8	5	7	16	4	4	4	7	3	9	4	1
0509	3	1	4	4	1	1	4	4	7	3	4	6	4
0510	12	12	10	13	15	11	10	9	25	10	29	12	11
0511	1	1			1		4	1			1		
0612			1		1	1						1	
0613	1	3		3	2	2	1		1	2	5	6	2
0614		1	1				1			1			
0715	2	3		3	1		1		2	5	2	4	3
0716		2		1	1			1	3	2	1	2	1
0717		1	2			2					1	2	1
0718													
0719	1		2	2		1	1			1	1		1
0820	4		2	4	1	2	4	3	2	2	1	1	1
0822	12	2	18	14	19	13	2	7	13	20	8	12	9
0823	8	5	2	2		1	3						
0824	1		4	3		3	1	2	1	6	2	5	2
0825		1		1			2				1		
0826	2	1	1	1				1			1		3
1209		1											
1210		1											
1319		1											
1526	1												

[a] Includes DLP and road kills.

Table 6. Unit 1A black bear harvest percent by transport method, regulatory years 1997 through 2009.

Regulatory Year	Transport												
	Air	(%)	Boat	(%)	Highway vehicle	(%)	Walk	(%)	Other[a]	(%)	Unk[b]	(%)	*n*
1997–1998	4	(6)	61	(82)	5	(7)	3	(4)	0	(0)	1	(1)	74
1998–1999	0	(0)	66	(75)	11	(12)	7	(8)	0	(0)	4	(5)	88
1999–2000	4	(4)	79	(79)	5	(5)	5	(5)	2	(2)	5	(5)	100
2000–2001	0	(0)	86	(84)	6	(6)	2	(2)	2	(2)	6	(6)	102
2001–2002	7	(8)	73	(82)	2	(2)	0	(0)	0	(0)	7	(8)	89
2002–2003	0	(0)	73	(97)	0	(0)	1	(1)	0	(0)	1	(1)	75
2003–2004	1	(1)	51	(88)	0	(0)	3	(5)	0	(0)	3	(6)	58
2004–2005	0	(0)	48	(95)	2	(4)	1	(1)	0	(0)	0	(0)	51
2005–2006	0	(0)	80	(94)	5	(6)	0	(0)	0	(0)	0	(0)	85
2006–2007	0	(0)	88	(88)	12	(12)	0	(0)	0	(0)	0	(0)	100
2007-2008	0	(0)	89	(87)	8	(8)	4	(4)	1	(1)	7	(6)	109
2008-2009	0	(0)	82	(93)	3	(3)	3	(3)	0	(0)	3	(3)	91
2009-2010	3	(4)	63	(82)	9	(12)	2	(3)	0	(0)	0	(0)	77
Average	1	(2)	72	(85)	5	(6)	2	(2)	0	(0)	3	(4)	85

[a] Includes 3- or 4-wheelers or other ORV.

[b] Includes DLP and vehicle collisions.

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: Unit 1B (3,000 mi^2)

GEOGRAPHIC DESCRIPTION: Southeast Alaska mainland, Cape Fanshaw to Lemesurier Point.

BACKGROUND

HABITAT DESCRIPTION

Most high quality black bear habitat in Unit 1B is confined to a relatively narrow band of forested landscape between saltwater and the coastal mountains. A large portion of the unit encompasses high elevation peaks and ice fields. The Alaska Department of Fish and Game (ADF&G) has estimated that of the 3,000 square miles in Unit 1B, only about 850 square miles are forested habitat. A few large river valleys, such as the Farragut, Stikine, Bradfield, Harding, Eagle, and Thomas Bay drainages, support salmon and other anadromous fish. The Anan Creek drainage also supports large, accessible salmon runs and attracts many bears, as well as humans who view them. Portions of the unit have been logged and have clearcuts in various stages of seral habitats and some logging roads.

Small openings and disturbed areas, such as wetlands, avalanche chutes, clearcuts, and subalpine meadows, are important black bear foraging areas. Black bear diets may range from mostly vegetarian to mostly carnivorous, and the species may subsist by scavenging or by predation on large and small mammals or fish. In Unit 1B, black bears primarily eat vegetation during early spring. Major foods include grasses and sedges, *Equisetum* spp., and berries that have persisted through the winter. Later in spring, black bears may be efficient predators of moose calves and/or Sitka black-tailed deer fawns. During summer and fall, when bears accumulate fat reserves for winter hibernation, those bears with access to salmon streams eat large quantities of fish. Berries are also important during the summer and fall months. Poor fish runs or berry crops are thought to result in low cub production and survival the following spring. In most areas of the mainland, black bears share habitats with brown bears.

Over 16,000 acres of forested habitat in Unit 1B have been logged to date. As a result, timber harvest poses the most serious threat to black bear habitat in the unit over the long term. Black bears appear able to exploit increases in forage in early-successional plant communities immediately after logging and may temporarily benefit from clearcutting. However, this food source is lost approximately 20–25 years post logging with canopy closure, and second-growth forests provide little habitat for bears. Pre-commercial thinning and pruning of second-growth

stands can extend the short-term benefits to bears, but the long-term effects of logging will be detrimental.

HUMAN USE HISTORY

Black bears are indigenous to Unit 1B and have traditionally been hunted for food and trophies. Information about black bears in the unit is limited to sealing records, anecdotal public reports, and observations by our staff. Although we lack quantitative demographic information on black bears in the unit, we believe the population is stable.

Regulatory history

Statewide sealing of black bears began in 1973. Prior to 2009, hunters were not required to obtain a hunt registration permit or harvest ticket for black bear; thus, effort data for unsuccessful hunters had previously been unavailable and information on hunt effort was available only for successful hunters. At its Region I meeting in Nov 2008 the Board of Game passed a regulation requiring black bear hunters in Units 1–7, 11–17, 19D and 20 to obtain a black bear harvest ticket prior to hunting.

For most years since statehood the black bear hunting season extended from 1 September through 30 June with a resident bag limit of 2 bears annually, only 1 of which could be a blue or glacier bear. From 1980 through 1983 the season closed on 15 June and the bag limit for residents and nonresidents was only 1 bear. In 1984, the limit increased to 2 bears. In 1990, the nonresident bag limit was reduced from 2 bears to 1 per year.

In 1982 it became legal to use bait to hunt black bears year-round. In 1988 the Board of Game limited baiting in Southeast Alaska to the spring period 15 April–15 June.

The use of dogs for hunting black bears has been allowed since 1966. Hunting with dogs requires a permit issued by ADF&G. No permit requests to hunt bears with dogs have been received for the unit.

Since 1996, hunters have been required to salvage the edible meat of all black bears killed in Southeast Alaska during the period 1 January–31 May.

Because it was concerned about wounding loss, the Board of Game at its Region I meeting in November 2004 passed a regulation requiring a wounded black or brown bear to count against the bag limit of the hunter for the regulatory year.

Historical harvest patterns

Because of difficult access to most areas and a low human population, the annual harvest in the unit has remained relatively stable at low levels, averaging 8 bears per year from 1973 to 1979, 15 bears per year in the 1980s, 17 bears per year in the 1990s and 17 bears per year from 2000 to 2009. The 30 bears killed during the 2001–2002 regulatory year represent the highest recorded annual harvest. Although there is no clear explanation for this harvest spike, there was a relatively high take by guided nonresident hunters (57%) and local resident hunters (16%) that year, but we do not know if total hunter effort was higher than normal. Approximately 70–100% of the annual harvest occurs during the spring season. Since 1973, males have outnumbered females in the harvest by about 7 to 1. Beginning in 1993, the nonresident harvest began to

exceed the resident harvest, with nonresidents accounting for 68% of the harvest since 1995. Most nonresidents hunt with a guide in the unit. Nonresident hunters must purchase a tag to affix to each bear harvested. The cost of these tags ($225 for nonresidents and $300 for nonresident aliens) may limit the number of nonresident hunters who pursue black bears. Nonresidents willing to purchase a tag are more likely to hunt the adjacent Unit 3 islands, which are better known for producing trophy-sized bears.

Historical harvest locations

From 1973 to 2009 black bear harvest was documented in 15 Wildlife Analysis Areas (WAAs) in Unit 1B. These include WAAs in the Cape Fanshaw, Farragut Bay, Thomas Bay, LeConte Bay, Stikine River, Eastern Passage, Bradfield Canal, Frosty Bay, and Cleveland Peninsula areas. WAA 1603, the Dry Bay/Thomas Bay area, accounted for a disproportionately high percentage (20%) of the total harvest. Proximity to and accessibility from the communities of Petersburg and Wrangell probably influence harvest areas. Most harvest areas are associated with river drainages that support anadromous fish runs. Roads associated with logging at Thomas Bay and the Bradfield River valley provide easy access for hunters previously restricted to airplanes or boats.

Anan Creek management

Anan Creek, on the upper Cleveland Peninsula, has long been a popular black bear viewing area. Since statehood, the Anan Creek drainage has been closed to black bear hunting. In October 1996, the Board of Game changed the boundaries of the Anan Creek Closed Area. Effective July 1, 1997, the Anan Creek drainage within 1 mile of Anan Creek downstream from the mouth of Anan Lake, including the area within a 1-mile radius from the mouth of Anan Creek Lagoon, was closed to taking black and brown bear. The rationale for this regulatory change was a desire to protect bears that had become vulnerable to harvest due to human habituation as a result of bear viewing at Anan Creek.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain an average spring skull size and an average annual male skull size of at least 17.5 inches.
- Maintain a male to female ratio of 3:1 in the harvest.

We have been using skull size as a management objective since the late 1980s because we believe that year-to-year trends in average skull size may indicate changes in population size and composition and provide some measure of the sustainability of harvest levels. A decreasing average skull size may indicate a decline in that segment of the population composed of large, older bears and could indicate an overall population decline. However, an increasing average skull size could also indicate a reduction in the proportion of younger bears in the population. Probably the most appropriate use of skull size data at this time is as an indicator of some change in the population or in hunter effort. We do not have a technique to tell us precisely what such a change might indicate, but we use it in conjunction with other data to make our best assessment of the current population.

Age, genetics, and environmental factors such as habitat and forage quality all combine to influence black bear skull size. Sealing records and anecdotal evidence indicate that mature mainland black bears generally have smaller skull sizes compared to those found on Southeast Alaska islands. The skull size management objective of 17.5 inches was established after analysis of previous years' data showed this to be the long-term average. We wanted to maintain skull size in the harvest at the long-term high, and we have looked at any reduction in this mean as a possible indication of changes in the population's age structure.

METHODS

Staff of the Alaska departments of Fish and Game and Public Safety and state-appointed sealing agents sealed hides and skulls of black bears. Hunters are required to submit bear skulls and hides for sealing within 30 days of the kill. Biological and hunt information collected included pelage color, sex, skull size (length and width), date and location of kill, number of days hunted, transportation method, guide use, and hunter use of commercial services. A premolar was collected from most bears and sent to Matson's Laboratory (Milltown, Montana) for age determination. We also seal any bear that is killed under defense of life or property (DLP) provisions, as a road kill, an illegal kill, or during research efforts. During this report period, tissue samples were opportunistically collected from some bears harvested in the unit for DNA and stable isotope analysis. Comparison of current and historical data indicates harvest trends and may offer indirect evidence of population trends.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population estimates are not currently available for black bears in this unit. Information obtained during sealing cannot be used to measure population trends. Although harvest information gained from sealing records, such as average skull sizes, average ages, and sex ratios, may provide some indication of black bear population trends, in the absence of accompanying demographic data, correlations between these measures and harvest sustainability will continue to elude us. Research is needed to identify population parameters so we might better assess population trends and harvest sustainability.

Population Size

No black bear population studies have been conducted in Unit 1B. Estimates of population size or density are difficult to obtain, as the species generally inhabits forested areas, and aerial surveys are impossible. The vast, remote areas in the unit also make studies difficult and expensive to undertake. Black bear density estimates for Unit 1B are based on studies in similar habitats in western Washington State in the 1960s. We believe minimum densities in mainland Southeast Alaska are slightly higher than the 1.4 bears per square mile found in the Washington study (Poelker and Hartwell 1973). Assuming a density of approximately 1.5 bears per square mile of forested habitat, ADF&G estimated 1,230 black bears in Unit 1B in 1990. Densities of black bears are probably similar in Unit 1B to other Southeast Alaska mainland areas.

Black bears with cinnamon-colored pelage occur primarily in a few isolated pockets in Unit 1B. A relatively small proportion of bears taken by hunters from the Farragut Bay, Stikine River, and

Eastern Passage areas have cinnamon pelage. Although there are a few unverified reports of glacier bear sightings in the unit, no glacier bears have been noted in the harvest. No Kermode bears (those with white pelage) have been reported in the unit.

Population Composition

We lack quantitative information with which to estimate the sex and age composition of the Unit 1B black bear population. The male-to-female ratio in the harvest may provide a better indicator of harvest sustainability and population status than does average skull size. Considering their high reproductive potential, survival of breeding females is critical to sustained yield management. Prolonged overharvest of females is likely to result in population declines. A decreasing trend in the male-to-female harvest ratio could signal a decline in that segment of the population composed of older, larger males. Region I staff established the 3:1 male-to-female guideline in the late 1980s, based on studies conducted on black bears elsewhere.

Distribution and Movements

Black bears are thought to be evenly distributed throughout the forested habitats in Unit 1B. Unlike black bears on most Southeast Alaska islands, Unit 1B black bears share mainland habitat with brown bears. Quantitative information about home ranges and movement patterns of Unit 1B black bears is not available.

The only quantitative information on black bear movement patterns in Southeast Alaska comes from a single denning study conducted on Mitkof Island in Unit 3 during 1980–1981 (Erickson et al. 1982). Black bear movement patterns are influenced to a large degree by seasonal changes and annual differences in the occurrence, abundance, and quality of preferred food items. Reproductive activities also influence bear movement patterns, particularly for males. As a result, males typically have larger home ranges than do females.

Black bears typically emerge from winter dens in March and April. Following emergence from dens, bears typically occupy low elevation habitats, where they feed on greening vegetation. As spring proceeds into summer, bears typically disperse throughout forested and alpine habitats, where they continue to feed on grasses, sedges, forbs, and berry-producing shrubs. In the late summer and early fall bears typically congregate near anadromous fish streams, where they feed on spawning salmon. As fish runs decline in the late summer and fall, bears disperse from salmon streams and feed primarily on berries and alpine vegetation before denning again in October and November.

MORTALITY

Harvest

Season	Bag Limit
1 Sep–30 Jun	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear
1 Sep–30 Jun	Nonresident hunters: 1 bear

Board of Game Action and Emergency Orders. At its Region I meeting in Nov 2008, the Board of Game passed a regulation requiring black bear hunters in Units 1–7, 11–17, 19D and 20 to obtain a black bear harvest ticket prior to hunting.

No emergency orders pertaining to black bears in Unit 1B were issued during this report period.

Hunter Harvest. The Unit 1B black bear harvest has remained relatively stable at low levels since about 1980.The level of harvest during the most recent 5-year period decreased slightly (7%) from the preceding 5-year period. Hunter harvest in Unit 1B ranged from 15 to 22 bears annually during this report period and during 2 of the 3 years was above the preceding 10 year average harvest of 16 bears annually (Table 1).

Males made up 100%, 82%, and 87% of the kill in regulatory years 2007, 2008, and 2009, respectively. During this report period the average male skull size ranged from 18.2 to 18.7 inches, well above the management objective of 17.5 inches, during all 3 years (Table 2). The male-to-female harvest ratio during this report period was 8:1, well above the management goal of 3:1.

Hunter Residency and Success. Although the ratio varies annually, during this report period nonresident hunters took approximately 66% of the total harvest, local residents took about 25%, and nonlocal Alaska hunters took 9% of the bears harvested in the unit (Table 4). The percentage of the overall harvest taken by local residents and nonresidents decreased during this report period, while that of nonlocal residents increased.

Harvest Chronology. All of the black bears harvested during the report period were taken during the spring season, with 82–87% of bears killed in May (Table 5).

Harvest in Particular Areas (WAAs). During this report period black bear harvest occurred in 13 WAAs in Unit 1B. These include WAAs in the Cape Fanshaw, Farragut Bay, Dry Bay, Thomas Bay, Brown Cove, LeConte Bay, Stikine River, Eastern Passage, Blake Channel, Bradfield Canal, and Cleveland Peninsula areas. WAAs in the Farragut Bay, Bradfield Canal, Dry Bay and Thomas Bay areas produce 59 percent of the unitwide harvest. WAA 1603, the Dry Bay/Thomas Bay area, once again accounted for a disproportionately high percentage (25%) of the unitwide harvest.

Bait Stations. In 2008 one local resident obtained a permit to operate a bait station in the unit, and one bear was taken over bait.

Hunting with Dogs. No permit requests have been made to hunt bears with dogs in the unit.

Guided Hunter Harvest. Over the last ten years, the percentage of the unitwide harvest taken by guided nonresidents has averaged 42%. During the most recent 5-year period, guided hunters accounted for 27% of the unit wide harvest, compared to 53% during the preceding *5*-year period. During this report period 39% of the successful nonresident hunters used a guide, while 31% used commercial services, such as boat rental, for transportation to and from the field.

Transport Methods. During the report period, all but one successful hunter reported using a boat to access black bear hunting areas. The one exception walked to his hunting area, (Table 6).

There are no communities in Unit 1B, and with the exception of Thomas Bay and Bradfield Canal, there are very few roads.

Other Mortality

There were no reports of non-hunting mortality in Unit 1B during the report period (Table 1). No DLPs or illegal harvests were reported. Nonetheless, we continue to receive unconfirmed reports of bears being shot and left in the field by individuals believing that bears are detrimental to deer and moose populations. While possibly significant, no information is currently available on the amount of wounding loss that occurs in the unit.

HABITAT

Assessment

Timber harvest continues to pose the most serious threat to black bear habitat in the unit. Post logging increases in berry production, primarily *Vaccinium* sp., may contribute to short-term bear population growth. This forage source will be lost as the canopy closes, as will habitat diversity associated with old-growth forests, accompanied by a loss of denning trees. The long-term effects of logging will be detrimental to black bears. Roads associated with logging increase human access and can make bears increasingly vulnerable to harvest.

Enhancement

No habitat enhancement projects specifically intended to benefit black bears have been attempted in the unit. Although primarily intended as a silvicultural practice, habitat manipulation in the form of pre-commercial thinning and pruning has been performed in some young second-growth stands in the Thomas Bay area. This effort provides a secondary benefit to wildlife by reducing canopy cover, permitting sunlight to reach the forest floor, and increasing the production and availability of understory forage plants and berries. These benefits are relatively short-lived, approximately 20–25 years, after which canopy closure again results in loss of understory vegetation. In the absence of additional thinning the long-term effects of clearcut logging will be detrimental to black bear populations.

NONREGULATORY MANAGEMENT PROBLEMS AND NEEDS

Nuisance Bear Problems. Although small settlements exist on the Point Agassiz Peninsula and on Farm Island, there are no established communities on the Unit 1B mainland. We have, however, received occasional reports of bears breaking into cabins and campers in the Thomas Bay area.

CONCLUSIONS AND RECOMMENDATIONS

In recent years, declining black bear harvests across much of the region have given rise to concerns about potential overharvest. The Unit 1B black bear harvest, however, has remained relatively stable at low levels. Although the harvest level during the most recent 5-year period decreased 7% from that of the preceding 5-year period, hunter harvest ranged from 15 to 22 bears annually during this report period and during 2 of the 3 years was above the preceding 10 year average of 16 bears annually. Prior to 2009 there was no mandatory hunt reporting requirement for unsuccessful black bear hunters. In the absence of information from this group of hunters we were unable to evaluate whether the unusually low harvests in 2003 and 2005 were

simply the result of reduced effort or low hunter success, or if they resulted from environmental factors such as atypical winter or spring weather conditions.

In order to ensure that black bears are managed on a sustained yield basis, research is needed to estimate the black bear population in the unit. Research is also needed to identify possible correlations between sealing data and population trends. A better understanding of the short- and long-term impacts of clearcut logging on black bear populations is also needed. The percentage of males in the harvest and average male skull size were well above the management objectives during this 3-year period and indicate that black bear populations are stable in Unit 1B. No management or regulatory changes are recommended at this time. Timber harvest continues to pose the most serious threat to black bear habitat in the unit. Roads associated with logging increase human access and can make bears increasingly vulnerable to harvest. The long-term effects of logging will be detrimental to black bears.

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Table 1. Unit 1B black bear harvest, 1999–2009.

Regulatory Year	Hunter kill						Nonhunting kill [a]			Total estimated kill					
	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	(%)	F	(%)	Unk.	Total
Fall 99	4	0	0	0	4	NA	0	0	0	4	100	0	0	0	4
Spring 00	8	1	11	0	9	0	0	0	0	8	89	1	11	0	9
Total	12	1	8	0	13	0	0	0	0	12	92	1	8	0	13
Fall 00	4	1	20	0	5	NA	0	0	0	4	80	1	20	0	5
Spring 01	16	1	6	0	17	0	0	0	0	16	94	1	6	0	17
Total	20	2	10	0	22	0	0	0	0	20	91	2	9	0	22
Fall 01	5	2	29	0	7	NA	0	0	0	5	71	2	29	0	7
Spring 02	19	4	17	0	23	0	0	0	0	19	83	4	17	0	23
Total	24	6	20	0	30	0	0	0	0	24	80	6	20	0	30
Fall 02	2	1	33	0	3	NA	0	0	0	2	67	1	33	0	3
Spring 03	13	2	13	0	15	0	0	0	0	13	87	2	13	0	15
Total	15	3	17	0	18	0	0	0	0	15	83	3	17	0	18
Fall 03	1	0	0	0	1	NA	0	0	0	1	100	0	0	0	1
Spring 04	6	0	0	0	6	0	0	0	0	6	100	0	0	0	6
Total	7	0	0	0	7	0	0	0	0	7	100	0	0	0	7
Fall 04	1	1	50	0	2	NA	0	0	0	1	50	1	50	0	2
Spring 05	8	1	11	0	9	0	0	0	0	8	89	1	11	0	9
Total	9	2	18	0	11	0	0	0	0	9	82	2	18	0	11
Fall 05	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	0
Spring 06	7	1	13	0	8	0	0	0	0	7	88	1	13	0	8
Total	7	1	13	0	8	0	0	0	0	7	88	1	13	0	8
Fall 06	1	0	0	0	1	NA	0	0	0	1	100	0	0	0	1
Spring 07	17	0	0	0	17	0	0	0	0	17	100	0	0	0	17
Total	18	0	0	0	18	0	0	0	0	18	100	0	0	0	18
Fall 07	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	0
Spring 08	19	0	0	0	19	0	0	0	0	19	100	0	0	0	19
Total	19	0	0	0	19	0	0	0	0	19	100	0	0	0	19

Fall 08	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	0
Spring 09	18	4	18	0	22	1	0	0	0	18	82	4	18	0	22
Total	18	4	18	0	22	1	0	0	0	18	82	4	18	0	22
Fall 09	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	0
Spring 10	13	2	13	0	15	0	0	0	0	13	87	2	13	0	15
Total	13	2	13	0	15	0	0	0	0	13	87	2	13	0	15

[a] Includes DLP kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Unit 1B black bear mean skull size[a], 1995–2009.

Regulatory year	Males	*n*	Females	*n*
1995–1996	18.1	28	17.2	1
1996–1997	18.6	19	18.7	1
1997–1998	17.4	9	16.0	1
1998–1999	17.7	23	N/A	0
1999–2000	18.7	12	N/A	0
2000–2001	18.5	19	15.7	2
2001–2002	18.1	24	16.2	6
2002–2003	18.4	15	16.1	3
2003–2004	18.1	7	N/A	0
2004–2005	18.4	9	16.3	2
2005–2006	18.5	7	17.4	1
2006–2007	18.5	18	NA	0
2007–2008	18.2	19	NA	0
2008–2009	18.7	18	16.0	4
2009–2010	18.3	12	16.7	2

[a] Skull size = total length + zygomatic width in inches.

Table 3. Unit 1B harvested black bear mean age, 1999–2009.

Regulatory year	Males	*n*	Females	*N*
1999–2000	8.75	8	7	1
2000–2001	10.2	20	10.5	2
2001–2002	9.6	22	8.8	6
2002–2003	10.7	15	13.0	3
2003–2004	7.3	7	NA	0
2004–2005	9.9	9	8.0	2
2005–2006	11.6	7	28	1
2006–2007	13.1	18	NA	0
2007–2008	10.5	17	NA	0
2008–2009	10.4	18	7.5	4
2009–2010	11.2	13	16.5	2

Table 4. Unit 1B successful black bear hunter residency, 1995–2009.

Regulatory Year	Local resident [a]	(%)	Nonlocal resident	(%)	Nonresident	(%)	Total successful hunters
1995–1996	8	28	1	3	20	69	29
1996–1997	7	32	0	0	15	68	22
1997–1998	3	27	1	9	7	64	11
1998–1999	8	33	1	4	15	62	24
1999–2000	2	15	1	8	10	77	13
2000–2001	7	32	1	4	14	64	22
2001–2002	4	16	1	1	25	83	30
2002–2003	4	22	0	0	14	78	18
2003–2004	3	43	1	14	3	43	7
2004–2005	5	45	0	0	6	55	11
2005–2006	1	13	0	0	7	88	8
2006–2007	5	28	1	6	12	67	18
2007–2008	7	37	1	5	11	58	19
2008–2009	6	27	2	9	14	64	22
2009–2010	1	7	2	13	12	80	15

[a] Local residents are those that reside in Petersburg, Wrangell, or Kake.

Table 5. Unit 1B black bear harvest chronology by percent, 1995–2009.

Regulatory Year	Month						
	September	October	November	April	May	June	*n*
1995–1996	17	0	0	3	76	4	29
1996–1997	18	9	4	0	55	14	22
1997–1998	0	0	0	27	55	18	11
1998–1999	4	0	0	13	70	13	24
1999–2000	31	0	0	7	46	16	13
2000–2001	22	0	0	14	50	14	22
2001–2002	23	0	0	10	54	13	30
2002–2003	11	0	6	6	71	6	18
2003–2004	14	0	0	29	57	0	7
2004–2005	9	9	0	18	55	9	11
2005–2006	0	0	0	0	100	0	8
2006–2007	6	0	0	6	89	0	18
2007–2008	0	0	0	11	84	5	19
2008–2009	0	0	0	0	82	18	22
2009–2010	0	0	0	7	87	7	15

Table 6. Unit 1B black bear harvest in percent by transport method, 1995–2009.

Regulatory year	Airplane	Boat	Highway vehicle	Foot	Unknown	*n*
1995–1996	7	93	0	0	0	29
1996–1997	14	82	0	4	0	22
1997–1998	0	100	0	0	0	11
1998–1999	0	100	0	0	0	24
1999–2000	0	100	0	0	0	13
2000–2001	0	100	0	0	0	22
2001–2002	0	100	0	0	0	30
2002–2003	0	100	0	0	0	18
2003–2004	0	86	0	14	0	7
2004–2005	0	100	0	0	0	11
2005–2006	0	100	0	0	0	8
2006–2007	0	100	0	0	0	18
2007–2008	0	95	0	5	0	19
2008–2009	0	100	0	0	0	22
2009–2010	0	100	0	0	0	15

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 1C (7,600 mi^2)

GEOGRAPHICAL DESCRIPTION: The Southeast Alaska mainland and the islands of Lynn Canal and Stephens Passage lying between Cape Fanshaw and the latitude of Eldred Rock, including Sullivan Island and the drainages of Berners Bay.

BACKGROUND

HABITAT DESCRIPTION

Most high-quality Unit 1C black bear habitat is confined to a relatively narrow band of forest between saltwater and the coastal mountains. A large portion of the unit encompasses high elevation peaks and ice fields. A few large river valleys, such as the Taku, Speel, Endicott, Chuck, Port Houghton, and Berners Bay, have streams that support salmon and other anadromous fish. Portions of the unit have been logged and contain clearcuts that are in various seral stages. As elsewhere in Southeast Alaska, habitat changes continue to occur from clearcut logging. Although early successional stages (3–20 years post logging) provide black bears with an abundance of forage, later stages result in the disappearance of understory plant species as conifer canopies close and light does not penetrate to the forest floor. Second-growth stands also lack large hollow trees and root masses that are used for dens. Therefore, although logging may result in an increase in black bear forage in the short term, the long-term result of logging will be a decline in bear numbers due to the disappearance of a productive understory (Suring et al. 1988). The Alaska Department of Fish and Game (ADF&G) has estimated approximately 1,300 square miles of forested habitat in Unit 1C with approximately 38–50 mi^2 having been logged by clearcutting. These logging operations occurred from the time of World War II in Excursion Inlet to 1999 near Echo Cove.

Unit 1C black bears primarily eat vegetation during early spring, although they likely prey on moose calves and Sitka black-tailed deer fawns where available. Important foraging areas are beach lines, estuaries, wetlands, small forest openings, subalpine meadows, and disturbed areas such as avalanche chutes, and clearcuts. Major vegetative foods include grasses and sedges, skunk cabbage, devil's club, horsetail, and berries that have persisted through the winter. During summer and fall bears accumulate fat for hibernation and their diets may change from mostly vegetative to largely fish for individuals with access to salmon streams. Berries are also important during summer and fall. Poor fish runs or berry crops are thought to result in low cub production and survival in the following spring because of low energy reserves prior to den-up.

Mainland black bears share ranges with brown bears, especially in major river valleys such as the Taku River, and Berners Bay. Brown bears are rare to nonexistent on the Unit 1C islands and are seen only occasionally in the immediate Juneau area.

Bear habitat near Juneau is currently affected by one significant human related factor, human garbage. Although bears are numerous locally due to productive natural habitat, the availability of garbage as an attractive alternative or additional food source promotes high bear densities. With restrictions against firearms discharge within the city and borough of Juneau (CBJ), these urban areas provide a "refuge," where bears are not subjected to hunter harvest. This absence of a harvest, along with the high human density in the area, ensures a high level of conflict with bears.

HUMAN USE HISTORY

Black bears have been hunted for many years in Unit 1C, although harvest information was not collected until 1973 when sealing was first required. Since then, all successful hunters have been required to take hides and skulls to a sealing agent, allowing ADF&G to acquire information on harvested bears and hunter effort. Hunting effort information for unsuccessful hunters is not available before 2009, and it will take a year or two to ensure all black bear hunters are aware of the requirement and have tickets prior to hunting. As in past reports, we have information for successful hunts, and now, limited information for unsuccessful hunters.

Regulatory history

For most years since statehood the black bear hunting season has been from 1 September through 15 June or 30 June, and the bag limit for residents has been 1–3 bears annually, only 1 of which could be a blue or glacier bear. Since 1990, the bag limit for residents has been 2 bears (not more than 1 glacier bear) and for nonresidents, 1 bear per year.

Historical harvest patterns

The harvest percentage by residency status did not change significantly through the 1990s. Beginning in the early 2000s, the resident black bear harvest began to decline, and the nonresident harvest began to increase. Resident hunters historically accounted for 60–70% of the annual harvest. Approximately half of nonresidents hunt without a guide in the unit. Nonresident hunters must purchase tags to affix to each bear harvested. The fact that black bear hunting opportunities exist in most other states, along with the cost of these tags ($225 for nonresident citizens and $300 for nonresident aliens), probably reduces the number of nonresidents who hunt black bears in Unit 1C.

The Unit 1C annual harvest has risen steadily over the past 40 years, with a mean of 47 in the 1970s, 73 in the 1980s, and 96 bears in the 1990s. The annual harvest peaked in 2000 at 152 bears. Approximately 80% of the harvest has occurred in the spring season, with males outnumbering females in the harvest about 3 to 1. There are differences, though slight, in the sex ratio of the harvest in spring vs. fall, with the fall harvest having a higher percent of female bears. This is probably due to females with yearlings rejecting them by the fall season, thereby being alone and legal for harvest.

Historical harvest locations

The black bear harvest in Unit 1C is fairly well distributed. The areas with the most harvest are the west side of Lynn Canal and the area south of the Taku River (Table 1). WAA 2304 is the St. James Bay area that attracts mostly local residents of Unit 1C. It contains several good anchorages for boaters, and the estuary provides bear hunters with ample opportunity to spot and stalk bears. WAAs 2305 and 2306 are at the southern end of the Chilkat Range and have been partially logged. The road system in this area provides opportunities for hunters to use ATVs to hunt bears. This is a very popular area for Hoonah residents because of its proximity to their community, and because it is the nearest area to Hoonah where black bears are present. WAAs 2823–2927 (Table 6) are located between Snettisham and Cape Fanshaw in the southern portion of the subunit. Nonresidents who are on combination hunts for brown and black bears harvest many of the bears taken in this area. A typical hunt begins in Unit 4 for brown bears, and then finishes in this area for black bears.

URBAN BEAR MANAGEMENT

The tendency for black bears to take advantage of human food or garbage as alternative foods has been one of the greatest management problem regarding black bears within this unit. Bears that have become conditioned to human food are difficult to discourage, and it has often been necessary to move or destroy such animals. Despite enforcement and public education efforts, the number of bear–human conflicts and resulting complaints to ADF&G and public safety agencies required a significant expenditure of effort and resources. Studies to determine the usefulness of aversive conditioning to discourage bears were conducted in 1989 and 1990, but little success was seen with garbage-conditioned bears, and intensive and repeated treatment of bears was not practical (McCarthy and Seavoy 1992).

Along with the sporadic killing of urban bears, Douglas area staff also trapped and moved bears in spite of the general ADF&G policy to not move bears (ADF&G 1990). In many cases a combination of public sentiment and staff incentive made moving bears a less onerous option than destroying them, especially after a single incident for an animal. In some cases bears were simply hauled to the end of the Juneau road system, while at other times they were transported to a more remote mainland location by boat. As one would expect, translocation of bears is not overly effective, as many problem animals returned to former urban neighborhoods and habits, and moving bears is expensive in terms of transportation costs and staff time. However, a small number of the black bears moved from downtown Juneau remained in remote areas where they were released.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain a mean annual male skull size (length plus width) of at least 17.5 inches.
- Maintain a 3:1 male to female ratio in the harvest.

It is difficult to obtain direct population information on black bears (such as aerial surveys for population size and composition), so we collect sealing data (from harvested bears) as an indirect method of monitoring the populations. Skull measurements and sex ratios are indices we have historically used in this effort. Hunters will generally select the largest bear they encounter on a

hunt, and these large bears tend to be males. If the availability of larger male bears decreases, then hunters are likely to shoot smaller bears, male and female.

The 3:1 male to female objective in the harvest was arrived at by consensus among ADF&G biologists as a means to manage the harvest in a conservative manner. The reasoning is that there is a 50:50 sex ratio at birth, and ½ of the breeding-age sows are legal for harvest each year (sows with cubs are protected). Because of the relative low productivity of black bears, it is imperative to protect the female portion of the population as much as possible. By monitoring the female portion of the harvest, we can also gain insight into the availability of male bears in the population.

The objective of maintaining a 17.5-inch mean male skull size is based on the long-term average for male bears harvested in Unit 1C. If skull size or age of harvested bears changes over time significantly, this could be an indication that the population parameters have changed. If the mean skull size declines, this may mean that availability of larger bears has declined as well.

As black bear managers, we use the above indices as trend indicators more than decision trigger points. We continually look for ways to interpret these data in a meaningful manner, and measures such as hunter effort and guided hunters vs. unguided hunters can affect the size and sex of bears harvested. Harvest data, collected during sealing, may or may not reflect any real changes in the population as a whole. Management biologists take these variables into consideration when interpreting the above indices, as well as changes to habitat, weather, and access patterns. We stress that skull size and age of harvested bears is at best a general, indirect measure of what is happening with a portion of the population. Whether these indices can measure real changes to populations and can be of management use has not yet been demonstrated.

There was much discussion about black bear management and management objectives in Region 1 during this report period, focusing on the decreasing harvest in several areas of Region I, and the changing successful hunter demographics (resident vs. nonresident). Harvested bears are not representative of the population as a whole, but rather a measure of hunter selectivity. Thus, hunter demographics and selectivity may have more to do with changes in skull size and age than do changes in the population structure. Also, several scenarios could lead to changes in these indices, and without population information we have no way of determining what is causing the change. If the average skull size or age of bears declines, this could be because fewer older bears are available, or because the bear population is productive and younger bears are more prevalent and more likely to be taken. Based on Sterling Miller's work (Miller and Miller 1990), skull size and age are not sensitive enough to show changes in a population until major changes have already taken place. Therefore, managers need to be careful when interpreting the meaning behind any changes in skull size and age data.

METHODS

Staff of the departments of fish and game and public safety sealed black bear hides and skulls taken by successful hunters. Hunters were legally required to seal bears within 30 days of the date of kill. Biological and hunt information collected at the time of sealing included pelage color, sex, skull size (length and width), date and location of kill, number of days hunted, transportation method, and use of commercial services, including guides. We checked all bears

for tattoos or ear tags, an indication that ADF&G personnel captured the bear previously. We collected a premolar from each bear and sent it to Matson's Laboratory in Montana for age determination.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population estimates are not available for Unit 1C black bears. Information obtained during sealing cannot be used to measure population trends. Although harvest information gained from sealing records, such as skull size, age, and sex ratios, may provide some indication of population trends, correlations between these measures and harvest sustainability will continue to elude us in the absence of accompanying demographic data. Research is needed to identify population parameters so we might better assess population trends and harvest sustainability.

Population size

There have been no black bear population studies in Unit 1C. Estimates of population size or density are difficult to obtain. The species generally inhabits forested areas, where aerial surveys are impractical. Vast remote areas in the unit also make studies difficult and expensive to undertake. Density estimates for Unit 1C are based on studies conducted in similar habitats in western Washington State in the 1960s (Poelker and Hartwell 1973). We believe minimum densities in mainland Southeast Alaska are slightly higher than the 1.4 bears per mi^2 found in the Washington study area. Assuming a density of 1.5 bears per mi^2 of forested habitat, ADF&G estimates 1,950 black bears in Unit 1C. Black bear densities are probably similar in Unit 1C to other Southeast mainland areas, and we have assumed density to be consistent throughout the forested areas of the unit. Depending on the availability of human food to bears, mainly garbage, and the tolerance of the human population, bear density near communities may differ from elsewhere in the unit. For example, in comparing bear densities near Juneau with Gustavus, because of conditions noted above, the bear density near Juneau is probably higher than the extended natural habitat. In Gustavus, where there are no restrictions on firearms discharge and most bears that frequent residential areas are killed, there is undoubtedly a lower bear density near the community than away from it.

All black bears harvested in Unit 1C must be sealed, at which time data on skull size and age are collected as 2 of the main sets of biological data. These data are used by the department as 2 sets of indices of the status of the black bear populations. Even with variability in skull size and age there have been no significant changes in the data we have collected over the past 3 report periods, so based on these data, we don't have reason to suspect that the unit wide population has changed significantly. The harvest during this report period declined each year, and varied substantially between the first and third year.

The number of bears near the city of Juneau appears to be increasing, based on the number of nuisance bear calls to the JPD and ADF&G. This is likely the result of female bears teaching their cubs to feed on refuse, and seeking safety from adult male bears in congested areas. It gives the impression that bears are increasing because they are more persistent and visible. The cubs' learned behavior does lead to periodic generational increases of nuisance bears.

Population composition

Our management objective of a 3:1 male-to-female harvest ratio is aimed at assuring a minimal harvest of female bears. We lack reliable information on the composition of the bear population, but use the indirect index of the harvest sex ratio for insight into the availability of male bears in the population. On a very gross scale, if the harvest of females increases, we interpret that as meaning fewer large male bears are available to hunters.

Distribution and movements

Black bears are present throughout the mainland and on most islands in Unit 1C. The larger mainland river drainages harbor brown bears that likely displace black bears from some locations. The distances black bears move in and around the unit is generally unknown, except in the areas adjacent to 2 proposed mining sites: the Alaska Juneau Mine (AJ Mine) in the Sheep Creek valley just southeast of Juneau and the Kensington mine just north of Berners Bay. Home ranges for black bears were estimated at both of these sites using radio collared animals (n=7 and n=12 respectively). Average home range sizes were 6 km^2 and 8 km^2, respectively, at the 2 sites (Robus and Carney 1995, Robus and Carney 1996). Urban bear home range estimates were calculated using GPS equipped radio-collar data from captured bears. The mean home range size was 12 km^2 (n=4, range 5 km^2- 23 km^2) (ADFG, Unpublished data). These compare similarly to home ranges of bears in Washington state (Poelker and Hartwell 1973), giving some credibility to our rationale of using black bear density data from the Washington state study for Southeast Alaska.

Unit 1C black bears exhibit a wide range of colors, including black, cinnamon, and blue (glacier) color. We have received reports of glacier colored bears on the Juneau road system, and one glacier bear was taken in the unit during the report period; 15 cinnamon and 278 black color phase bears make up the overall Unit 1C harvest for the report period.

MORTALITY

Harvest

Season	Bag Limit
1 Sep–30 Jun	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear
1 Sep–30 Jun	Nonresident hunters: 1 bear

Game Board Action and Emergency Orders. In 2008, the Alaska Board of Game implemented a regulation requiring the use of general season harvest tickets to hunt black bears in Southeast, Alaska. The regulation was effective on July 1, 2009; harvest tickets were required when the fall 2009 black bear hunt opened on September 1. No emergency orders were issued relating to black bears in Unit 1C during this report period.

Hunter Harvest. Hunters reported killing 117, 87, and 77 bears in regulatory years 2007, 2008, and 2009, respectively (Table 2). The mean annual harvest of 94 bears is just slightly lower than the mean of 97 bears from the previous report period. Males composed 86, 77, and 78% of the harvest over the report period, exceeding the management objective of 75% in each year. Average skull size for male bears during the report period was 17.8, slightly lower than 18.3

inches reported in the previous report period. The mean age of male bears decreased to 8.9 years from 9.7 years during the previous report period (Table 3). The majority of bears harvested had black pelage, although 1 glacier bear was taken by a hunter in 2009. Successful hunters spent an average of 2.7 days afield (Table 3), slightly lower than the 3.1 days of effort spent per successful hunter during the previous report period.

Based on the initial return of harvest ticket information, 138 ticket holders hunted in Unit 1C. Fifty six (41%) hunters reported being successful. Successful hunters took 2.7 days to harvest a black bear, and unsuccessful hunters, based on harvest ticket data, spent 3.8 days hunting. Very little hunt location data was provided. Only 37 of 138 ticket holders recorded hunt location information. Hunters will need another season or so to get in to the practice of returning their black bear harvest ticket report. Unlike registration permits, there is not a penalty for failing to report black bear hunting activity if unsuccessful (successful hunters must still have bears sealed by the department). In addition, staff noted many hunters were unfamiliar with the new harvest ticket requirement, and many did not have them prior to hunting. With the implementation of the harvest ticket requirement managers will be able to access unsuccessful hunter information. These data will allow biologists to compute catch per unit effort data for all hunters, which will assist managers in identifying areas where black bear population dynamics are changing.

Hunter Residency and Success. Local unit residents took 47% of all black bears during the report period; nonresident hunters took 44%; and nonlocal Alaskans took 9% (Table 4). Local resident hunters took 133 bears during the report period, up slightly from 99 bears reported in 2004–2006. Nonresident hunters took fewer bears during the current report period (124) compared to the previous period (167) but the bear harvest remains relatively high for this group of hunters. The nonlocal resident harvest was unchanged from the previous report at 24 bears. There is substantial variability in the total number of bears taken by all demographic groups over the last 10 years. Harvest for all groups likely depends more on the availability of bears rather than effort. Although we do not have empirical data to monitor effort, anecdotal information and conversations with hunters does not suggest fewer hunters are pursuing black bears today than in the recent past.

Harvest Chronology. During the report period, 79% of bears taken were killed in the spring season (Table 5). The spring harvest component is nearly identical to the harvest reported (78%) in the previous period. May represents the month with the highest black bear harvest in Unit 1C at 65%. The spring season, specifically the month of May has historically produced the highest harvest of bears. This is due to the hunters' interest in taking a bear with a prime pelt. Bear pelts are prime if the animal is taken shortly after den emergence; black bears are known to emerge in the largest numbers in early to mid-May.

Harvest in Particular Areas (WAAs). The harvest during this report period was again concentrated in the handful of WAAs that produced most of the bears in the preceding 2 report periods. These areas are centered on the south end of the Chilkat Range and the area between Snettisham and Cape Fanshaw (Table 1). The WAAs adjoining the Juneau urban area (2515, 2515, 2517) also produce several bears annually which is likely due to access provided by the Juneau road system.

Transport Methods. Boats continued to dominate means of transport to the field, used by 78% of successful hunters during the report period (Table 6). Other methods included foot, highway vehicles, airplanes, and off-road vehicles. The reason boat access is so prevalent is that, during the spring, black bears can be found on nearly any uninhabited beach as they forage for newly emergent sedges. By using a boat, hunters can cover a lot of area with relative ease and likely will have opportunity to pursue 1 or more bears. Modes of transportation for successful black bear hunters vary slightly year-to-year but hunters using boats have consistently been the highest percentage of users.

Other Mortality.

During this report period, ADF&G, and private citizens killed 6, 6, and 2 bears during 2007, 2008, and 2009 respectively. The bears were killed either in defense of life or property, or because they were garbage conditioned and considered to be a public safety concern. Law enforcement agencies did not kill any bears during the report period.

HABITAT

Assessment

The most critical impacts to habitat in this unit will resort from a number of proposed developments in Unit 1C. The proposed 400-acre golf course on north Douglas Island continues to be discussed, and will likely lead to additional development by private homeowners as lands become available. This area is attractive to bears because of the salmon in Petersen Creek, as well as abundant skunk cabbage and blueberries in the area. Undoubtedly, this development will affect bears more from a human–bear interaction standpoint than from the footprint of the golf course itself. Another potential area of development is the mainland coast from Echo Cove to Cascade Point. A pioneer road was constructed to Cascade Point during the report period with plans to extend the road up Lynn Canal to the Katzehin River Delta making Juneau more accessible by connecting it to the Haines Highway. Increased highway traffic, increased access to the area by recreational users, and interactions between bears and refuse at the newly developed areas could affect the bear population in that area. In the past, logging has been a concern. Although several areas have been logged in the past, no active logging is occurring in the unit at present. There are long term plans to continue logging in some previously cut areas (i.e., Chilkat Range), and to log new areas in southern portions of the unit but it does not appear logging is as economically attractive as it once was in the unit.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Urban Bear Management Activities. During the report period staff continued a substantial effort to shift ADF&G involvement away from instant response to nuisance bear reports to advising callers on how to reduce the attraction for bears in the hopes that the animals would return to wild habitats. Only in the case of an intractable bear that repeatedly caused problems did we make an effort to trap and remove or relocate an animal.

We continued to work to provide the public with bear and refuse information through public service announcements via the daily newspaper, a weekly newspaper, and radio, including an annual program in the spring we use to prepare the community for seasonal bear activity. These types of department announcements serve to remind the community of the value of having bears in the area, and the need to manage refuse responsibly.

Staff participated in neighborhood meetings in areas with high levels of urban bear activity, and several outdoor safety programs (e.g., Kid Safe) each year to reinforce proper refuse management, and appropriate behavior in bear habitat. In addition, staff presented a Fireside Chat program at the Mendenhall Glacier Visitors Center about urban bears in Juneau. Much of the information for the program was collected from 5 radio-collared female black bears. Presenting tangible information to the public, such as hourly locations of bears, is a powerful tool to help people acquire a sense of ownership in the local bear resource, and to reinforce the need for proper refuse management.

CONCLUSIONS AND RECOMMENDATIONS

The Unit 1C bear harvest continued to increase initially during the report period, peaking at 117 bears in 2007. During the remainder of the period (2008–2009) the harvest decreased to levels last seen in 2004 and 2003. Hunters continue to voice concerns that they are seeing fewer bears, at least in the southern portion of Unit 1C. The black bear harvest from southern portions of Unit 1C (Tracy Arm-Cape Fanshaw) are lower than have been seen in the past. It is unclear if this trend will continue, and if it does, what that means about bear numbers. Similar declines in harvest and the number of bears seen are being reported in Unit 2 (Prince of Wales Island) and portions of Unit 3. Two of our indices of population health (skull size and age) were similar throughout the report period, as were days hunted per bear. These measurements were also similar to the means of the previous report period. Although skull size is a measurement we monitor as an indicator of overall population health, skull size measurements may not be sensitive enough to detect changes until they become very pronounced. The continued stable age structure of the harvest and hunter effort give us some comfort as managers that the black bear population may not have changed significantly.

We will continue to monitor the bear harvest through sealing requirements, while gathering more specific information on kill locations. The harvest ticket requirement will provide needed unsuccessful hunter data to anticipate areas of concern with black bear harvest. We will continue to work with the CBJ and other communities in Unit 1C to refine current refuse management practices and to identify alternatives that serve to reduce human and black bear conflicts.

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Table 1. Unit 1C black bear mortality from all Wildlife Analysis Areas (WAA), regulatory years 2000 through 2009.

	Regulatory year										
WAA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
2202	2	2	1	0	1	0	2	1	1	1	11
2203	0	3	2	1	1	2	1	0	0	0	10
2304	15	13	7	6	3	7	9	10	6	3	77
2305	8	5	8	6	1	3	9	17	4	5	66
2306	22	10	17	13	8	12	11	12	3	11	119
2307	8	5	14	3	0	4	7	4	9	2	56
2408	4	0	1	0	1	0	0	2	2	8	18
2409	3	1	3	1	0	0	1	2	2	3	16
2410	0	1	1	3	1	0	2	0	0	0	8
2411	0	1	1	0	0	1	0	0	0	1	4
2412	0	0	0	0	0	1	0	0	0	0	1
2413	0	0	0	0	0	0	0	0	2	0	2
2514	6	6	5	5	0	2	10	8	2	4	48
2515	7	11	10	6	5	9	5	8	7	6	74
2516	0	0	0	0	0	0	0	0	0	0	0
2517	14	7	12	5	3	6	11	4	8	8	78
2518	7	5	1	0	1	5	2	2	5	1	29
2519	2	1	2	2	0	2	2	6	3	0	20
2722	4	7	6	1	3	1	0	9	4	1	36
2823	17	20	12	11	8	12	11	5	5	1	102
2824	6	3	4	6	3	2	4	3	3	3	37
2825	19	14	9	5	7	6	6	10	9	8	93
2926	18	26	15	3	15	31	20	12	14	9	163
2927	8	10	10	2	7	16	15	10	7	12	97
Total	170	151	141	79	68	122	128	125	96	87	1165

Table 2. Unit 1C black bear harvest and other mortality, regulatory years 2000 through 2009.

Regulatory year	Reported														
	Hunter kill					Nonhunting kill				Total estimated kill					
	M	F	Unk	Total	Baited	M	F	Unk	Total	M	(%)	F	(%)	Unk	(%)	Total
2000–2001																
Fall 2000	8	8	0	16	NA	10	4	0	14	18	(58)	12	(42)	0	(0)	30
Spring 2001	112	24	2	138	NA	0	1	0	1	112	(82)	25	(18)	2	(2)	140
Total	120	32	2	154	NA	10	5	0	15	130	(76)	37	(22)	2	(1)	170
2001–2002																
Fall 2001	18	12	0	30	NA	2	4	0	6	20	(56)	16	(44)	0	(0)	36
Spring 2002	96	16	0	112	NA	1	0	1	2	97	(85)	16	(14)	1	(1)	115
Total	114	28	0	142	NA	3	4	1	8	117	(78)	32	(22)	1	(0)	151
2002–2003																
Fall 2002	30	8	0	38	NA	10	7	4	21	40	(68)	15	(25)	4	(7)	59
Spring 2003	64	17	0	81	NA	0	0	1	1	64	(78)	17	(21)	1	(1)	82
Total	94	25	0	119	NA	10	7	5	22	104	(74)	32	(23)	5	(3)	141
2003–2004																
Fall 2003	7	6	0	13	NA	5	1	0	6	12	(63)	7	(37)	0	0	19
Spring 2004	51	8	0	59	NA	1	0	0	1	52	(87)	8	(13)	0	0	60
Total	58	14	0	72	NA	6	1	0	7	64	(81)	15	(19)	0	0	79
2004–2005																
Fall 2004	7	2	0	9	NA	0	4	0	4	7	(54)	6	(46)	0	(0)	13
Spring 2005	52	2	0	54	NA	0	1	0	1	52	(95)	3	(5)	0	(0)	55
Total	59	4	0	63	NA	0	5	0	5	59	(87)	9	(13)	0	(0)	68
2005–2006																
Fall 2005	16	11	0	27	NA	5	2	2	9	21	(58)	13	(36)	2	(6)	36
Spring 2006	79	5	0	84	NA	0	2	0	2	79	(92)	7	(8)	0	(0)	86
Total	95	16	0	111	NA	5	4	2	11	100	(82)	20	(16)	2	(2)	122

Table 2. continued.

Regulatory year	Reported														
	Hunter kill					Nonhunting kill				Total estimated kill					
	M	F	Unk	Total	Baited	M	F	Unk	Total	M	(%)	F	(%)	Unk	(%)	Total
2006–2007																
Fall 2006	19	9	0	28	NA	5	5	2	12	24	(60)	14	(35)	2	(5)	40
Spring 2007	80	8	0	88	NA	0	0	0	0	80	(91)	8	(9)	0	(0)	88
Total	99	17	0	116	NA	5	5	2	12	104	(81)	22	(17)	2	(2)	128
2007–2008																
Fall 2007	20	7	0	27	NA	4	1	1	6	24	(73)	8	(24)	1	(3)	33
Spring 2008	83	7	0	90	NA	1	1	0	2	84	(91)	8	(9)	0	(0)	92
Total	103	14	0	117	NA	5	2	1	8	108	(86)	16	(13)	1	(1)	125
2008–2009																
Fall 2008	14	7	0	21	NA	4	2	1	7	18	(64)	9	(32)	1	(4)	28
Spring 2009	55	11	0	66	NA	2	1	0	3	57	(83)	12	(17)	0	(0)	69
Total	69	18	0	87	NA	6	3	1	10	75	(77)	21	(22)	1	(1)	97
2009–2010																
Fall 2009	8	5	0	13	NA	7	1	1	9	15	(68)	6	(27)	1	(5)	22
Spring 2010	53	11	0	64	NA	0	1	0	1	53	(82)	12	(18)	0	(0)	65
Total	61	16	0	77	NA	7	2	1	10	68	(78)	18	(21)	1	(1)	87

Table 3. Unit 1C successful black bear hunter effort, mean skull size, and mean age, regulatory years 1997 through 2009.

Regulatory year	Successful hunter effort			Mean skull size (inches)				Average age (years)			
	Total days	Nr hunters	Mean days per hunter	Male	*n*	Female	*n*	Male	*n*	Female	*n*
2000–2001											
Fall 2000	36	15	2.4	17.9	8	16.3	9	6.3	8	10.0	9
Spring 2001	377	139	2.7	17.9	111	16.1	23	7.9	104	12.0	23
Total	413	154	2.7	17.9	119	16.2	32	7.6	112	11.5	32
2001–2002											
Fall 2001	116	30	3.9	17.4	17	15.5	12	6.0	20	7.6	15
Spring 2002	345	112	3.1	17.8	94	16.1	15	8.4	93	9.8	16
Total	461	142	3.2	17.8	111	15.8	27	7.9	113	8.7	31
2002–2003											
Fall 2002	91	38	2.4	17.1	28	16.0	8	7.8	36	7.3	9
Spring 2003	294	81	3.6	17.9	58	16.3	17	8.3	62	11.2	16
Total	385	119	3.2	17.6	86	16.2	25	8.1	98	9.8	25
2003–2004											
Fall 2003	33	13	2.5	17.5	6	15.9	6	5.1	11	9.0	7
Spring 2004	187	59	3.2	17.8	50	15.9	8	8.7	52	8.3	8
Total	220	72	3.1	17.8	56	15.9	14	8.1	63	8.6	15
2004–2005											
Fall 2004	13	9	1.4	18.4	6	16.2	2	8.8	6	9.0	2
Spring 2005	176	54	3.3	18.5	52	16.7	2	9.9	49	7.0	2
Total	189	63	3.0	18.5	58	16.5	4	9.8	55	8.0	4

Table 3. continued.

Regulatory year	Successful hunter effort			Mean skull size (inches)				Average age (years)			
	Total days	Nr hunters	Mean days per hunter	Male	*n*	Female	*n*	Male	*n*	Female	*n*
2005–2006											
Fall 2005	88	27	3.3	18.9	16	16.4	11	9.9	14	9.7	11
Spring 2006	261	84	3.1	18.5	79	16.4	5	10.1	75	8.0	5
Total	349	111	3.1	18.5	95	16.4	16	10.1	89	9.2	16
2006–2007											
Fall 2006	59	28	2.1	16.3	19	16.1	8	5.5	19	11.8	8
Spring 2007	284	88	3.2	18.3	78	16.0	8	10.1	79	9.0	8
Total	343	116	3.0	17.9	97	16.0	16	9.2	98	10.4	16
2007–2008											
Fall 2007	78	27	2.9	16.5	20	15.6	7	6.3	20	8.3	6
Spring 2008	251	90	2.8	17.9	81	15.0	7	9.7	82	5.7	7
Total	329	117	2.8	17.6	101	15.3	14	9.0	102	6.9	13
2008–2009											
Fall 2008	53	21	2.5	17.3	14	15.0	7	7.2	14	7.4	7
Spring 2009	157	66	2.4	18.0	54	15.5	11	9.3	54	8.5	11
Total	210	87	2.4	17.9	68	15.3	18	8.9	68	8.1	18
2009–2010											
Fall 2009	31	13	2.4	17.6	6	16.4	5	9.9	8	11.8	5
Spring 2010	200	64	3.1	17.8	53	15.7	11	8.5	53	9.6	11
Total	231	77	3.0	17.8	59	15.9	16	8.7	61	10.3	16

Table 4. Unit 1C black bear successful hunter residency, regulatory years 2000 through 2009.

Regulatory year	Local resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Unknown residency	(%)	Total
2000–2001	73	(47)	20	(13)	62	(40)	0	(0)	155
2001–2002	60	(42)	19	(13)	63	(45)	0	(0)	142
2002–2003	43	(36)	15	(13)	61	(51)	0	(0)	119
2003–2004	37	(52)	6	(8)	29	(40)	0	(0)	72
2004–2005	19	(30)	8	(13)	36	(57)	0	(0)	63
2005–2006	34	(31)	11	(10)	66	(59)	0	(0)	111
2006–2007	46	(40)	5	(4)	65	(56)	0	(0)	116
2007–2008	55	(47)	12	(10)	50	(43)	0	(0)	117
2008–2009	41	(47)	3	(4)	43	(49)	0	(0)	87
2009–2010	37	(48)	9	(12)	31	(40)	0	(0)	77

Table 5. Unit 1C black bear harvest chronology by month, regulatory years 2000 through 2009.

Regulatory year	Harvest periods												
	Sep	(%)	Oct	(%)	Nov	(%)	Apr	(%)	May	(%)	Jun	(%)	*n*
2000–2001	14	(9)	2	(1)	1	(.5)	12	(8)	101	(66)	24	(15.5)	154
2001–2002	20	(14)	10	(7)	0	(0)	2	(1)	83	(59)	27	(19)	142
2002–2003	27	(23)	8	(7)	3	(3)	2	(2)	69	(58)	10	(8)	119
2003–2004	10	(14)	3	(4)	0	(0)	2	(3)	52	(72)	5	(7)	72
2004–2005	7	(11)	2	(3)	0	(0)	2	(3)	50	(80)	2	(3)	63
2005–2006	22	(20)	5	(4.5)	0	(0)	7	(6)	72	(65)	5	(4.5)	111
2006–2007	24	(21)	3	(2)	1	(1)	7	(6)	60	(52)	21	(18)	116
2007–2008	21	(18)	5	(4)	1	(1)	14	(12)	65	(56)	11	(9)	117
2008–2009	16	(18)	5	(6)	0	(0)	2	(2)	59	(68)	5	(6)	87
2009–2010	10	(13)	2	(3)	1	(1)	4	(5)	58	(75)	2	(3)	77

Table 6. Unit 1C black bear harvest percent by transport method, regulatory years 2000 through 2009.

Regulatory year	Transport												
	Air	(%)	Boat	(%)	Highway vehicle	(%)	Walk	(%)	Other	(%)	Unk	(%)	*n*
2000–2001	5	(3)	117	(76)	16	(10)	7	(5)	8	(5)	2	(1)	155
2001–2002	4	(3)	112	(79)	16	(11)	7	(5)	3	(2)	0	(0)	142
2002–2003	3	(3)	86	(72)	16	(13)	4	(3)	10	(8)	0	(0)	119
2003–2004	0	(0)	55	(76)	10	(14)	0	(0)	7	(10)	0	(0)	72
2004–2005	0	(0)	56	(89)	4	(6)	2	(3)	1	(2)	0	(0)	63
2005–2006	1	(1)	94	(85)	7	(6)	3	(3)	6	(5)	0	(0)	111
2006–2007	1	(1)	94	(81)	14	(12)	6	(5)	1	(1)	0	(0)	116
2007–2008	5	(4)	89	(76)	17	(15)	5	(4)	1	(1)	0	(0)	117
2008–2009	0	(0)	67	(77)	14	(16)	5	(6)	1	(1)	0	(0)	87
2009–2010	0	(0)	63	(82)	9	(12)	3	(4)	2	(2)	0	(0)	77

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 1D (2,854 mi^2)

GEOGRAPHICAL DESCRIPTION: That portion of the Southeast Alaska lying north of the latitude of Eldred Rock, excluding Sullivan Island and the drainages of Berners Bay.

BACKGROUND

HABITAT DESCRIPTION

The majority of Unit 1D is held in public ownership and lands accessible to hunting include 447 mi^2 owned by the state (Alaska Department of Natural Resources 2002), with a majority of the remaining lands owned by the federal government and administered by the Bureau of Land Management, the Tongass National Forest, and the National Park Service. The Alaska Chilkat Bald Eagle Preserve contains 75 mi^2 along the Chilkat, Chilkoot, and Klehini Rivers. Unit 1D contains an estimated 1041 mi^2 of forested habitat (Homer et al. 2004) and several large river systems that provide excellent habitat for black bears. Anadromous salmon streams within the unit include the Chilkat River and its major tributaries, the Klehini, Tsirku, Little Salmon, Kelsall, and Takhin Rivers. The Chilkoot and Ferebee Rivers also have important anadromous fish runs, as does the Katzehin River on the east side of Lynn Canal. In the Skagway area, the Taiya and Skagway Rivers also support anadromous fish populations.

Openings in the forest canopy, wetlands, subalpine meadows, and disturbed areas such as avalanche chutes and clearcuts, are important foraging areas for black bears. Black bear diets range from primarily vegetarian during the spring of the year to mostly carnivorous during the salmon runs. Major herbaceous foods include grasses, sedges and horsetail (*Equisetum* spp.) in estuarine areas, cow parsnip (*Heracleum lanatum)*, skunk cabbage (*Lysichiton americanum),* and berries (*Vaccinium* spp. and *Viburnum edule*) that have persisted through the winter. Later in spring, Unit 1D black bears may also prey on moose calves. During summer and fall, bears consume large quantities of fish to accumulate fat reserves for winter hibernation. Berries are also important during summer and fall. Poor fish runs or berry crops are thought to result in low cub production and survival the following spring. Unit 1D black bears share habitat with brown bears and, in some areas, such as the Chilkoot River valley, may be displaced by them.

Large areas of the Klehini, Kelsall, and Chilkat River valleys are encompassed by the Haines State Forest, and portions of the forest have been subjected to timber harvest in the past. The current Haines State Forest timber base consists of 65 mi^2 of forested habitat and the annual

allowable cut is approximately 5.88 million board feet (Alaska Department of Natural Resources 2002). Similar to elsewhere in Southeast Alaska, habitat changes continue to occur as a result of timber harvest. Although early succession stages (3–20 years) provide black bears with an abundance of plant foods, later stages result in the disappearance of understory plants as conifer canopies close and light cannot penetrate to the forest floor. Second-growth stands lack the forage base of earlier successional stages, and they lack large hollow trees and root masses important for denning. An increase in the number of logging roads in Unit 1D has resulted in more human access to areas that formerly experienced lighter use. We believe that although logging may create food for bears in the short term, the long-term result will be a decline in bear numbers (Suring et al. 1988), at least partly due to increased access and decreased forage.

HUMAN USE HISTORY

Black bears have a long history of being hunted in Unit 1D. Sealing of black bears was first required in 1973. Because hunters are not required to have hunting permits, information about unsuccessful hunter effort is not available. We have information only for successful hunts, gathered during sealing of black bear hides and skulls.

Regulatory history

Since statehood, the black bear hunting season has extended from 1 September through 30 June, and the annual bag limit for residents has been 2 bears, only 1 of which can be a blue or glacier bear. Nonresident bag limits were the same as those for residents until 1990, when the nonresident limit was reduced to 1 bear per year. The use of dogs for hunting black bears has been allowed since 1966; hunting with dogs requires a permit issued by ADF&G. No permits to hunt with dogs have been issued in Unit 1D, nor has there been any interest expressed in this pursuit. As a result of a regulatory change in 1996, hunters must salvage the edible meat and the hide and skull of all black bears killed in Southeast Alaska during the period 1 January–31 May. In 1982 using bait to hunt black bears became legal year-round. However, in 1988 the Alaska Board of Game (BOG) limited baiting in Southeast Alaska to the spring period 15 April–15 June. In 2002, the BOG fielded a proposal to prohibit black bear baiting in Unit 1D. As a result the BOG closed a portion of the unit within 1 mile of the major Haines roads. The issues discussed by the BOG included the attraction of brown bears to the bait stations, and the close proximity of bait stations to human development contributing to the conditioning of bears to human garbage. A 5 mile closure was considered but the board determined 1 mile to be more appropriate.

Historical harvest patterns

The Unit 1D average annual harvest has increased over the last 4 decades. Although there continues to be variation in the harvest between years, mean black bear harvest has stabilized during the past 2 decades. During the 1970s, average annual harvest was around 18 bears, in the 1980s it increased to 26 bears, in the 1990s it continued to increase to an average of 33 bears per year, and over the past decade has remained near this level with the annual harvest averaging 32 bears. Within each decade, no other clear trends have been apparent, as harvest varies greatly from year to year. For the periods 1998–2001, 2001–2003, and 2004-2006 the average numbers of bears harvested annually were 42, 26, and 35 bears, respectively (Scott 2007). The mean annual harvest for this report period (2007–2009) was 31 black bears.

Local residents have typically accounted for about three-quarters of the annual harvest. However, during this report period that number decreased as non-local residents accounted for more bears than usual, while nonresidents continued to take about 20% of the black bears harvested. Many hunters use highway vehicles for transport, probably because of the abundance of logging roads in the most heavily hunted Wildlife Analysis Areas (WAAs) in the unit. During the last decade more than half of the successful black bear hunters used highway vehicles and approximately one-third used boats.

Male bears constituted an average of 77% of the harvest during the 17-year period 1990–2006; the 2007–2009 male harvest was 82%. During this report period local resident hunters harvested 14% female bears, substantially less than the nonresident female bear harvest of 24%, and nonlocal residents at 36%.

A relatively high percentage of bears harvested in Unit 1D have been killed over bait in recent years. During 1992–1994, 19% of the harvest was killed over bait. That percentage increased to 39% during 1995–1997 (Barten 1999). During this report period, the percentage of black bears taken over bait was 37%, indicating that bear baiting remains a popular and successful method of taking Unit 1D black bears. During the 7-year period 1986–1992, an average of 64% of the harvest occurred in the spring. However, during 1993–1997 (5 years), spring harvest averaged 86% of the annual hunter kill. In the last report period, spring harvest remained high at 88% (Scott 2007). During this report period the spring harvest decreased slightly to 80% of the overall black bear harvest. As reported here previously, a regulatory change restricting bait stations from within a 1-mile corridor of the main roads in the Haines area took effect beginning in spring 2003, but it does not appear to have impacted the long-term seasonal black bear harvest.

Historical harvest locations

The majority of the Unit 1D black bear harvest has been taken in 2 WAAs, 4302 (along the Haines Highway and Chilkat and Klehini Rivers) and 4303 (the Kelsall River and Upper Chilkat River). To a lesser extent, WAA 4405 and 4407, which includes Lutak Inlet, Taiya Inlet, and lands surrounding Skagway are also used. Because 4302 and 4303 are relatively accessible by highway vehicles and boats, many hunters use these areas for bear hunting, as well as to establish bait stations there in the spring.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain a mean annual male skull size of at least 17.0 inches
- Maintain a 3:1 male to female ratio in the harvest

Because population information is costly and difficult to obtain, we collect data on other biological parameters, such as skull size and sex of harvested bears, as a means of monitoring the status of the population over time. Theoretically, a change in the sex ratio or in skull size over time might reflect a change in population structure that would need to be addressed through some regulatory change. In reality, changes in skull size or sex ratio are likely subtle and would need to be extreme in nature or show a consistent long term trend in order for us to recognize the need for a regulatory change. However, we will continue to collect the information and to pursue

other ways of examining these data that will be more perceptive to change over time, and thus more useful for managers.

Using a 3:1 harvest ratio of males to females as a management objective is one way of managing relatively conservatively. Assuming a 1:1 male to female ratio at birth, half the animals in the population are females. Theoretically, the breeding interval is typically 2 years, so half the adult females are accompanied by young in a given year. It is illegal to shoot a female accompanied by young; thus, half the females are protected annually. However, breeding intervals may be longer than 2 years (Garshelis 1994), and we have no data on age at first reproduction, which might also result in a higher number of females in unprotected status each year.

The 17.0-inch skull size objective is based on long-term data from this unit. A significant change could reflect a change in age composition of this population, possibly signifying overharvest. However, population changes resulting in such a change would likely need to be extreme for such a change to be evident and not simply an artifact of small sample size, or from the variability in harvest any given year.

METHODS

Staff of the Alaska Departments of Fish and Game (ADF&G) and Public Safety sealed black bear hides and skulls taken by successful hunters. Biological and hunt information collected at the time of sealing included pelage color, sex, skull size (length and width), date and location of kill, number of days hunted, transportation method, and hunter use of commercial services. We collected a premolar from most bears and sent it to Matson's Laboratory for age determination. All black bear hunters using bait stations were required to register with ADF&G. Bait station registration has recently been changed to a statewide, computer-based system. Hunters desiring a bait station permit are registered in the statewide database at the time of permit issuance.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

No black bear population studies have been conducted in Unit 1D. Estimates of population size or density are difficult to obtain. The species generally inhabits forested areas, where aerial surveys are impractical. Vast, remote areas in the unit also make studies difficult and expensive to undertake.

Population size

Black bear densities are probably lower in Unit 1D than other Southeast Alaska mainland areas, possibly due to inter-specific competition with brown bears. ADF&G estimated 275 black bears in Unit 1D in 1990, an average of 1.3 bears per forested mi^2, however this density was based on an estimate of 210 mi^2 of forest habitat which is only 20% of that currently identified using Landsat imagery (Homer et al. 2004). Nevertheless this estimate of the total population seems realistic suggesting the density of black bears in 1D is less than 1.3 bears per forested mi^2. Peacock et al. (2011) estimated an average density of 3.9 black bears per mi^2 elsewhere in Southeast Alaska, which applied to Unit 1D would yield a population of more than 4,000 black bears. Because black bear habitat in the unit overlaps with brown bear habitat such a high population is unlikely because of resource partitioning between these two species. Without

studies designed to derive direct estimates of black bear numbers, it is extremely difficult to estimate the population in this unit.

Population composition

The majority of black bears sealed in Unit 1D during 2007–2009 exhibited the most common pelage color, black (76%). Over the past 2 decades, 31% of the black bears harvested in Unit 1D exhibited cinnamon pelage, although this designation is somewhat subjective and may depend on the experience of the sealing agent. One glacier colored bear was reported in the harvest during this report period. Reports of another glacier bear cub were received in the summer of 2010 along the Chilkat River accompanying an adult female and a black colored sibling.

During this report period (2007–2009), 18% of the bears harvested were females, meeting our management objective of a 3:1 (75% to 25%) male to female bear harvest ratio.

Distribution and movement

We have little information about black bear distribution in this unit. Human population growth is resulting in increasing interactions between bears and rural dwellers.

MORTALITY

Harvest

Season	Bag Limit
1 Sep–30 Jun	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear
1 Sep–30 Jun	Nonresident hunters: 1 bear

Board of Game Action and Emergency Orders. In August 2007, the BOG passed a temporary emergency regulation prohibiting the taking of white-colored black bears in Unit 1D. During November 2007, the BOG adopted a permanent regulation (5 AAC 85.015), similar to regulations in Unit 1C that prohibited the harvest of "white colored" black bears. In 2008 the BOG passed a regulation requiring black bear hunters in Southeast Alaska to possess harvest tickets and report on hunting effort. This regulation went into effect in RY2009, and the information obtained from the harvest reports will now allow the department to assess hunter effort from both successful and unsuccessful black bear hunters. No Emergency Orders were issued for Unit 1D black bear seasons.

Hunter Harvest. Hunters reported killing 33, 38, and 20 black bears in regulatory years 2007, 2008 and 2009, respectively. This equated to an average annual hunter harvest of 30 bears, which was slightly lower than the previous report period harvest (Scott 2007) of 34 bears per year. Regulatory year (RY) 2009 represented the second lowest black bear harvest since 2000 (Table 1). The ratio of males to females (3:1) was within management objectives (Table 1) for the entire report period.

Hunter Residency and Success. Local resident hunters take the majority of black bears in Unit 1D (range 57%-77%), and primarily use the bears for meat. The percentage of bears taken by nonresidents during this report period was 18%, slightly less than the percentage of bears taken by nonresidents over the past 10 years (21%) (Table 2). RY2008 represented the highest harvest

of bears by nonresidents (9) in this report period, though less than the harvest of 15 bears in RY2005 which was the highest nonresident harvest in the previous 10 years.

Harvest Chronology. Spring months account for most Unit 1D harvest with 71-90% of the harvest reported during this season. September accounted for 15% of the harvest during this report period (Table 3). As noted above, most local bear hunters, who took 69% of the annual harvest, hunt for meat, and spring bears, are preferred over fall bears because they are believed to be more palatable.

Transport Methods. Most successful black bear hunters used boats (34%) or highway vehicles (40%) during the report period (Table 4). These 2 modes of transportation serve bear hunters well as much of the habitat occupied by bears can be accessed via roads or rivers. During the last report period (2004-2006) the use of off-road vehicles by successful hunters had increased to 18%, whereas it was 13% during this period, ranging from 10% to 18%. Only 10% of hunters reported "by foot" as their means of transportation, similar to the last reporting period.

Hunter Effort. Over the last 10 years hunter effort has varied (range 2.4 – 5.4) though 2 of the 3 years in this report period were among the lowest effort reported (Table 5). Data indicate that 3.4 days were required per hunter to harvest a black bear during this report period (Table 6). Perhaps this reflects an increasing availability of bears, but it would be premature to draw this conclusion from hunter effort data alone. To more accurately gauge the availability of black bears we would need to obtain effort data from both successful and unsuccessful hunters. This data will be available during the next report period as hunters are now required to obtain harvest tickets which includes a harvest report designed to capture this information. Although not a significant relationship, the general trend between bear harvest and hunter effort indicates that in years when more effort is invested to harvest a bear, more bears are harvested.

Harvest in Particular Areas (WAAs). Approximately 45% of the black bear harvest came from along the Haines Highway and the lower Chilkat River, WAA 4302 (Table 7). Another 41% came from the upper Chilkat River, and about 4% originated from the Chilkoot and Ferebee watersheds. This report period's harvest locations are consistent with long-term trends. Both the Haines Highway and Kelsall River Road provide extensive access to hunting locations and both have hunters with histories of hunting the same areas over the years.

Bait Stations. Black bear baiting in Unit 1D provides hunters an opportunity to harvest, improves the hunter's ability to be selective with shot placement, and possibly reduces the taking of females and/or sows with cubs. Information related to bear baiting had previously been unavailable; therefore we will briefly discuss bear baiting trends over the past decade.

Over the past 10 years, an average of 22 hunters registered 35 bait stations annually in Unit 1D. During this same period, 110 black bears have been reportedly harvested over bait, an average of 11 bears per year. That is approximately 1/3 of the 322 total black bears killed in Unit 1D over this time. The average age of black bears killed over bait was 8.5 years compared to 8.25 years of age for all black bears killed. Male bears account for 84% (92) of those killed over bait. Total black bear harvest in Unit 1D does not appear to be significantly different with respect to sex selection with male harvest at 79% (252). Nonresidents accounted for 25% (28) of the black bears harvested over bait and this group harvested 92% (26) males. Residents harvested 75%

(82) of the black bears harvested over bait with male bears accounting for 80% (82) of the harvest. During this report period, 34 bears (37%) were harvested at bait stations with as high as 48% of the annual harvest taken over bait in RY2007.

Local Alaska Wildlife Troopers and other unit residents have expressed concern that hunters may be harvesting brown bears at or near black bear bait stations. Furthermore, some residents are very concerned that black and particularly brown bears may become food conditioned at bait stations, and thus, have a higher likelihood of becoming nuisance bears.

Hunting with Dogs. No one requested a permit to hunt bears with dogs in the unit.

Guided Hunter Harvest. Nonresident hunters took 17 (19%) of the black bears during the report period (Table 2), a decrease from the last report period when nonresidents took 26 (25%) of the bears harvested. Of the successful nonresident hunters, 7 (41%) hired a guide to assist in their hunt, compared to 20 (77%) during the last report period. Over the past decade an average of nearly 5 black bears were taken annually by guided nonresident hunters. Nonresident hunters are not required to have a registered guide while hunting black bears in Alaska but many have chosen to pursue black bears in combined species hunts (i.e., brown bear, mountain goats) where a guide is required, and therefore are accompanied by a guide on their black bear hunt as well.

Other Mortality

During 2007–2009, 2 black bears were killed in Defense of Life and Property (DLP). The same number was taken in DLP during the previous 2 report periods; 3 bears were killed in DLP during 1998–2000. Since 1990, a total of 14 DLP bears have been reported. Between 1971 and 1989, only 10 bears were taken under DLP regulations (Hessing 2005). We think the slight increase in the number of DLP kills in the past 20 years (10 to 14) supports our belief that when people move into traditional black bear habitat, bear/human conflicts increase. During the current reporting period no bears were reported killed in vehicle collisions.

HABITAT

Assessment

Residential and commercial development is the single most important habitat consideration for Unit 1D black bears. Even in small communities, people move into traditional black bear habitat. This will displace bears and increase the number of bear/human conflicts. Logging and subsequent forest succession continues to have an effect on black bear habitat in Unit 1D. It appears that in some areas isostatic rebound is raising riparian habitat and possibly decreasing available moose browse, which could result in smaller moose populations and a decreased prey base for black and brown bears. The extent to which these factors affect unit black bears is unknown.

Enhancement

We performed no habitat enhancement work during this report period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Nuisance Bear Problems/Urban Bear Management Activities. The Haines dump was closed in 1999 and collected garbage is now sorted for recycling, compost, burial and export. Garbage

disposal in Unit 1D has historically been problematic. Rather than pay the fees for refuse collection, some residents accumulate garbage on their property in sheds or garages, until they haul it to a disposal facility. These stockpiles attract bears. Also, several landowners in Haines grow fruit trees, particularly apples and cherries, and raise livestock. These attractants, as well as garbage, increase bear/human conflicts and often result in DLP kills.

A toll-free number is available to allow unit residents to make direct contact with the area Wildlife Conservation office in Douglas. The amount of information about black (and brown) bears that we dispense to the public has increased and has elicited positive responses. Wildlife staff have suggested bear deterrent techniques and deterrent devices (Critter Gitter© and electric fences) that have been deployed in Haines. We will continue to work with Unit 1D residents to alleviate bear/human conflicts.

CONCLUSIONS AND RECOMMENDATIONS

During the report period, regulatory years 2007–2009, the black bear harvest was composed of 82% male and 18% female bears, meeting the management objective of a 3:1 male to female harvest ratio. The 3-year mean male skull size of 16.9 inches was slightly below the management objective of 17.0 inches. We will continue to evaluate this parameter to determine if the declining trend continues. Although the number of bears taken over bait stabilized in this report period, these harvests need to be further examined for possible long-term effects. We continue to collect teeth for aging bears, and we will assess reproductive history of females using tooth analysis by Matson's Laboratory (Milltown, MT). High brown bear numbers and habitat changes may cause a decline in black bear numbers and harvest in the future.

Black bear hunting is becoming more popular in Southeast Alaska making us concerned about possible overharvest in a limited number of locations. We anticipate an increase in the total number of hunters in Unit 1D and will monitor the overall harvest, considering management objectives and hunter demographics, to evaluate the need for regulatory action.

Several research projects are ongoing in Southeast Alaska using hair snare techniques to collect bear DNA. DNA can be used to estimate bear populations and densities in the project areas. Consideration should be given to using these techniques to estimate black bear populations and densities in specific locations within Unit 1D.

Continued public education and outreach will be used to reduce the number of black bears taken DLP and to provide Unit 1D residents with nonlethal options to address conflicts with black bears.

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Regional Management Coordinator

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Table 1. Unit 1D black bear harvest, regulatory years 2000 through 2009.

Regulatory	Hunter kill				Nonhunting kill[a]					Illegal	Total reported kill						
year	M	F	Unk	Total	Baited	M	F	Unk	Total	kill	M	(%)	F	(%)	Unk	(%)	Total
2000																	
Fall 2000	6	0	0	6	0	2	0	0	2	0	8	(100)	0	(0)	0	(0)	8
Spring 2001	30	9	0	39	18	0	0	0	0	0	30	(77)	9	(23)	0	(0)	39
Total	36	9	0	45	18	2	0	0	2	0	38	(81)	9	(19)	0	(0)	47
2001																	
Fall 2001	2	3	0	5	0	0	1	0	1	0	2	(33)	4	(67)	0	(0)	6
Spring 2002	26	5	0	31	10	0	2	0	2	0	26	(79)	7	(21)	0	(0)	33
Total	28	8	0	36	10	0	3	0	3	0	28	(72)	11	(28)	0	(0)	39
2002																	
Fall 2002	4	4	0	8	0	1	0	0	1	0	5	(56)	4	(44)	0	(0)	9
Spring 2003	9	4	0	13	5	1	0	0	1	0	10	(71)	4	(29)	0	(0)	14
Total	13	8	0	21	5	2	0	0	2	0	15	(65)	8	(35)	0	(0)	23
2003																	
Fall 2003	2	2	0	4	0	0	0	0	0	0	2	(50)	2	(50)	0	(0)	4
Spring 2004	14	2	0	16	6	0	0	0	0	0	14	(88)	2	(12)	0	(0)	16
Total	16	4	0	20	6	0	0	0	0	0	16	(80)	4	(20)	0	(0)	20
2004																	
Fall 2004	1	0	0	1	0	0	0	0	0	0	1	(100)	0	(0)	0	(0)	1
Spring 2005	20	3	0	23	11	1	0	0	1	0	21	(88)	3	(12)	0	(0)	24
Total	21	3	0	24	11	1	0	0	1	0	22	(88)	3	(12)	0	(0)	25

Table continues next page

Table 1. continued.

Regulatory	Hunter kill					Nonhunting kill[a]				Illegal	Total reported kill						
year	M	F	Unk	Total	Baited	M	F	Unk	Total	kill	M	(%)	F	(%)	Unk	(%)	Total
2005																	
Fall 2005	5	1	0	6	0	1	0	0	1	0	6	(86)	1	(14)	0	(0)	7
Spring 2006	30	7	0	37	17	0	0	0	0	0	30	(81)	7	(19)	0	(0)	37
Total	35	8	0	43	17	1	0	0	1	0	36	(82)	8	(18)	0	(0)	44
2006																	
Fall 2006	4	1	0	5	0	0	0	0	0	0	4	(80)	1	(20)	0	(0)	5
Spring 2007	22	8	0	30	11	0	0	0	0	0	22	(73)	8	(27)	0	(0)	30
Total	26	9	0	35	11	0	0	0	0	0	26	(74)	9	(26)	0	(0)	35
2007																	
Fall 2007	5	0	0	5	0	0	0	0	0	0	5	(100)	0	(100)	0	(0)	5
Spring 2008	23	5	0	28	16	1	0	0	1	0	24	(83)	5	(17)	0	(0)	29
Total	28	5	0	33	16	1	0	0	0	0	29	(85)	5	(15)	0	(0)	34
2008																	
Fall 2008	8	3	0	11	0	0	0	0	0	0	8	(73)	3	(27)	0	(0)	11
Spring 2009	22	5	0	27	13	0	0	0	0	0	22	(82)	5	(19)	0	(0)	27
Total	30	8	0	38	13	0	0	0	0	0	30	(79)	8	(21)	0	(0)	38
2009																	
Fall 2009	1	1	0	2	0	0	1	0	1	0	1	(33)	2	(67)	0	(0)	3
Spring 2010	16	2	0	18	5	0	0	0	0	0	16	(89)	2	(11)	0	(0)	18
Total	17	3	0	20	5	0	1	0	1	0	17	(81)	4	(19)	0	(0)	21

[a] Includes DLP kills, research mortalities, and other known human-caused mortality.

Table 2. Unit 1D black bear successful hunter residency, regulatory years 2000 through 2009.

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Nonresident Guided[c]	(%)[d]	Unknown[b] residency	(%)	Total
2000	33	(70)	5	(11)	7	(15)	7	(15)	2	(4)	47
2001	27	(69)	1	(2)	8	(21)	6	(17)	3	(8)	39
2002	13	(57)	2	(8.5)	6	(26)	4	(18)	2	(8.5)	23
2003	15	(75)	1	(5)	4	(20)	4	(19)	0	(0)	20
2004	19	(76)	2	(8)	4	(16)	3	(13)	0	(0)	25
2005	25	(57)	4	(9)	15	(34)	12	(28)	0	(0)	44
2006	26	(74)	2	(6)	7	(20)	5	(14)	0	(0)	35
2007	26	(77)	2	(6)	5	(15)	2	(6)	1	(3)	34
2008	24	(63)	5	(13)	9	(24)	3	(8)	0	(0)	38
2009	14	(67)	3	(14)	3	(14)	2	(10)	1	(5)	21

[a] Local hunters are those hunters that reside in Unit 1D.
[b] Includes DLP kills, research mortalities, and other known human-caused mortality.
[c] Number of nonresident kills in previous column that were taken by nonresident hunters who were guided.
[d] Percentage of total bears harvested by guided nonresident hunters.

Table 3. Unit 1D black bear harvest chronology by month, regulatory years 2000 through 2009.

Regulatory year	Month Sep	(%)	Oct	(%)	Nov	(%)	Apr	(%)	May	(%)	Jun	(%)	*n*[a]
2000	6	(13)	2	(4)	0	(0)	0	(0)	26	(55)	13	(28)	47
2001	6	(16)	0	(0)	0	(0)	0	(0)	17	(45)	15	(39)	38
2002	8	(36)	0	(0)	0	(0)	1	(5)	10	(45)	3	(14)	22
2003	2	(10)	2	(10)	0	(0)	0	(0)	11	(55)	5	(25)	20
2004	0	(0)	1	(4)	0	(0)	0	(0)	18	(75)	6	(25)	25
2005	5	(12)	1	(2)	0	(0)	1	(2)	28	(65)	8	(19)	43
2006	2	(6)	2	(6)	1	(3)	0	(0)	15	(43)	15	(43)	35
2007	4	(12)	1	(3)	0	(0)	0	(0)	17	(50)	12	(35)	34
2008	10	(26)	1	(3)	0	(0)	1	(3)	17	(45)	9	(24)	38
2009	0	(0)	2	(10)	0	(0)	1	(5)	13	(65)	4	(20)	20

[a] Does not include bears killed during closed season.

Table 4. Unit 1D black bear harvest percent by transport method, regulatory years 2000 through 2009.

Regulatory year	Transport: Highway vehicle	(%)	Boat	(%)	Walk	(%)	Plane	(%)	Other[a]	(%)	Unk[b]	(%)	*n*
2000	20	(43)	14	(30)	10	(21)	1	(2)	0	(0)	2	(4)	47
2001	15	(38)	15	(38)	4	(10)	2	(5)	0	(0)	3	(8)	39
2002	11	(48)	7	(30)	1	(4)	0	(0)	2	(9)	2	(9)	23
2003	6	(30)	6	(30)	4	(20)	1	(5)	3	(15)	0	(0)	20
2004	11	(44)	10	(40)	1	(4)	0	(0)	2	(8)	1	(4)	25
2005	8	(18)	20	(45)	5	(11)	1	(2)	8	(18)	2	(5)	44
2006	11	(31)	11	(31)	4	(11)	0	(0)	9	(26)	0	(0)	35
2007	8	(24)	13	(38)	5	(15)	1	(3)	6	(18)	1	(3)	34
2008	22	(58)	9	(24)	3	(8)	0	(0)	4	(11)	0	(0)	38
2009	7	(33)	10	(48)	1	(5)	0	(0)	2	(10)	1	(5)	21

[a] Includes 3- or 4-wheelers or other ORV.

[b] Includes DLP, or other known human-caused mortality.

Table 5. Unit 1D black bear hunter effort, mean skull size, and mean age, regulatory years 2000 through 2009. Days hunted over 30 are excluded from table. Ages not available for all bears or years. Mean skull size not available for all bears.

Regulatory year	Hunter effort			Mean skull size[a] (inches)				Average age (years)[b]			
	Total days	Nr hunters	Mean days per hunter	Male	*n*[c]	Female	*n*	Male	*n*	Female	*n*
2000											
Fall 2000	8	6	1.3	16.2	6						
Spring 2001	236	39	6.1	17.3	30	15.5	9				
Total	244	45	5.4	17.1	36	15.5	9	7.0	37	9.6	9
2001											
Fall 2001	14	5	2.8	16.5	2	14.8	3				
Spring 2002	135	31	4.4	17.1	25	15.1	5				
Total	149	36	4.1	17.1	27	15.0	8	7.9	28	6.5	10
2002											
Fall 2002	12	7	1.7	17.3	4	15.5	4				
Spring 2003	79	12	6.6	17.9	9	15.7	4				
Total	91	19	4.8	17.7	13	15.6	8	8.8	14	11.4	7
2003											
Fall 2003	6	4	1.5	15.8	2	15.5	2				
Spring 2004	58	14	4.1	17.8	15	15.8	2				
Total	64	18	3.6	17.6	17	15.6	4	8.8	16	10.3	4
2004											
Fall 2004	1	1	1	16.3	1	0.0	0				
Spring 2005	110	23	4.8	17.7	21	16.3	3				
Total	111	24	4.6	16.0	21	16.3	3	12.7	21	9.4	3

Table continues next page

Table 5. continued.

Regulatory year	Total days	Hunter Effort: Nr hunters	Hunter Effort: Mean days per hunter	Mean skull size[a] (inches): Male	*n*	Female	*n*	Average age (years)[b]: Male	*n*	Female	*n*
2005											
Fall 2005	22	6	3.7	17.4	6	16.1	1				
Spring 2006	170	37	4.6	17.6	30	15.7	7				
Total	192	43	4.5	17.5	36	15.8	8	9.2	35	9.5	8
2006											
Fall 2006	11	5	2.2	16.4	4	15.1	1				
Spring 2007	160	30	5.3	17.3	22	15.5	8				
Total	171	35	4.9	16.5	26	15.5	9	8.3	26	5.6	9
2007											
Fall 2007	26	5	5.2	15.5	5	0.0	0	4.4	5	0.0	0
Spring 2008	81	28	2.9	17.3	21	15.69	5	6.3	24	9.0	5
Total	107	33	3.2	16.9	26	15.69	5	6.0	29	9.0	5
2008											
Fall 2008	32	11	2.9	15.7	7	15.67	3	4.4	8	16.0	3
Spring 2009	123	27	4.6	16.9	21	15.91	4	7.7	22	10.8	5
Total	155	38	4.1	16.6	28	15.81	7	6.8	30	12.75	8
2009											
Fall 2009	2	2	1.0	16.2	1	15.54	2	4.0	1	6.5	2
Spring 2010	45	18	2.5	17.4	16	15.04	2	6.7	16	5.5	2
Total	47	20	2.4	17.4	17	15.29	4	6.5	17	6.0	4

[a] Skull sizes equal length plus zygomatic width.
[b] Ages not available for all bears.
[c] *n* represents sample size..

Table 6. 3-Year mean hunter effort, bear skull size and age comparison, regulatory years 1998–2009.

Regulatory year	Hunter effort			Mean skull size[a] (inches)				Average age (years)[b]			
	Total days	Nr hunters	Mean days per hunter	Male	*n*[c]	Female	*n*	Male	*n*	Female	*n*
1998–2000											
Total	355	125	2.8	16.9	99	15.4	27	6.9	82	8.7	23
2001–2003											
Total	274	73	3.8	17.4	58	15.3	20	8.4	57	9.1	21
2004–2006											
Total	474	102	4.6	16.8	81	15.7	20	8.9	82	8.2	20
2007–2009											
Total	309	91	3.4	16.9	71	15.6	16	6.4	76	10.1	17

[a] Skull sizes equal length plus zygomatic width.
[b] Ages not available for all bears.
[c] *n* represents sample size.

Table 7. Unit 1D black bear mortality[a] by Wildlife Analysis Areas (WAA), regulatory years 2000 through 2009.

Regulatory year	WAA							Total
	4302	4303	4304	4405	4406	4407	4408	
2000	24	8	1	7	7	0	0	47
2001	21	10	1	5	0	0	2	39
2002	10	8	0	2	0	2	1	23
2003	7	12	0	0	0	1	0	20
2004	13	8	0	4	0	0	0	25
2005	25	13	2	1	1	1	1	44
2006	15	12	1	7	0	0	0	35
2007	13	15	0	3	1	2	0	34
2008	20	13	0	1	0	3	1	38
2009	9	10	0	0	0	2	0	21

[a] Includes DLP kills, research mortalities, and other known human-caused mortality.

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 2 (3,600 mi^2)

GEOGRAPHICAL DESCRIPTION: Prince of Wales Island and adjacent islands south of Sumner Strait and west of Kashevarof Passage.

BACKGROUND

HABITAT DESCRIPTION

Prince of Wales (POW) and adjacent islands have some of the best black bear habitat in Southeast Alaska. Unit 2 has abundant productive salmon streams, many large estuaries, and subalpine and alpine areas at lower, more hospitable elevations compared to mainland locations capable of supporting a large number of bears. The larger average skull sizes of Unit 2 bears compared to other Southeast Alaska bears also suggest that Unit 2 bears have access to extremely productive habitats.

Small openings and disturbed areas, such as wetlands, avalanche chutes, clearcuts, and subalpine meadows are important areas for foraging. Black bear diets range from mostly vegetarian to mostly carnivorous and the species may subsist by scavenging or by predation on a variety of mammals or fish. Unit 2 black bears primarily eat vegetation during early spring. Major foods include grasses and sedges, *Equisetum* spp., skunk cabbage (*Lysichiton americanum*), and berries (*Vaccinium and Rubus sp*.). Later in spring, bears are efficient predators of Sitka black-tailed deer fawns during a short vulnerable period in late May and June. During summer and fall, bears accumulate fat reserves necessary for winter hibernation. Bears with access to salmon streams consume large quantities of fish, and poor fish runs (or reduced berry crops) can result in low cub production and survival (Jonkel and Cowan 1971). Fecundity may also be impacted if food supplies have been poor during the previous summer and the female has not accumulated adequate energy reserves. In these cases, the fertilized egg might not implant and consequently the female will not produce cubs. Poor food availability may also cause losses after implantation or may result in the death of cubs that are born weak. In most years, cub survival is around 20% but may be as high as 50% during good food years. The most critical period is when a bear becomes independent at 16–17 months old (Jonkel and Cowan 1971). The age when females first produce cubs is also related to available food supply and ranges from 3 to 7 years of age, depending on their nutritional plane, a measure of habitat quality (Kolenosky and Strathearn 1987).

Although there are abundant healthy and productive habitats, more clearcut logging has occurred in Unit 2 than in other Southeast Alaska (Southeast) black bear habitats. Counting national forest and private lands, the Alaska Department of Fish and Game (ADF&G) estimates about 475 mi^2 of forested black bear habitat has been cut during the past 50 years, including over 40% of the old-growth forest once found in Unit 2. Logging-associated road building in Unit 2 has created the highest density of roads in Southeast, with more than 2,500 miles of drivable roads on national forest land and additional large tracts of road on private Native corporation lands. Only a few roads have been closed after logging operations finished, as required by the 1997 Tongass Land Management Plan (TLMP, USFS 1997). The recently enacted Access Travel Management Plan (ATM) by the USFS will close 150 miles of road to highway vehicles and convert an additional 222 miles from highway vehicle use to OHV use only (USDA 2009). As a result of more than 40 years of large scale clearcut logging, habitat changes continue to occur. Although early seral stages (3–20 years post-logging) provide black bears with abundant plant foods, later stages result in the disappearance of understory as conifer canopies close and light does not penetrate to the forest floor. Second-growth stands also lack large hollow trees and root masses important for denning. We believe that, although logging may create food for bears in the short term, the long-term result will be a decline in bear numbers in Unit 2 (Suring et al. 1988).

Logging activity peaked in the 80's and early 90's before declining to lower levels, but has seen resurgence during this reporting period. The Logjam Timber sale allowed for 73 million board feet of lumber, resulting in clear-cut logging of an additional approximate 3,400 acres of old-growth habitat. The US Forest Service is planning another large scale sale called the Big Thorne Timber sale which would allow for an additional 100 million board feet of lumber from approximately 5,800 acres to be removed from the forest. This sale could begin as soon as 2012. In addition, current legislation before congress called the Sealaska bill has the potential to transfer up to 85,000 acres of Tongass National forest to Sealaska Corporation. Of this, potentially 75,000 acres or 117 square miles of additional old-growth habitat could be lost to clear-cut logging.

The faunal history of Southeast Alaska is far more complex than previously thought. Recent discoveries in several limestone caves in Unit 2 show that prehistorically black bears (*Ursus americanus)* shared this range with brown bears (*Ursus arctos*). Brown bears are no longer present on POW or the surrounding archipelago. Radiocarbon dating methods on fossils found in the caves suggest both species of bears were present during the last glacial maximum, dating back to 35,000–45,000 years ago, and the range overlap existed during the Pleistocene until at least 7200 B.P. What finally drove *U. arctos* to extinction on the southern islands is unclear, but a likely factor is the dense forest habitat that developed during the Holocene, covering all but the highest mountain peaks (Banfield 1974; MacDonald and Cook 1996, 1999). Stable isotope analysis on both modern and fossil *U. americanus* from POW using $\delta^{13}C$ values suggest this species has an almost exclusive terrestrial diet in spite of the fact that these bears are often seen catching salmon (Heaton 1995). Along with *U. arctos*, several other extirpated species have been identified from fossils found in the caves. They include red fox (*Vulpes vulpes)*, arctic fox (*Alopex logopus)*, wolverine (*Gulo gulo)*, and barren ground caribou (*Rangifer tarandus)*.

HUMAN USE HISTORY

Black bears are indigenous to Unit 2 and have traditionally been hunted for food and trophies. Information about black bear abundance and distribution in the unit is limited to sealing records, anecdotal public reports, and observations by our staff.

Regulatory history

Statewide sealing of black bears began in 1973. Since then we have been able to get data on hunter effort during the sealing process, but only for those hunters who were successful. However, a proposal was passed at the 2008 Board of Game (BOG) meeting which now requires all black bear hunters to obtain a harvest ticket/report prior to hunting, which will allow us to obtain effort data from "all" hunters. This should shed additional light on the state of the bear population on POW and elsewhere in the region by allowing us to look at catch per unit effort data in various geographic locations. We can also use the contact information we receive from these harvest tickets to survey hunters about other aspects of bear hunting. As expected, compliance from hunters and license vendors was poor the first year the regulation was in effect, but we are optimistic that, with familiarity, compliance will improve and we will begin collecting useful data.

Seasons and bag limits

Since statehood, the bear hunting season has extended from 1 September through 30 June, with a bag limit for residents of 2 bears per regulatory year., only 1 of which can be a blue or glacier bear. Nonresident and resident bag limits were the same until 1990, when the nonresident limit was reduced to 1 bear per year. In 1982 it became legal to bait black bears year-round. However, in 1988, the Board of Game limited baiting in Southeast Alaska to the period 15 April–15 June. That same year ADF&G records began to accurately document the number of bait permits issued. Beginning fall 1996, hunters were required to salvage the edible meat of all spring black bears killed in Southeast Alaska during the period 1 January–31 May. The requirement was adopted as a compromise alternative to a proposal to eliminate bear baiting. The salvage rule and bear baiting in general continue to be contentious issues with proposals for and against these regulations coming before the BOG each cycle.

Hunting with dogs

Hunting bears with dogs is a controversial issue. (Elowe 1990). POW is the only place in Southeast Alaska with a history of hunting bears with dogs, and unlike other areas of the state, such hunters have primarily been nonresidents. Many other states have eliminated the use of dogs for bear hunting, but the practice has been allowed since 1966 in Alaska. In the early 1990s, numerous complaints about this practice on POW prompted ADF&G to develop a policy for hunting bears with dogs in the region. That policy, adopted in 1992, restricts hunting bears with dogs to the fall, September–December, because deer fawns, bear cubs, and other young wildlife are most vulnerable to disruption during the spring. Currently, a maximum of 5 permits are issued in Unit 2 during any year to keep this hunt within manageable limits and to minimize disruption to wildlife and other user groups. Prior to 1998, the annual 5-permit limit had never been reached. In 1994 the Board of Game adopted additional permit conditions into regulation, and Region I added additional conditions requiring a report of the number of bears treed and harvested and proof of health certificates for all dogs used. Many of the same hunters consistently apply for the permits each year. Approximately 1–4 bears are harvested with dogs

each year, which is a small portion of the overall bear harvest. In contrast, outside of Alaska, dog-related hunting harvests have been increasing and have accounted for up to 15% of the annual take in other states. However, where an alternative hunting method is available that the general public can use effectively, the percentage of bears taken with hounds is usually low. This is true for Southeast Alaska. Most hunters find spot-and-stalk methods very effective, and they consequently rely less on other methods.

Historical harvest patterns

Unlike many areas in the northern part of the state, where black bears are numerous and managers are trying to reduce their numbers to bolster moose and caribou populations, managers of black bears on Prince of Wales Island are seriously concerned about apparent population declines. After averaging 123 bears per year during 1980–1988 and 221 bears annually from 1989 to 1995, the Unit 2 black bear harvest increased to a yearly average of 353 bears during 1994–2002. From 2003 to 2007 the average continued to increase to 432 bears annually. Harvest peaked in 2005 at nearly 500 bears and has been alarmingly in decline since (Table 1). Along with this recent decline in harvest, managers have noted declines in average skull sizes and ages of harvested bears from the central roaded portion of POW where the highest harvests occur. This suggests a decrease in large bears, which may mean a declining population. In addition, local residents, hunting guides, tour operators, transporters, local hunters and other members of the public are increasingly expressing concerns about chronic low bear numbers compared to just 10-15 years ago (ADFG 2010).

Black bear harvest by nonresidents in Unit 2 has steadily increased over the past 25 years. It topped out at 89% during 2006 and 2007 and has been above 80% each of the past 9 seasons. During the past 10-year period, Alaska residents living in Unit 2 accounted for 6% and nonlocal residents another 9% of the harvest (Table 2). Most nonresidents do not use a registered guide when black bear hunting in this unit, but guided hunts are increasing. Nonresident hunters must purchase a locking tag ($225-$300) to affix to each bear harvested. Males have accounted for about 73% of the harvest during the past 10 years and between 62% and 79% of the harvest has occurred during spring.

With the extensive road system, numerous lodges and bed and breakfasts, vehicle and skiff rentals available, POW is a very popular and economical hunt for the do-it-yourself hunter wanting to experience Alaska. Although we do not have hunter effort data, field observations from staff, harvests and anecdotal reports of lower bookings from lodges indicate fewer hunters came to POW during this reporting period. The current economic recession, high fuel prices, or lower bear populations are all potential reasons for this apparent decline.

Until 1985 Unit 2 bear hunters used airplane, boat, and highway transportation in relatively equal amounts. However, logging-associated road construction peaked in the 1980s, and beginning in 1986 most hunters used the road system to access hunting areas. During the past 10 years, highway vehicles accounted for 48% of the transportation used by successful Unit 2 hunters while boats accounted for 49% (Table 3). Even the boat based hunters are using the extensive road system to access multiple waterways on a typical hunt. A new highway improvement and paving project was recently completed along a large tract of the main road from Klawock to Thorne Bay and east to Naukati. Another section of pavement was completed along the main 30 Road from the Naukati Junction to Coffman Cove during the summer of 2009. These projects

have improved hunter access to the island but will be countered somewhat by diminishing road access due to road closures associated with the Forest Service's Access Travel Management Plan.

Historical harvest locations

Historically, Wildlife Analysis Areas (WAAs) 1214, 1317, and 1422 account for approximately 1/3 of the annual harvest (Table 4). WAA 1422, which includes Tuxekan and El Capitan passages on west POW, offers easy road access. WAA 1317 (the area south and west of Hollis) provides easy boat access into the 12-mile Arm area. WAA 1214 includes the popular Polk and McKenzie Inlet regions. Additional WAAs that have received notable hunting pressure more recently include 1420 (Ratz Harbor to Coffman Cove on the east side of POW), WAA 1318 (the area around POW's primary population centers of Craig and Klawock with easy road access), and 1530 (Whale Pass and Exchange Cove on the northeast corner of the island) (Figure 1). Many of these areas also offer good access from saltwater along protected bays and passages.

Several formerly popular WAA's experienced significant declines in harvest during the 2009 season; most notably WAA 1107 (Hydaburg area), 1210 (Moira Sound), 1211 (Cholmondeley Sound), 1317 (12-Mile Arm), 1319 (North Thorne), and 1422 (Tuxekan/El Cap) (Table 4).

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain an average skull size of at least 19.1 inches for male bears harvested each spring (January–June) or 18.0 inches for all males taken during a regulatory year.
- Maintain a male-to-female sex ratio of 3:1 in the harvest.
- Minimize human–bear conflicts by providing information and assistance to the public and to other agencies.

Age, genetics, and environmental factors, such as habitat and forage quality, combine to influence black bear skull size. Sealing records indicate that harvested mature black bears in Unit 2 generally have larger skulls than bears from the nearby mainland. The skull size management objective of 19.1 inches for males harvested in the spring was established in the late 1980s after analysis of several previous years data showed this to be the long-term average. We wanted to maintain skull size in the harvest at the long-term high, and we have looked at any reduction in this average skull size as a possible indication of changes in the population's age structure.

We use skull size as a management tool because we believe that average skull size trends may indicate changes in population size and composition, and they provide some measure of the sustainability of the harvest. A decreasing average skull size may indicate a decline in that segment of the population composed of large, older bears and could indicate an overall population decline. However, an increasing average skull size could also indicate a reduction in the proportion of younger bears in the population. Probably the most appropriate use of skull size data is as an indicator of some change in the population or in hunter effort. We use skull size in conjunction with other data to make our best assessment of the current population.

Sex ratio is another parameter commonly used when monitoring black bear harvests. It is relied on as a primary means of assessing population status in 19 states and provinces and as supporting information for population assessment in another 8 areas (Garshelis 1990). Harvest sex ratio is thought by some bear biologists to suggest changes in the population. A 3:1 male to female sex ratio in the harvest has been suggested to be a sustainable yield from a healthy bear population (Porter 2008).

METHODS

Hunters are required to submit bear skulls and hides for sealing within 30 days of the kill. Fish and Game staff, designated sealers, or Alaska Bureau of Wildlife Enforcement troopers must seal black bear hides and skulls taken by successful hunters. Biological and hunt information collected at the time of sealing includes hide color, sex, skull length and width, date and location of kill, number of days hunted, transportation method, and any use of commercial services, including guides. A premolar is collected and sent to Matson's Laboratory in Milltown, Montana for age determination. During this report period, tissue and/or hair samples were collected from harvested bears for DNA and stable isotope analysis.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population estimates are not currently available for black bears in this unit. Information obtained during sealing cannot be used to measure population trends. Although harvest information gained from sealing records, such as average skull size, average age, and sex ratio may provide some indication of black bear population trends, in the absence of accompanying demographic data, correlations between these measures and harvest sustainability will continue to elude us. Research that is underway on POW promises to provide a greater understanding of black bears and their population on POW.

Population Size

No black bear population studies have been completed in Unit 2. Density estimates of North American black bears vary between 0.3 and 3.4 bears/mi^2, depending on the region and habitat conditions. At the high end, a Washington state study in forested Sitka spruce habitat that included logged areas comparable to POW resulted in the 3.4 bears/mi^2 estimate (Lindzey and Meslow 1977).

Elsewhere, Modafferi (1982) estimated 1 bear/mi^2 in eastern Prince William Sound, Alaska. Density estimates from forested habitat in Minnesota using biomarker mark-recapture methods resulted in higher values than we estimate for Unit 2, ranging from 4–6 bears/mi^2 (Garshelis 1989). The highest black bear density estimated in forested habitat outside of Alaska, Minnesota, or Washington was in Virginia and ranged from 0.96–1.49 bears/mi^2 (Carney 1985).

Wood (1990) indicated that unlogged portions of Unit 2 contain some of the best black bear habitat in Southeast Alaska. Based on population estimates from other North America coastal areas (Poelker and Hartwell 1973), Wood estimated the Unit 2 black bear density at 1.5 bears/mi^2. Using Wood's density estimate, Larsen derived a population estimate of 5,400 bears for the unit (Larsen 1995). In making this estimate, Larsen assumed some areas have more and some less bears than others.

In 2000, ADF&G supported a study on a 400-mi^2 northern portion of Kuiu Island located in Unit 3 that used tetracycline biomarkers to estimate black bear density. This black bear research calculated a bear density estimate at 3.9 bears/mi^2 (1.5 km^2) (Peacock 2004). This higher density estimate is comparable with Lindzey and Meslow's (1977) peak estimate of black bears on Long Island, Washington. Because the Kuiu effort was focused on an island adjacent to Unit 2 with similar logging patterns, its results may be more applicable to Unit 2 bear populations than studies done elsewhere. If we calculate a conservative estimate of Unit 2 bears using 3 bears/mi^2, which is less than the results from the Kuiu study but higher than previous estimates calculated from the Washington state work, we would essentially double the overall estimate for Unit 2 from 5,400 to 10,800 bears. Prior to this reporting period, managers thought the actual number of bears in Unit 2 was likely somewhere between these two density estimates because of the large area and varying habitat quality across the temperate forest landscape (Porter 2008), but this no longer appears to be the case as managers now believe that currently the bear population on POW is depressed from highs seen during the 1990s and early 2000s.

Current Research

During this reporting period we have begun several extensive research projects related to black bears to help answer some of the questions surrounding the recent population declines on POW. In 2008 we initiated a pilot study in the central portion of Prince of Wales Island. Efforts were intensified during the summer of 2009 and completed in 2010. This study included the use of noninvasive genetic mark–recapture techniques. We used noninvasive breakaway single-capture noose snares equipped with barbed wire and barbed wire fences to capture hair from live bears (Beier et al. 2005). Bears were considered marked if we obtained a genetic signature from hair samples. The recaptures were obtained when hunters harvested bears during the subsequent hunting seasons. When the analysis is completed we will use the information to calculate a harvest rate as well as rough density estimate of bears. Data collected through this effort will be important in helping us determine if the present harvest is sustainable. Unfortunately, incompetent appointed sealers may have lost or compromised a large number of tissue samples from harvested bears from 2008–2010. We are currently awaiting lab results before we can analyze data.

In 2009 we began a comprehensive demographics, life history and movement patterns research project. During this study bears are captured with modified Aldrich foot snares in elevated bucket sets and free-range-darted with the use of trained hounds. Captured bears are equipped with GPS and VHF radio collars. We collect blood and tissue samples from them and take a number of body measurements. The objectives of the study are to monitor movement patterns and vulnerability to harvest. We will be able to get home range estimates, the first of their kind in Southeast Alaska, describe den sites and habitat selection, and will be able to measure fecundity and cub survival. We have equipped 12 bears with GPS collars and 9 with VHF collars thus far. Collaring efforts will continue in summer 2011 as additional funding has allowed us to purchase several more GPS collars. This research will help corroborate our hair snare work, previous bear research in Southeast Alaska, and ties in with a deer research project being done concurrently on POW.

A pilot study in 2000, using radio collars on newborn Sitka black-tailed deer, confirmed bears are efficient predators of young deer. Beginning in 2010 a doctoral degree student, sponsored in part by ADFG, began collaring adult does and neonate fawns on POW. We hope the project will

yield valuable information on the degree of black bear predation on deer fawns, birth site selection, and habitat use. This work will continue through 2012.

Population Composition

We lack quantitative information with which to estimate the sex and age composition of the Unit 2 black bear population. Because most hunters select the largest bear they can find and tend to harvest males at a rate higher than they occur in the population, the male-to-female harvest ratio provides a better indicator of harvest sustainability and population status than does the ratio of males to females in the population. Prolonged overharvest of females during the past 5-10 years on POW may have resulted in population decline. We suspect the harvest of female bears increased over time as hunters had a harder time finding large male bears. A decreasing trend in the male-to-female harvest ratio could signal a decline in that segment of the population made up of older, larger males.

Distribution and Movements

As stated above, Unit 2 black bears are probably not evenly distributed across the unit. For example, the islands between Sea Otter Sound and Bucarelli Bay that lack of productive salmon streams are mostly uninhabited by black bears. Also, a high proportion of southern POW is characterized by muskeg and low volume timber and probably supports a lower density of bears than the more productive northern half of the island. Current research should provide much needed quantitative information about home ranges, habitat use, and movement patterns of Unit 2 black bears soon.

Unlike mainland Southeast Alaska, Unit 2 black bears occur in the absence of brown bears. The cinnamon-colored black bear, which occurs in mainland populations, is absent from Unit 2, as are the glacier (blue) and Kermode (white) bears, which occur infrequently in nearby British Columbia and occasionally along the mainland of Southeast Alaska.

MORTALITY

Harvest

Season	Bag limit
1 Sep–30 Jun	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear
1 Sep–30 Jun	Nonresident hunters: 1 bear

Board of Game Action and Emergency Orders. The BOG established the Southern Southeast Islands Controlled Use Area (CUA) for Units 2 and 3 at the 2008 meeting. The CUA is closed to the use of motorized land vehicles for the transportation of black bear hunters, their hunting gear, or parts of black bear September 1-30; however, this prohibition does not apply to the transportation of black bear hunters, their hunting gear, or parts of black bears to or from publicly owned airports, the Alaska State ferry Terminals, commercial lodging, department designated boat launches, or for registered guests at US Forest Service cabins at Staney Creek and Twelve Mile Arm. In addition to this regulation, the board implemented a harvest ticket requirement for all of Southeast Alaska.

No emergency orders were issued that would affect black bears in Unit 2 during this report period.

Hunter Harvest. The 2007–2009 average annual harvest was 310 bears. Harvest has been decreasing since the peak harvest of 486 bears in 2005. Bunnell and Tait (1985) developed a deterministic simulation model showing that maximum allowable annual hunting mortality on black bears over 1 year old is 14.2% of the estimated population. Based on Larsen's (1995) population estimate of 5,400 bears, this percentage would give a maximum sustainable annual harvest of 767 bears. The high 2005 harvest of 486 bears was only 9% of this population estimate. Because we believe the recent harvests have not been sustainable and the bear population has been reduced markedly the last several years, the 14.2% sustainable harvest rate for POW may be too high, or we may be over-estimating bear density. Other factors to consider are wounding loss and illegal kills, which we suspect may be responsible for up to 50% additional mortality on POW. It is important to track harvest on watershed or other site-specific scales because overharvest may occur locally. Analyzing populations on small spatial scales may also be important because our Unit 2 population estimates are based entirely on available habitat and habitat quality may vary radically between watersheds.

A sex ratio of 3 males to 1 female bear in the harvest, or 75% male harvest, is thought to be sustainable over the long term. The harvest sex ratio has fallen short of that target during this reporting period with 2007-2009 ratios registering 2.3:1, 2.8:1, and 2.5:1 respectively. The 3-year average was 2.5:1 or 71 % male harvest. The peak harvest years of 2005 and 2007 were the lowest average sex ratios on record at 2.3:1 males to females. The average sex ratio of the harvest during the past 10 years (2000–2009) has been below management objectives at 2.7:1, 73% male harvest, (range 2.3:1-3.4:1) and has only been above 3:1 during 2 of those 10 years. In comparison, the previous 10-year (1990–1999) average ratio was 3.0:1 (range 2.4-3.8:1) when the management objective was met 7 of those 10 years (Table 1).

We looked at the Unit 2 harvest at smaller scale areas as well as unit wide. The unit is divided into major harvest units (MHUs), which in turn are composed of (Wildlife Analysis Areas (WAAs). A 4-digit code represents the MHU + WAA for fine scale mapping of harvest. During the previous reporting period (RY2004–2006), MHU's 1100, 1200, and 1300 experienced an increasing trend in female harvest. During this reporting period, female harvest in MHUs 1100, 1200, 1300, 1400, and 1500 all showed declining trends; not surprising considering the overall decline in the bear harvest since 2005. The 10-year averages for the past decade (RY 2000–2009) and the previous decade (RY 1990–1999) clearly show significant increases in female harvest. During 1990–1999 these MHU's averaged 2.8, 7.6, 21.3, 16.7 and 11.4 females harvested respectively. During RY 2000–2009, those averages increased to 6.4, 18.9, 31.9, 24.1 and 20.3 respectively. Also the proportion of females in the total harvest increased significantly during the last decade in MHUs 1200 and 1500, but has not changed significantly in MHUs 1100, 1300 and 1400. MHUs 1300 and 1400 have some of the highest road densities in the unit and bears from these areas seem to be younger compared to bears in areas with less access (Table 5 and Figure 1).

The mean or median age of the harvest (or some ratio among age classes) is often assumed to directly reflect the level of exploitation. If mortality is age-biased, as bear hunting mortality appears to be, changes in the age structure will lag well behind changes in population size

(Garshelis 1990). The mean age of harvested Unit 2 bears has remained fairly constant during the past 10 years (1999–2008), with males averaging 6.4 years (range 5.0–7.5) and females 8.9 years (range 7.2– 10.3) (Table 6). Males harvested in the fall are always younger on average than bears harvested in the spring. For example, the average age for fall males in fall 2007 was the lowest on record at 3.8 years (Table 6). Conversely, there is no age difference in the female harvest between spring and fall. We will continue to evaluate the age trends of harvested male bears and the age structure of all harvested bears on a smaller landscape scale to look for trends. The average age of male bears taken during this report period was 6.6 years (data based only on RY 2007 and RY2008 as RY 09 data not yet available).

During this report period only 1 hound hunter, a POW resident, registered to hunt with dogs. He took 1 bear with this method. The same resident has been assisting Fish and Game staff with bear captures using his tracking dogs and has also helped several hunters find and dispatch hard to locate wounded bears.

Hunter Residency and Success. Nonresident hunters continue to harvest more bears in Unit 2 than local and nonlocal Alaska residents combined. Between 1980 and 1990, nonresidents took less than 50% of the Unit 2 bear harvest. During this report period, nonresidents took 84% of the reported harvest, whereas Unit 2 residents and non-local Alaska residents each took 8% of the remaining harvest (Table 2). The residency of successful hunters has changed dramatically over the past 20 years. During 1990–1999 Alaska residents accounted for 37% of the harvest, and this declined to 15% during 2000–2009 (Table 2). Reasons for this shift are most likely due to an increasing interest by non-Alaskans in hunting bears in Unit 2, and a change in demographics of Alaskans living in Unit 2.

The Unit 2 human population has experienced striking changes in the past 10 years with the closure of many logging camps and an overall reduction in timber-related activities. During the past 30–40 years, the logging industry provided a steady flow of new hunters into the area who were often new residents to Alaska as well as avid hunters. The remote locations of many logging operations allowed workers easy access to game populations, including bears. Since the decline of the timber industry, newer Unit 2 residents are more involved in tourism and charter fishing and less invested in a lifestyle that involves hunting. This may explain some of the reduced resident harvest.

Hunter effort has dropped precipitously along with harvest. Successful hunters' days afield peaked in 2005 at 1,677, then dropped 50% over 4 years to 790 days in 2009. The days afield per bear taken however, has remained constant at approximately 3.5 hunter days (Table 6).

Harvest Chronology. Most Unit 2 bears are taken in the spring and May is consistently the peak harvest month. The May bear harvest was 51%, 41% and 58% of total harvest respectively during 2007–2009. The long-term average for May during 1987–2006 was 51%. September consistently has the second highest monthly harvest (26% during the report period). An exception was September 2009 when implementation of the Controlled Use Area limited the September harvest to just 13% of the season total. Only a few bears are taken in October and November (Table 7).

Harvest in particular Major Harvest Areas (MHU). Two Major Harvest Areas on POW, 1300 and 1400, have accounted for a large portion of the total harvest in Unit 2. During the report period MHU 1400 accounted for 23% of the harvest, while MHU 1300 accounted for 35%. These are similar to the long-term (1991–2006) percentages of 25% for MHU 1400 and 31% from 1300, the top are for harvest in Unit 2 (Table 5). Both of these harvest units have road access, which leads to intense harvest pressure.

Bait stations. Alaska faced a ballot initiative during November 2004 to ban bear baiting under state hunting regulations. Anti-hunters felt using bait to lure bears was unfair chase and an unethical hunting practice, and they were able to get the required signatures to bring it to a statewide vote. The initiative brought about a great deal of news coverage on both sides, but in the end the initiative was defeated at the polls.

Bait permits are issued by registration permit, and each permit allows the hunter to establish 2 bait sites. Baiting is allowed only during the spring hunting season. During the past 10 years, we have issued an average of 106 permits each year (range 60–158). During the 2005 season we issued 158 permits, the most permits on record for a single year. Hunters normally choose to establish the maximum of 2 bait sites per registration permit, so in 2005 that meant more than 300 bait sites possibly set up across Unit 2. However, even with the high number of bait registration permits issued in the unit, the reported harvested over bait has historically accounted for only a small percentage of the total Unit 2 bear harvest. During this report period 2007–2009, hunters reported taking 31, 24, and 8 bears over bait respectively (Table 1). However, hunters who obtain Unit 2 bait permits often report taking bears using spot and stalk methods rather than hunting over their established bait site.

Because additional hunters may hunt over the same bait site with permission of the owner, we do not have good estimates of actual numbers of hunters using bait sites. In an attempt to gather some of that important harvest information we have asked hunters to mail in their site permit at the end of the season. The site permit includes hunting license numbers from visitors if they used another hunter's registered bait site. More than 80% of the hunters harvesting bears over bait each season in Unit 2 are nonresidents. The majority of hunters using bait report taking bears with archery equipment.

Beginning spring 2010, hunters will be required by state regulation to provide exact GPS coordinates of their bait station prior to registration. This proposal was submitted by the Alaska Wildlife Troopers (AWT) to address the need for them to be able to locate bear baiting sites. Bear baiting permits come with a number of conditions associated with them, including requirements that they be placed away from roads and residences for public safety, and that the sites be cleaned up after the season ends. In order for AWT to check bait sites for permit compliance, troopers need to be able to locate the sites in a safe and efficient manner. As is, troopers often spend hours looking for a single site, which wastes their time and does not allow them to perform other important enforcement aspects of their jobs. By requiring GPS locations, AWT will be able to use the waypoints to quickly and efficiently check bait sites for compliance, helping ensure bear baiting is conducted in a safe and responsible manner.

Guided Hunter Harvest. Nonresidents accompanied by a licensed big game guide are allowed to harvest 1 bear. During this report period 8 guides were registered to hunt in the unit. Guides must

first be licensed by the state for specific guide use areas and then be permitted by the U.S. Forest Service (USFS) under a special use permit. Guided hunters are not guaranteed success, although personal contact with several Southeast guides suggests 95–100% of guide-assisted hunters take bears. Successful guided hunts matched the harvest pattern seen in recent years, peaking in 2005 when 75 guided hunters harvested bears. During the 2007–2009 seasons 63, 49, and 34 successful hunters reported using licensed guides to harvest bears. This represents approximately 15% of the harvest during the reporting period. Historically, 2–4 licensed big game guides have operated in Unit 2 annually. During 1990-1997 only 2 bears per year on average were taken by guided hunters. But in 1998 Unit 2 saw a significant increase in guided activity. Fifteen bears were taken on guided hunts that year and harvest from guided hunting has steadily increased since then.

The use of transporters to access hunting areas, especially by nonresidents, has been a concern during this and previous report periods. Unlike registered guides who are permitted for a set number of bear hunts, transporters are not limited to a set number of hunts by the USFS., Unlimited clients equates to a lot of dead bears. We believe unregulated transporters are partly responsible for the large increase in bear harvest since the mid 1990s and the associated concerns we now have with bear conservation in Unit 2. Transporters must obtain a state transporter license to operate, and those operating on marine waters must also have U.S. Coast Guard approval. Transporters are not legally allowed to influence where hunters go to hunt, nor can they assist hunters in locating or stalking game, or helping clients care for trophies. We suspect these regulations are frequently abused, and that many transporters are operating similar to a big game guide, resulting in an unregulated and quick removal of bears from the unit. The USFS is currently evaluating these activities and may eventually change its special use permit system to provide better records across the Tongass National Forest. The Forest Service is also looking at ways to bring transporters under the permit umbrella similar to guides and other users. The Alaska Big Game Commercial Services Board is also clarifying existing guide language in state regulation and establishing new guidelines to reduce abuse of this system. Although the USFS special use permit addresses crowding issues, mandatory reporting will also provide a way to monitor changes across all of the Tongass National Forest.

Other mortality

Although there is little supportive data, we believe wounding loss is a significant source of mortality for Unit 2 bears, perhaps as high as 50% of the annual harvest on POW. Forest understory is dense, and frequent rainfall complicates the task of tracking wounded animals. At the time of sealing, hunters sometimes volunteer that they shot at additional bears while hunting. Nonresident hunters probably wound more animals than residents because of their unfamiliarity with local habitat conditions and vegetation, shot distance and placement, and basic bear behavior after the shot is fired.

We have documented some defense of life or property (DLP) kills over the years, but believe many more have been killed than have been reported. We suspect that bears killed at logging camps and in the many small Unit 2 communities have historically gone unreported due to the nature of DLP kills and the necessity of filling out paperwork and turning the bear over to the state. ADF&G is making a greater effort to build relationships with enforcement officials and communities to foster better documentation and data collection in the future. Since the closure of the landfill in Craig, several bears have been killed under DLP regulations near Craig and

Klawock. Several bears are also killed in vehicle collisions each year along new stretches of paved highway. We expect vehicle collisions to increase with more miles of road being paved each year in the unit. Grasses planted to stabilize hillsides will attract bears, and more drivers will spend additional time on the road at higher speeds.

HABITAT

Assessment

Timber harvest continues to pose the most serious threat to black bear habitat in the unit. Post-logging increases in berry production, primarily *Vaccinium* spp., may contribute to short-term bear population growth. This forage source will be lost as the canopy closes, as will habitat diversity associated with old-growth forests, accompanied by a loss of den trees. Roads associated with logging increase human access and can make bears increasingly vulnerable to harvest. The current apparent population decline may in part be the first evidence of reduced carrying capacity due to past logging.

Enhancement

No habitat enhancement projects specifically intended to benefit black bears have been attempted in the unit. Traditionally used as a silvicultural practice, precommercial thinning and pruning has been performed in some young second-growth stands in Unit 2. Recently there have been some attempts to add a wildlife component to the thinning prescriptions. The problem with most thinning prescriptions meant to benefit wildlife is the remaining slash. Because of the additional cost to remove or reduce slash it is seldom treated and creates an impenetrable barrier to most animals for approximately 20–25 years, after which canopy closure again results in loss of understory plants. The long-term effects of extensive clearcut logging will be detrimental to black bear populations in this unit. We may very well have reached the peak of bear suitability in Unit 2 as most of the areas previously clearcut are now reaching the closed canopy stage of forest succession. Several proposed large Federal timber sales along with some state timber sale offerings will further reduce long term bear carrying capacity in Unit 2.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Nuisance Bear Problems. Historical records are inaccurate regarding the number of bears killed while feeding on garbage or other human attractants in Unit 2. We receive only 1–2 DLP reports from POW each year. Since most of these Unit 2 areas are not restricted by city ordinances, landowners sometimes shoot and tag a nuisance bear under hunting regulations rather than surrender it to authorities, or are authorized by authorities to tag and keep a bear post DLP killing.

Until the early 1990's, many communities had open landfills that lured bears near people consequently creating generations of food-conditioned bears. An effort by the Alaska Department of Environmental Conservation to bring landfill managers into compliance with state regulations resulted in fewer refuse attractions for Unit 2 bears. The city of Thorne Bay closed its landfill. The city of Hydaburg was found to be out of compliance and is now shipping to the Craig/Klawock landfill. The shared Craig/Klawock barge transfer site is now operating and has removed the food attraction for bears.

CONCLUSIONS AND RECOMMENDATIONS

The Unit 2 black bear harvest that steadily increased to record levels in 2005 now appears to be in sharp decline. The data that has been collected to estimate the harvest rate of bears in the central WAAs on POW, as well as a minimum density estimate is still being analyzed but should be completed by 2012. That data along with the present research, aimed at providing some basic demographics, life history and movement information about POW bears, will greatly enhance our understanding of this important animal on POW to better address future management needs.

The age trend of male bears in the harvest appears to be stable, but we are seeing an older age class of female bears in the harvest along with smaller male skull averages. This suggests that in some cases hunters are harvesting an older female bear instead of a male because it was the largest animal they encountered. We will continue to monitor these trends in the harvest.

The mean male skull size during the spring failed to meet our management objective of 19.0 inches during all 3 years of this reporting period; 2007 ($\bar{x}$ =18.9), 2008 ($\bar{x}$ = 18.9) and 2009 ($\bar{x}$ = 18.9). During those years there was a marked decline in the number of spring males with skull sizes 20 inches or larger. Sixty three, 27 and 7 bears reached this mark during 2007–2009 respectively, for an average of 32 per year, compared with an average of 108 per year during the 3 years of the previous report period. Occasionally Unit 2 male bears also exceed a 21-inch skull measurement, qualifying them for the Boone and Crocket record book. During this report period, no bears in 2008 or 2009 reached 21 inches and only 13 reached this mark in 2008 (1 had a 22 inch skull). This is again a marked contrast to 2004-2006 when 24, 26, and 28 bears respectively reached this mark.

Unit 2 hunters would benefit from an educational video that gives information on identifying mature male bears in the field while describing our concerns about wounding loss. Such a video would help hunters and managers by promoting more male-specific selective hunting and help educate hunters about shot placement and shot distance.

We will continue to track harvest in specific locations in order to adjust future population estimates. This is especially important because harvests in 2 MHUs, both easily accessible along the road system, make up a large portion of the total bear harvest in the unit. Based on available literature, data collected, and crude density estimates, we believe the harvest the past several seasons has exceeded sustainable levels. Regulatory changes such as implementation of the Southern Southeast Islands Controlled Use Area and a draw hunt for non-guided non-residents will help address these concerns.

As logging continues, and large tracts of previously logged habitat rapidly convert to second-growth forest, we anticipate reductions in the carrying capacity for Unit 2 bears.

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Table 1. Unit 2 black bear harvest, 1988–2009.

Regulatory year	Reported																
	Hunter kill					Nonhunting kill[a]				Estimated kill		Total estimated kill[c]					
	M	F	Unk	Total	Baited[b]	M	F	Unk	Total	Unrep	Illegal	M	(%)	F	(%)	Unk	Total
1988																	
Fall 1988	63	28	1	92		2	0	1	3	0	0	65	(70)	28	(30)	2	95
Spring 1989	74	16	21	111	5	3	2	0	5	0	0	77	(81)	18	(19)	21	116
Total	137	44	22	203	5	5	2	1	8	0	0	142	(76)	46	(24)	23	211
1989																	
Fall 1989	27	17	27	71		1	1	2	4	0	0	28	(61)	18	(39)	29	75
Spring 1990	92	16	39	147	22	0	0	1	1	0	0	92	(85)	16	(15)	40	148
Total	119	33	66	218	22	1	1	3	5	0	0	120	(78)	34	(22)	69	223
1990																	
Fall 1990	44	21	16	81		4	3	2	9	0	0	48	(67)	24	(33)	18	90
Spring 1991	98	16	11	125	14	1	0	0	1	0	0	99	(86)	16	(14)	11	126
Total	142	37	27	206	14	5	3	2	10	0	0	147	(79)	40	(21)	29	216
1991																	
Fall 1991	34	26	5	65		0	2	0	2	0	0	34	(55)	28	(45)	5	67
Spring 1992	103	29	21	153	1	1	0	0	1	0	0	104	(78)	29	(22)	21	154
Total	137	55	26	218	1	1	2	0	3	0	0	138	(71)	57	(29)	26	221
1992																	
Fall 1992	42	26	12	80		0	0	1	1	0	0	42	(62)	26	(38)	13	81
Spring 1993	116	18	8	142	24	0	0	1	1	0	0	116	(87)	18	(13)	9	143
Total	158	44	20	222	24	0	0	2	2	0	0	158	(78)	44	(22)	22	224
1993																	
Fall 1993	52	35	3	90		0	0	0	0	0	0	52	(60)	35	(40)	3	90
Spring 1994	114	19	2	135	18	0	0	0	0	0	0	114	(86)	19	(14)	2	135
Total	166	51	5	225	18	0	0	0	0	0	0	166	(75)	54	(25)	5	225
1994																	
Fall 1994	58	25	2	85		2	1	0	3	0	0	60	(70)	26	(30)	2	88
Spring 1995	118	29	2	149	14	0	0	0	0	0	0	118	(80)	29	(20)	2	149
Total	176	54	4	234	14	2	1	0	3	0	0	178	(76)	55	(24)	4	237

Table continues next page

Table 1. continued.

Regulatory year	Reported																
	Hunter kill					Nonhunting kill[a]				Estimated kill		Total estimated kill[c]					
	M	F	Unk	Total	Baited[b]	M	F	Unk	Total	Unrep	Illegal	M	(%)	F	(%)	Unk	Total
1995																	
Fall 1995	50	35	0	85		0	0	0	0	0	0	50	(59)	35	(41)	0	85
Spring 1996	138	27	0	165	8	1	0	1	2	0	0	139	(84)	27	(16)	1	167
Total	188	62	0	250	8	1	0	1	2	0	0	189	(75)	62	(25)	1	252
1996																	
Fall 1996	49	39	0	88	0	0	0	1	1	0	0	49	(56)	39	(44)	1	89
Spring 1997	106	20	0	126	8	1	0	0	1	0	0	107	(84)	20	(16)	0	127
Total	155	59	0	214	8	1	0	1	2	0	0	156	(73)	59	(27)	1	216
1997																	
Fall 1997	65	37	1	103	0	0	0	1	1	0	0	65	(64)	37	(36)	2	104
Spring 1998	154	35	1	190	3	0	0	0	0	0	0	154	(81)	35	(19)	1	190
Total	219	72	2	293	3	0	0	1	1	0	0	219	(75)	72	(25)	3	294
1998																	
Fall 1998	53	66	0	119	0	0	0	2	2	0	0	53	(45)	66	(55)	2	121
Spring 1999	170	26	1	197	1	0	0	0	0	0	0	170	(87)	26	(13)	1	197
Total	223	92	1	316	1	0	0	2	2	0	0	223	(71)	92	(29)	3	318
1999																	
Fall 1999	50	46	0	96	0	1	0	0	1	0	0	51	(53)	46	(47)	0	97
Spring 2000	196	31	1	228	15	0	1	0	1	0	0	196	(86)	32	(14)	1	229
Total	246	77	1	324	15	1	1	0	2	0	0	247	(76)	78	(24)	1	326
2000																	
Fall 2000	88	58	0	146	0	0	1	0	1	0	0	88	(60)	59	(40)	0	147
Spring 2001	195	40	0	235	12	3	0	1	4	0	0	198	(83)	40	(17)	1	239
Total	283	98	0	381	12	3	1	1	5	0	0	286	(74)	99	(26)	1	386
2001																	
Fall 2001	55	55	0	110	0	0	1	0	1	0	0	55	(50)	56	(50)	0	111
Spring 2002	204	40	0	244	8	0	0	0	0	0	0	204	(84)	40	(16)	0	244
Total	259	95	0	354	8	0	1	0	1	0	0	259	(73)	96	(27)	0	355
2002																	
Fall 2002	70	54	0	124	0	0	1	0	1	0	0	70	(56)	55	(44)	0	125
Spring 2003	235	45	0	280	29	0	0	0	0	0	0	235	(84)	45	(16)	0	280
Total	305	99	0	404	29	0	1	0	1	0	0	305	(75)	100	(25)	0	405

Table continues next page

Table 1. continued.

Regulatory year	Reported															
	Hunter kill					Nonhunting kill[a]				Estimated kill		Total estimated kill[c]				
	M	F	Unk	Total	Baited[b]	M	F	Unk	Total	Unrep	Illegal	M	(%)	F	(%)	Unk	Total
2003																	
Fall 2003	66	54	0	120	0	0	2	0	2	0	0	66	(54)	56	(46)	0	122
Spring 2004	276	46	0	322	35	3	0	0	3	0	0	279	(86)	46	(14)	0	325
Total	342	100	0	442	35	3	2	0	5	0	0	345	(77)	102	(23)	0	447
2004																	
Fall 2004	48	66	0	114	0	0	0	0	0	0	0	48	(42)	66	(58)	0	114
Spring 2005	296	61	0	357	30	0	0	0	0	0	0	296	(83)	61	(17)	0	357
Total	344	127	0	471	30	0	0	0	0	0	0	344	(73)	127	(27)	0	471
2005																	
Fall 2005	71	53	0	124	0	0	0	0	0	0	0	71	(57)	53	(43)	0	124
Spring 2006	268	94	0	362	46	0	0	0	0	0	0	268	(74)	94	(26)	0	362
Total	339	147	0	486	46	0	0	0	0	0	0	339	(70)	147	(30)	0	486
2006																	
Fall 2006	44	37	0	81	0	0	0	0	0	0	0	44	(54)	37	(46)	0	81
Spring 2007	240	72	0	312	37	0	0	0	0	0	0	240	(77)	72	(23)	0	312
Total	284	109	0	393	37	0	0	0	0	0	0	284	(72)	109	(28)	0	393
2007																	
Fall 2007	47	58	0	105	0	0	0	0	0	0	0	47	(45)	58	(55)	0	105
Spring 2008	205	53	0	258	31	0	0	0	0	0	0	205	(79)	53	(21)	0	258
Total	252	111	0	363	31	0	0	0	0	0	0	252	(69)	111	(31)	0	363
2008																	
Fall 2008	64	59	0	123	0	1	0	0	1	0	0	65	(52)	59	(48)	0	124
Spring 2009	176	27	0	203	24	0	0	0	0	0	0	176	(87)	27	(13)	0	203
Total	240	86	0	326	24	1	0	0	1	0	0	241	(74)	86	(26)	0	327
2009																	
Fall 2009	26	32	3	61	0	2	0	0	2	0	0	28	(46)	32	(53)	3	63
Spring 2010	145	36	0	181	8	1	0	0	1	0	0	146	(80)	36	(20)	0	182
Total	171	68	3	242	8	3	0	0	3	0	0	174	(72)	68	(28)	3	245

[a] Includes DLP kills, research mortalities, and other known human-caused mortality.
[b] Bears reported harvested over bait.
[c] Percent by sex based only on known harvest totals.

Table 2. Unit 2 residency of successful black bear successful hunters, 1987–2009.

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Total
1987–1988	44	(29)	46	(30)	62	(41)	152
1988–1989	33	(16)	47	(23)	123	(61)	203
1989–1990	39	(18)	52	(24)	127	(58)	218
1990–1991	46	(22)	71	(34)	89	(43)	206
1991–1992	40	(18)	72	(33)	106	(49)	218
1992–1993	24	(11)	73	(33)	125	(56)	222
1993–1994	35	(16)	58	(26)	132	(59)	225
1994–1995	31	(13)	54	(23)	148	(64)	233
1995–1996	62	(25)	45	(18)	143	(57)	250
1996–1997	35	(16)	40	(19)	139	(65)	214
1997–1998	46	(16)	38	(13)	209	(71)	293
1998–1999	35	(11)	55	(17)	226	(72)	316
1999–2000	26	(8)	44	(14)	254	(78)	324
2000–2001	29	(8)	53	(14)	299	(78)	381
2001–2002	23	(7)	38	(11)	289	(83)	350
2002–2003	27	(7)	47	(12)	330	(82)	404
2003–2004	31	(7)	23	(5)	388	(88)	442
2004–2005	28	(6)	42	(9)	401	(85)	471
2005–2006	20	(4)	41	(8)	425	(87)	486
2006–2007	18	(5)	26	(7)	349	(89)	393
2007–2008	17	(5)	22	(6)	324	(89)	363
2008–2009	22	(7)	24	(7)	280	(86)	326
2009–2010	22	(9)	25	(10)	195	(81)	242
Average	32	(11)	45	(15)	224	(74)	302

[a] Local hunters are those hunters that reside in Unit 2.

Table 3. Unit 2 transportation methods use in harvesting black bears, 1987–2009.

	Transport												
Regulatory year	Air	(%)	Boat	(%)	Highway vehicle	(%)	Walk	(%)	Other[a]	(%)	Unk[b]	(%)	*n*
1987–1988	14	(9)	39	(25)	99	(64)	0	(0)	0	(0)	2	(1)	154
1988–1989	30	(14)	68	(32)	102	(48)	0	(0)	3	(2)	8	(4)	211
1989–1990	18	(8)	70	(31)	118	(53)	0	(0)	6	(3)	11	(5)	223
1990–1991	7	(3)	69	(32)	118	(55)	0	(0)	12	(5)	10	(5)	216
1991–1992	11	(5)	64	(29)	126	(57)	5	(2)	5	(2)	10	(5)	221
1992–1993	18	(8)	59	(26)	135	(60)	10	(5)	0	(0)	2	(1)	224
1993–1994	15	(7)	63	(28)	124	(55)	23	(10)	0	(0)	0	(0)	225
1994–1995	13	(5)	53	(22)	159	(68)	10	(4)	0	(0)	3	(1)	238
1995–1996	19	(9)	69	(27)	134	(53)	27	(11)	1	(0)	1	(0)	251
1996–1997	11	(5)	56	(26)	114	(53)	32	(15)	1	(0)	2	(1)	216
1997–1998	19	(6)	82	(28)	170	(58)	22	(7)	0	(0)	1	(1)	294
1998–1999	8	(3)	98	(31)	175	(55)	33	(10)	0	(0)	4	(1)	318
1999–2000	13	(4)	107	(33)	196	(60)	8	(2)	0	(0)	2	(1)	326
2000–2001	13	(3)	146	(38)	197	(51)	21	(5)	4	(1)	5	(2)	386
2001–2002	0	(0)	169	(46)	198	(54)	0	(0)	0	(0)	0	(0)	367
2002–2003	2	(1)	201	(51)	195	(48)	0	(0)	0	(0)	0	(0)	398
2003–2004	6	(1)	236	(54)	187	(43)	0	(0)	0	(0)	0	(0)	429
2004–2005	6	(1)	235	(50)	228	(48)	0	(0)	0	(0)	3	(<1)	471
2005–2006	5	(1)	258	(53)	219	(45)	4	(1)	0	(0)	0	(0)	486
2006–2007	12	(3)	181	(46)	200	(51)	0	(0)	0	(0)	0	(0)	393
2007–2008	3	(<1)	186	(51)	163	(45)	10	(3)	1	(<1)	0	(0)	363
2008–2009	7	(2)	140	(43)	165	(51)	11	(3)	3	(<1)	0	(0)	326
2009–2010	1	(<1)	129	(53)	90	(37)	8	(3)	1	(<1)	13	(5)	242
Average	11	(4)	121	(40)	157	(52)	10	(3)	2	(<1)	3	(1)	303

[a] Includes 3- or 4-wheelers or other ORV.

[b] Includes DLP or other known human caused mortality.

Table 4. Unit 2 black bear mortality[a] from the most heavily harvested wildlife analysis areas (WAA), RY 1991–RY 2009.

	Regulatory years																			
WAA	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	$\bar{x}$
1107	7	11	8	14	8	8	12	12	16	21	18	44	16	37	35	23	28	14	5	**18**
1210	6	6	8	8	7	6	10	20	15	11	11	6	26	10	24	12	12	6	3	**11**
1211	4	2	12	6	8	8	7	9	11	24	21	29	20	35	32	28	18	8	3	**16**
1213	2	7	2	2	7	1	6	6	7	13	11	18	9	16	21	7	8	11	6	**8**
1214	18	15	15	10	18	11	36	28	31	13	30	40	37	38	55	21	27	37	31	**27**
1315	18	12	15	6	14	16	17	22	16	16	9	19	24	13	12	16	18	13	15	**15**
1316	3	4	0	4	10	1	2	1	3	3	1	2	3	3	1	3	4	8	2	**3**
1317	14	20	14	17	23	13	17	25	29	33	40	30	34	37	32	36	28	26	14	**25**
1318	16	17	19	21	18	19	15	22	16	16	16	11	25	11	13	16	19	16	13	**17**
1319	17	14	13	14	15	14	15	19	23	30	20	18	21	24	36	22	27	22	10	**20**
1332	9	9	8	6	8	12	6	9	10	13	0	0	0	15	14	19	18	12	15	**10**
1420	16	20	18	22	14	18	21	26	30	21	15	21	16	24	29	23	11	18	14	**20**
1421	6	6	9	9	5	6	8	14	14	16	3	12	11	10	8	11	8	9	8	**9**
1422	23	25	25	38	36	33	37	28	40	63	52	46	50	62	60	46	49	43	23	**41**
1526	2	1	12	1	6	7	20	12	15	19	16	16	26	22	12	19	10	9	9	**12**
1527	2	7	7	8	5	5	21	13	15	15	12	16	16	5	10	12	12	5	6	**10**
1529	12	13	10	15	9	9	23	14	7	24	18	9	10	19	19	21	13	10	9	**14**
1530	23	17	13	25	19	7	9	12	6	8	18	15	17	16	13	13	8	17	10	**14**
1531	0	1	6	7	5	2	4	7	3	17	6	4	4	9	6	4	8	4	0	**5**

[a] Includes DLP kills, research mortalities, and other known human-caused mortality.

Table 5. Unit 2 black bear harvest by major harvest unit (MHU), 1990–2009.

	MHU 1100			MHU 1200			MHU 1300			MHU 1400			MHU 1500		
Year	Female	Total	% Fem.	Female	Total	% Fem.	Female	Total	% Fem.	Female	Total	% Fem.	Female	Total	% Fem.
1990	2	22	9	6	29	21	15	53	28	4	37	11	9	35	26
1991	3	12	25	9	31	29	21	68	31	9	37	24	10	37	27
1992	4	15	27	6	32	19	18	70	26	9	45	20	5	36	14
1993	2	11	18	8	37	22	18	70	26	18	52	35	8	49	16
1994	3	14	21	5	25	20	15	66	23	18	67	27	13	58	22
1995	0	10	0	6	40	15	27	96	28	20	55	36	8	45	18
1996	2	15	13	4	31	13	23	75	31	20	57	35	10	36	28
1997	1	12	8	9	58	16	24	73	33	17	63	27	21	76	28
1998	5	22	23	13	63	21	28	99	28	23	65	35	21	63	33
1999	6	25	24	10	64	16	24	99	24	29	83	35	9	49	18
2000	5	23	22	11	63	17	32	111	29	28	93	30	22	89	25
2001	6	24	25	17	74	23	21	102	21	25	69	36	21	70	30
2002	6	49	12	15	87	17	32	90	36	30	81	37	8	55	15
2003	4	48	8	17	102	17	31	122	25	21	77	27	22	83	27
2004	7	51	14	24	109	22	31	124	25	34	96	35	30	85	35
2005	13	47	28	45	136	33	39	128	30	28	95	29	22	72	31
2006	7	32	22	16	81	20	44	119	37	19	80	24	22	78	28
2007	10	39	26	21	65	32	36	122	30	22	68	32	22	61	36
2008	4	26	15	19	67	28	26	100	26	20	70	29	17	51	33
2009	2	18	11	4	47	9	27	79	34	14	44	32	17	39	44
Ave. RY 1990–99	2.8	15.8	18	7.6	41	19	21.3	76.9	28	16.7	56.1	30	11.4	48.4	24
Ave. RY 2000–09	6.4	35.7	18	18.9	83.1	23	31.9	110	29	24.1	77.3	31	20.3	68.3	30
Ave. total	4.6	25.8	18	13.25	62.1	21	26.6	93.3	29	20.4	66.7	31	15.85	58.4	27

Table 6. Unit 2 black bear hunter effort, mean skull size, and mean age, 1987–2009.

Regulatory year	Hunter effort			Mean skull size[a] (inches)				Average age (years)[bc]			
	Total days	Nr hunters	Mean days per hunter	Male	*n*[d]	Female	*n*	Male	*n*	Female	*n*
1987											
Fall 1987	105	40	2.6	17.2	23	16.7	9				
Spring 1988	293	113	2.6	19.5	94	17.2	12				
Total/average	398	153	2.6	$\bar{x}$ =19.0	117	$\bar{x}$ =17.0	21	$\bar{x}$ =8.0	99	$\bar{x}$ =7.7	20
1988											
Fall 1988	328	92	3.6	18.0	57	16.9	26				
Spring 1989	414	114	3.6	19.4	70	16.7	18				
Total/average	742	206	3.6	$\bar{x}$ =18.8	127	$\bar{x}$ =16.8	44	$\bar{x}$ =58	7.8	$\bar{x}$ =8.4	10
1989											
Fall 1989	231	71	3.3	18.4	22	17.0	12				
Spring 1990	442	147	3.0	19.5	89	16.9	16				
Total/average	673	218	3.1	$\bar{x}$ =19.3	111	$\bar{x}$ =16.9	28	----		----	
1990											
Fall 1990	228	86	2.7	17.8	39	16.6	19				
Spring 1991	448	124	3.6	19.1	93	16.5	16				
Total/average	676	210	3.2	$\bar{x}$ =18.7	132	$\bar{x}$ =16.5	35	$\bar{x}$ =7.7	128	$\bar{x}$ =8.1	33
1991											
Fall 1991	184	67	2.7	18.1	31	16.8	25				
Spring 1992	653	154	4.2	19.4	103	17.0	28				
Total/average	837	221	3.8	$\bar{x}$ =19.1	134	$\bar{x}$ =16.9	53	$\bar{x}$ =7.6	132	$\bar{x}$ =8.2	56
1992											
Fall 1992	231	80	2.9	17.3	37	16.6	25				
Spring 1993	774	141	5.5	19.0	115	16.7	18				
Total/average	1005	221	4.5	$\bar{x}$ =18.6	152	$\bar{x}$ =16.6	43	$\bar{x}$ =7.1	153	$\bar{x}$ =8.4	42
1993											
Fall 1993	295	90	3.3	17.6	52	16.9	35				
Spring 1994	480	135	3.6	19.3	112	16.9	18				
Total/average	775	225	3.4	$\bar{x}$ =18.8	164	$\bar{x}$ =16.9	53	$\bar{x}$ =7.1	161	$\bar{x}$ =7.2	49

Table continues next page

Table 6. continued.

Regulatory year	Hunter effort: Total days	Hunter effort: Nr hunters	Hunter effort: Mean days per hunter	Mean skull size[a] (inches): Male	n[d]	Mean skull size[a] (inches): Female	n	Average age (years)[bc]: Male	n	Average age (years)[bc]: Female	n
1994											
Fall 1994	223	85	2.6	18.2	60	16.8	24				
Spring 1995	601	149	4.0	19.2	112	17.3	27				
Total/average	824	234	$\bar{x}$ =3.5	$\bar{x}$ =18.9	172	$\bar{x}$ =17.1	51	$\bar{x}$ =7.1	177	$\bar{x}$ =8.4	55
1995											
Fall 1995	233	85	2.7	18.3	50	16.8	35				
Spring 1996	588	166	3.5	19.2	135	17.0	26				
Total/average	821	251	$\bar{x}$ =3.3	$\bar{x}$ =18.9	185	$\bar{x}$ =16.9	61	$\bar{x}$ =7.1	185	$\bar{x}$ =8.0	62
1996											
Fall 1996	355	88	4.0	17.2	48	16.8	38				
Spring 1997	543	127	4.3	19.5	102	16.6	19				
Total/average	898	215	$\bar{x}$ =4.2	$\bar{x}$ =18.8	150	$\bar{x}$ =16.7	57	$\bar{x}$ =6.9	154	$\bar{x}$ =8.7	57
1997											
Fall 1997	345	103	3.3	17.6	63	16.5	36				
Spring 1998	704	187	3.8	19.2	151	17.0	34				
Total/average	1049	290	$\bar{x}$ =3.6	$\bar{x}$ =18.8	214	$\bar{x}$ =16.8	70	$\bar{x}$ =6.5	215	$\bar{x}$ =8.2	71
1998											
Fall 1998	397	119	3.3	17.7	51	16.6	65				
Spring 1999	709	189	3.8	19.1	163	17.3	25				
Total/average	1106	308	$\bar{x}$ =3.6	$\bar{x}$ =18.8	214	$\bar{x}$ =16.8	90	$\bar{x}$ =7.1	215	$\bar{x}$ =7.8	89
1999											
Fall 1999	281	96	2.9	17.0	48	16.5	44				
Spring 2000	984	228	4.3	19.2	190	17.1	32				
Total/average	1265	324	$\bar{x}$ =3.9	$\bar{x}$ =18.7	238	$\bar{x}$ =16.7	76	$\bar{x}$ =6.6	237	$\bar{x}$ =7.2	71

Table continued next page

Table 6. continued.

Regulatory year	Hunter effort: Total days	Hunter effort: Nr hunters	Hunter effort: Mean days per hunter	Mean skull size[a] (inches): Male	n[d]	Mean skull size[a] (inches): Female	n	Average age (years)[bc]: Male	n	Average age (years)[bc]: Female	n
2000											
Fall 2000	557	143	3.9	17.4	88	16.6	57				
Spring 2001	987	230	4.3	19.3	193	17.2	40				
Total/average	1544	373	$\bar{x}$ = 4.1	$\bar{x}$ =18.7	281	$\bar{x}$ =16.8	97	$\bar{x}$ =6.5	276	$\bar{x}$ =8.8	94
2001											
Fall 2001	391	112	3.5	17.8	52	16.7	57	4.5	53	8.9	53
Spring 2002	913	243	3.8	18.0	200	17.9	38	5.5	195	9.3	39
Total/average	1304	355	$\bar{x}$ =3.7	$\bar{x}$ =17.9	252	$\bar{x}$ =17.3	95	$\bar{x}$ =5.0	248	$\bar{x}$ =9.1	92
2002											
Fall 2002	376	125	3.0	17.5	70	16.9	55	6.9	69	5.9	45
Spring 2003	1068	270	4.0	19.4	229	17.2	45	8.1	230	8.4	50
Total/average	1444	395	$\bar{x}$ =3.7	$\bar{x}$ =18.5	299	$\bar{x}$ =17.0	100	$\bar{x}$ =7.5	299	$\bar{x}$ =7.2	95
2003											
Fall 2003	355	120	3.0	17.5	67	16.7	49	5.0	77	10.3	44
Spring 2004	1138	320	3.5	19.4	274	17.2	45	7.9	274	10.3	44
Total/average	1493	440	$\bar{x}$ =3.3	$\bar{x}$ =18.5	341	$\bar{x}$ =17.0	94	$\bar{x}$ =6.5	351	$\bar{x}$ =10.3	88
2004											
Fall 2004	375	112	3.3	17.6	46	16.8	65	4.5	47	9.3	64
Spring 2005	1251	354	3.5	19.3	286	16.9	57	7.8	288	9.6	60
Total/average	1626	466	$\bar{x}$ =3.4	$\bar{x}$ =18.5	332	$\bar{x}$ =16.9	122	$\bar{x}$ =6.2	335	$\bar{x}$ =9.5	124
2005											
Fall 2005	371	124	3.0	17.2	67	16.5	51	4.6	70	7.5	51
Spring 2006	1306	360	3.6	18.8	258	17.2	87	7.4	260	9.6	90
Total/average	1677	484	$\bar{x}$ =3.3	$\bar{x}$ =18.0	325	$\bar{x}$ =16.9	138	$\bar{x}$ =6.0	330	$\bar{x}$ =8.6	141
2006											
Fall 2006	267	81	3.5	16.9	43	16.7	37	4.9	44	9.6	37
Spring 2007	1165	312	3.7	19.0	240	16.7	72	7.8	228	8.1	67
Total/average	1432	393	$\bar{x}$ =3.6	$\bar{x}$ =18.0	283	$\bar{x}$ =16.7	109	$\bar{x}$ =6.4	272	$\bar{x}$ =8.9	104

Table continued next page

Table 6. continued.

Regulatory year	Hunter effort			Mean skull size[a] (inches)				Average age (years)[bc]			
	Total days	Nr hunters	Mean days per hunter	Male	n[d]	Female	n	Male	n	Female	n
2007											
Fall 2007	323	104	3.1	16.7	46	16.8	57	3.8	46	8.7	55
Spring 2008	967	255	3.8	18.9	201	17.2	52	7.3	191	10.8	50
Total/average	1,290	359	$\bar{x}$ =3.6	$\bar{x}$ =18.5	247	$\bar{x}$ =17.0	109	$\bar{x}$ =6.6	237	$\bar{x}$ =9.7	105
2008											
Fall 2008	331	120	2.8	17.3	56	16.8	53	5.0	54	9.5	50
Spring 2009	767	203	3.8	18.9	166	17.3	26	7.0	151	11.3	22
Total/average	1,098	323	$\bar{x}$ =3.4	$\bar{x}$ =18.5	222	$\bar{x}$ =17.0	79	$\bar{x}$ =6.5	205	$\bar{x}$ =10.0	72
2009											
Fall 2009	160	53	3.0	17.6	25	16.6	28	--	--	--	--
Spring 2010	630	177	3.6	18.9	146	16.8	34	6.3	51	11.7	19
Total/average	790	230	$\bar{x}$ =3.4	$\bar{x}$ =18.7	171	$\bar{x}$ =16.7	62	--	--	--	--

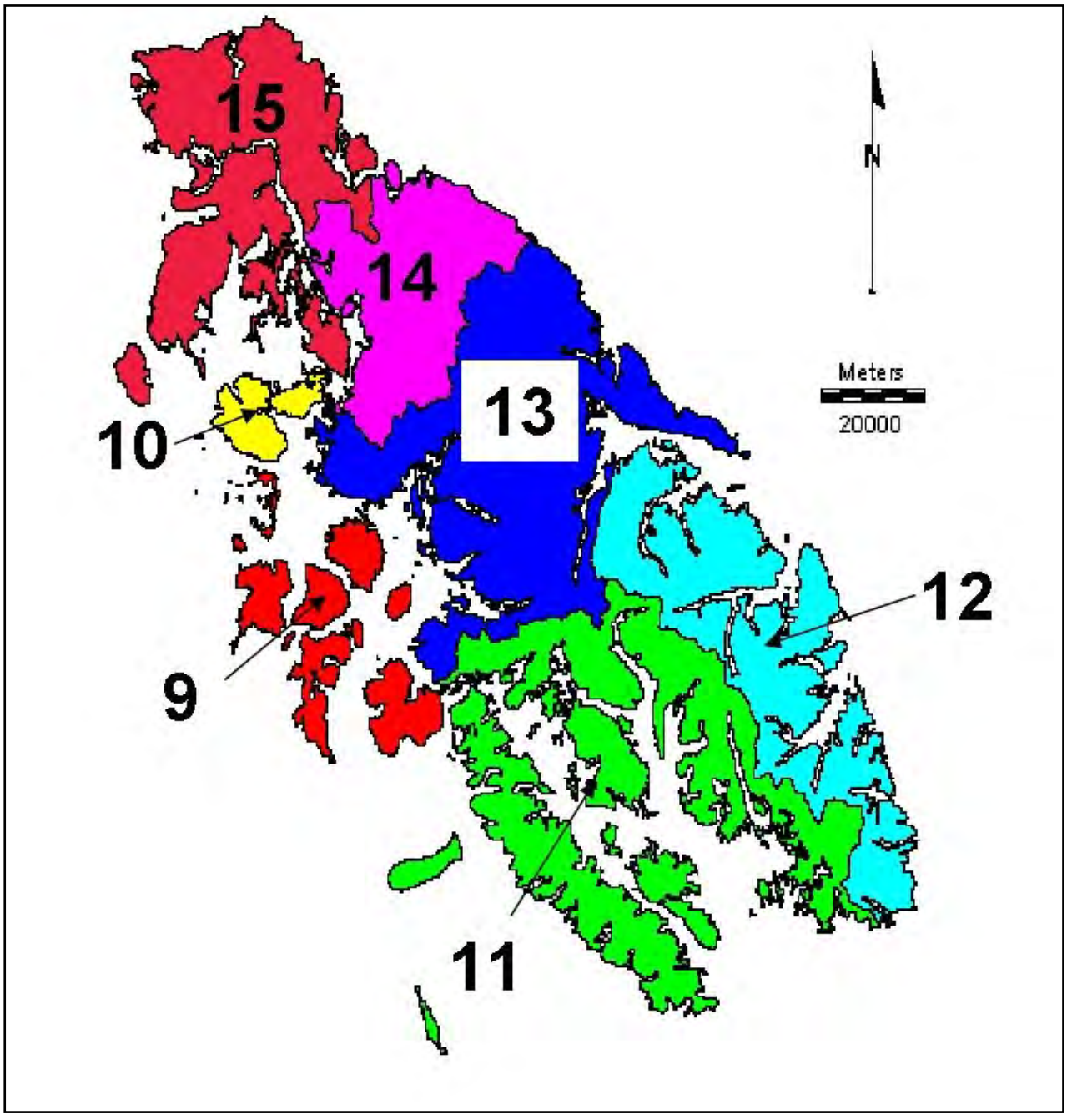
[a] Skull sizes equal length plus zygomatic width.
[b] Bear ages not available for 1980–1981 and 1989–1990.
[c] Bear ages for 2009 incomplete, results still returning from lab at time of printing.
[d] *n* represents sample size.

Table 7. Unit 2 black bear harvest chronology by month[a], 1987–2009.

Regulatory year	Harvest periods												n^h
	Sep	(%)	Oct	(%)	Nov	(%)	Apr	(%)	May	(%)	Jun	(%)	
1987–1988	24	(15)	14	(9)	1	(1)	21	(14)	80[c]	(52)	14	(9)	154
1988–1989	72	(35)	21[b]	(10)	1	(1)	9	(4)	92[e]	(44)	13	(6)	211
1989–1990	55	(25)	14	(6)	2[b]	(1)	14[b]	(6)	115	(53)	19	(9)	223
1990–1991	63[c]	(30)	17[c]	(8)	7[c]	(3)	16	(8)	88[c]	(41)	22	(10)	216
1991–1992	38	(17)	17[b]	(8)	8	(4)	28	(13)	107[b]	(49)	19	(9)	221
1992–1993	56	(25)	23[b]	(10)	2	(1)	19	(8)	116[b]	(52)	8	(4)	224
1993–1994	67	(30)	14	(6)	9	(4)	15	(7)	94	(42)	26	(11)	225
1994–1995	62[d]	(26)	20	(8)	6[b]	(3)	12	(5)	119	(50)	18	(8)	237
1995–1996	67	(27)	12	(5)	5	(2)	16	(6)	137[b]	(55)	13	(5)	252
1996–1997	75	(35)	9	(4)	4	(2)	14	(7)	100	(46)	13[b]	(6)	216
1997–1998	82	(28)	21	(7)	0	(0)	30	(10)	152	(52)	9	(4)	294
1998–1999	96	(30)	22	(7)	2[c]	(1)	25	(8)	149	(47)	23	(7)	318
1999–2000	82	(25)	10	(3)	4	(1)	18	(6)	187	(58)	23[b]	(7)	326
2000–2001	129	(34)	17	(4)	0	(0)	27	(7)	176[c]	(46)	36[c]	(9)	386
2001–2002	94	(27)	10	(3)	3	(1)	20	(5)	195	(52)	30	(8)	355
2002–2003	97	(24)	18	(5)	9	(2)	36	(9)	205	(51)	36	(9)	405
2003–2004	104[f]	(24)	13	(3)	2	(<1)	21	(5)	264[b]	(60)	37[g]	(8)	447
2004–2005	99	(21)	11	(2)	4	(1)	37	(8)	278	(59)	42	(9)	471
2005–2006	110	(23)	12	(2)	2	(<1)	18	(4)	276	(57)	68	(14)	486
2006–2007	95	(24)	11	(3)	4	(1)	3	(1)	223	(57)	57	(15)	393
2007-2008	94	(26)	9	(2)	2	(<1)	10	(3)	184	(51)	64	(18)	363
2008-2009	104	(32)	13	(4)	6	(2)	7	(2)	133	(41)	63	(19)	327
2009-2010	30	(13)	25	(10)	3	(1)	5	(2)	139	(58)	37	(15)	245
Average	78	(26)	14	(5)	4	(1)	19	(6)	170	(56)	31	(10)	304

[a] Does not include bears killed during closed season.
[b] Includes 1 DLP or other known human-caused mortality.
[c] Includes 2 DLPs or other known human-caused mortality.
[d] Includes 3 DLPs or other known human-caused mortality.
[e] Includes 4 DLPs or other known human-caused mortality.
[f] Includes 1 DLP and one roadkill.
[g] Includes 2 roadkill.
[h] Also includes bears killed in months not represented by this table and unknown kills.

Figure 1. Unit 2 Major Harvest Units (MHUs).



WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 3 (3,000 mi^2)

GEOGRAPHIC DESCRIPTION: Islands of the Petersburg, Kake, and Wrangell area.

BACKGROUND

HABITAT DESCRIPTION

Most high quality black bear habitat in Unit 3 is associated with low-elevation, old-growth forest with abundant and productive salmon streams. Small openings and disturbed areas, such as wetlands, avalanche chutes, clearcuts, and subalpine meadows are also important black bear foraging areas. Black bear diets may range from mostly vegetarian to mostly carnivorous, and the species may subsist by scavenging or by predation on large and small mammals or fish. In Unit 1B, black bears primarily eat vegetation during early spring. Major foods include grasses and sedges, *Equisetum* spp., and berries, primarily *Vaccinium* sp., that persist through winter. Later in spring, black bears may be efficient predators of moose calves and/or Sitka black-tailed deer fawns. During summer and fall, when bears accumulate fat reserves for winter hibernation, those bears with access to salmon streams eat large quantities of fish. Berries are also important during the summer and fall months. Poor fish runs or berry crops are thought to result in low cub production and survival the following spring.

We remain concerned about the extensive habitat changes occurring throughout the unit due to logging. The Alaska Department of Fish and Game (ADF&G) has estimated that of the 3,000 mi^2 of terrestrial habitat in Unit 3, about 1,500 mi^2 is forested. More than 129,000 acres of forested habitat in Unit 3 have been logged to date. As a result, timber harvest poses the most serious threat to black bear habitat in the unit over the long term. Black bears are able to exploit increases in forage in early-successional plant communities immediately after logging and may temporarily benefit from clearcutting. However, this food source is lost approximately 20–25 years postlogging with canopy closure, and second-growth forests provide little bear habitat. Precommercial thinning and pruning of second-growth stands can extend the short-term benefits to bears, but the long-term effects of logging will be detrimental. Large clearcuts on Mitkof, Wrangell, and Kupreanof Islands will diminish in value as bear habitat over the next few decades (Suring et al. 1988). The proliferation of roads associated with logging is also of concern as roads increase human access and make bears increasingly vulnerable to harvest.

HUMAN-USE HISTORY

Black bears are indigenous to Unit 3 and traditionally have been hunted for food and trophies. Information about black bears in the unit is limited to sealing records, anecdotal public reports, and staff observations. Although we lack quantitative demographic information on black bears in the unit, we believe the population is stable.

Regulation History

Sealing of black bears was first required in 1973. Prior to 2009, hunters were not required to obtain a hunt harvest ticket or registration permit for black bear; thus, effort data for unsuccessful hunters had previously been unavailable and information on hunt effort was available only for successful hunters.

For most years since statehood black bear hunting season extended from 1 September through 30 June, and the bag limit for residents has been 2 bears annually, only 1 of which could be a blue or glacier bear. From 1980 through 1983 the season closed on 15 June, and the resident bag limit was only 1 bear. Nonresident bag limits were the same as for residents until 1990, when the nonresident bag limit was reduced from 2 bears to 1 bear per year. In 1982 it became legal to use bait to hunt black bears year-round. In 1988 the Board of Game limited baiting in Southeast Alaska to 15 April–15 June. From 1989 to 1997 the department issued an average of 4 bear baiting permits per year in the unit. Each baiting permit allows the permittee to establish 2 individual bear baiting stations in the unit. The highest number of baiting permits issued was 11 in 2004. Hunting bears with dogs requires a permit issued by ADF&G. The use of dogs for black bear hunting has been allowed since 1966. No permit requests to hunt bears with dogs have been received for the unit. Since 1996 hunters have been required to salvage the edible meat of all black bears killed in Southeast Alaska from 1 January to 31 May.

In fall 2000, due to concerns over the steadily increasing harvest of black bears by nonresident hunters, the Board of Game established a harvest guideline of 120 bears annually for nonresidents on Kuiu Island. In 2001, the first year implemented, the new harvest guideline resulted in the emergency closure of the entire fall nonresident season on Kuiu after nonresidents harvested 110 bears, or 92 percent of the allowable quota, during the spring season. Since that time, no additional emergency closures have been necessary and the nonresident harvest on Kuiu has stabilized at an average of 112 bears annually.

Due to concerns about wounding loss, at its Region I meeting in November 2004 the Board of Game passed a regulation requiring a wounded black or brown bear to count against the bag limit of the hunter for the regulatory year in Units 1–4. At its statewide meeting in February 2004, the Board of Game (Board) passed a regulation allowing the sale of handicraft articles made from the fur of black bears.

At its Region I meeting in November 2008 the Board of Game passed a regulation requiring black bear hunters in Units 1–7, 11–17, 19D and 20 to obtain a black bear harvest ticket prior to hunting.

Historical harvest patterns

Annual harvests remained relatively stable from 1973 to 1980, averaging 43 bears per year. The harvest began to increase in the early 1980s, rising from 81 bears in 1981 to 166 bears in 1992.

By the early 1990s the unit had gained worldwide recognition for producing trophy-sized black bears, and in 1993 the harvest increased to 232 bears. By 2000 the annual harvest had increased over ten-fold since 1973, when 29 bears were killed. In the 2000–2001 regulatory year the Unit 3 harvest was 309 bears, with 165 (53 %) of those taken on Kuiu Island. From 2000 to 2006, approximately 73–83% of the annual harvest occured during the spring season. Since 1973, males have outnumbered females in the harvest about 4 to 1. The percentage of the harvest attributable to nonresident hunters increased from less than 50% in 1990 to 80% in 2000. Since 1992, the majority of black bears taken in the unit by nonresidents have come from Kuiu Island. Most nonresidents hunt without a guide in the unit. Nonresident hunters must purchase tags to affix to each bear harvested. The cost of these tags ($225 for nonresident citizens and $300 for nonresident aliens) may limit the number of nonresident hunters who hunt black bears.

As a result of increasing interest by nonresident hunters, the Unit 3 black bear harvest grew at an annual rate of 7% between 1990 and 2000. The Kuiu Island harvest increased more rapidly, at 9% annually, during the same period. The increasing harvest by nonresident hunters, particularly on Kuiu Island, resulted in concerns about the sustainability of increasing harvest levels. In 2001 the department implemented a newly authorized harvest guideline for Kuiu limiting the nonresident harvest to 120 bears annually. Since that time the Unit 3 harvest distribution has changed slightly and the proportion of the unitwide harvest coming off Kuiu annually has been reduced.

Historical harvest locations

Kuiu Island accounts for 25% of the Unit 3 land area and produced about 55% of the total black bear harvest from 1990 to 2000. Kuiu Island male skull sizes are larger on average than those from any other area of the state except Prince of Wales Island in Unit 2. Compared to other Unit 3 islands, Kuiu Island has a relatively high number of salmon streams and more shoreline miles per square mile of area than other islands. Roads associated with logging also provide easy access to the north end of Kuiu, where the highest harvest occurs. After increasing dramatically during the late 1990s, the percentage of successful hunters using motor vehicles on Kuiu has decreased in recent years. The decrease in motor vehicle use on Kuiu is primarily attributable to the departure of one transporter who had previously provided highway vehicles to his clients on the island. Kupreanof and Mitkof Islands produced annual black bear harvests averaging 33% and 8% of the Unit 3 bear harvest, respectively, throughout the 1990s. These percentages correspond closely to the percentage of Unit 3 land area on each island, 36% and 7%, respectively. Both islands have several highly productive salmon streams and extensive logging road networks, which aid hunter access. During the previous 2 report periods, Kuiu Island provided 48% of the unitwide harvest, Kupreanof 45%, Mitkof 4%, and the remainder of the Unit 3 islands 3%.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain an average spring skull size and an average annual male skull size of at least 18.5 inches.
- Maintain a male to female ratio of 3:1 in the harvest.

We have been using skull size as a management objective since the late 1980s because we believe that year-to-year trends in average skull size may indicate changes in population size and composition and provide some measure of the sustainability of harvest levels. A decreasing average skull size may indicate a decline in that segment of the population composed of large, older bears and could indicate an overall population decline. However, an increasing average skull size could also indicate a reduction in the proportion of younger bears in the population. Probably the most appropriate use of skull size data at this time is as an indicator of some change in the population or in hunter effort. We do not have a technique to tell us precisely what such a change might indicate, but use it in conjunction with other data to make our best assessment of the current population.

Age, genetics, and environmental factors, such as habitat and forage quality, all combine to influence black bear skull size. Sealing records and anecdotal evidence indicate that mature mainland black bears generally have smaller skull sizes compared to those found on Southeast Alaska islands. The skull size management objective of 18.5 inches was established in the late 1980s after analysis of data from previous years showed this to be the long-term average. We wanted to maintain skull size in the harvest at the long-term high, and we have looked at any reduction in this mean as a possible indication of changes in the population's age structure.

METHODS

Hunters are required to submit bear skulls and hides for sealing within 30 days of the kill. State-appointed sealing agents and staff from the departments of Fish and Game and Public Safety sealed hides and skulls of black bears. Biological and hunt information collected included pelage color, sex, skull size (length and width), date and location of kill, number of days hunted, transportation method, and hunter use of commercial services, including guide use. A premolar was collected from most bears and sent to Matson's Laboratory (Milltown, Montana) for age determination. We also sealed any bear killed under defense of life or property provisions (DLP) or any that died as road kill, illegal kill, or during research efforts. Comparison of current and historical data indicates harvest trends and may offer indirect evidence of population trends. No effort data is collected from unsuccessful hunters.

KUIU ISLAND RESEARCH

In May 2000, ADF&G entered into a cooperative agreement with the University of Nevada initiating a study using tetracycline biomarking and noninvasive DNA sampling as means of estimating the black bear population on northern Kuiu Island. In June of 2000 and 2002, Elizabeth Peacock (Peacock 2004) used tetracycline biomarking (Garshelis and Visser 1997) to estimate the size of the black bear population on Kuiu Island, north of the Bay of Pillars and Port Camden isthmus (673 km^2). Baits were laced with the antibiotic tetracycline and distributed; when a bait was taken by a bear, the tetracycline was incorporated in the newly formed bone tissue (Johnson 1964). To recover samples, hunters were asked to submit toe bone (metatarsal) samples from bears harvested on Kuiu and neighboring Kupreanof Islands during the period from fall 2000 and spring 2003. The bone samples were examined later under an ultraviolet microscope for the presence of a tetracycline-induced fluorescent mark allowing researchers to determine a marked-to-unmarked ratio of bears.

In June 2000 a total of 188 baits were deployed, resulting in 138 marked bears. Using recovery data from regulatory year 2000 Peacock estimated the population size on northern Kuiu was 1019 bears for a density estimate of 1.51 bears/km^2. In June 2002, a total of 263 baits were deployed, resulting in 191–201 marked bears. Using 2002 marks and recovery data, population point estimates for northern Kuiu ranged from 983 bears (1.46 bears/km^2) to 1013 bears (1.51 bears/km^2). Based on the 2000 and 2002 baiting efforts, and after adjusting for double-marking, emigration and immigration, Peacock developed density point estimates ranging from 1.31 to 1.51 bears/km^2 on northern Kuiu. The density estimate of 1.51 bears/km^2 or 3.9 bears/mi^2 is among the highest published black bear densities across the entire distribution of the species.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Information about Unit 3 black bears is limited to a Mitkof Island denning study (Erickson et al. 1982), a population estimation study conducted on northern Kuiu Island (Peacock 2004), harvest sealing records, anecdotal public reports, and observations by ADF&G staff.

Except for the 2000 and 2002 estimates for northern Kuiu Island, precise population estimates have never been available for black bears in the unit. Because the northern Kuiu population estimates were derived from studies conducted in 2000–2002 they may no longer be applicable. This is because changes in habitat post logging on Kuiu can greatly influence the ability of this habitat to support forage that is conducive to high bear densities. Additionally, the harvest of black bears during the past 10 years on Kuiu may have been above a sustainable level, and some evidence suggests black bear numbers on Kuiu have declined significantly since the late 1990s. Information obtained during sealing cannot be used to measure population trends. Although harvest information gained from sealing records, such as average skull size, average age, and sex ratio, may provide some indication of black bear population trends, in the absence of accompanying demographic data, correlations between these measures and harvest sustainability will continue to elude us. Research is needed to identify population parameters so we might better assess population trends and harvest sustainability.

Population Size

Precise population estimates are not currently available for black bears in the unit. Information collected during sealing cannot be used to measure population trends. Prior to the study on northern Kuiu Island, no black bear population studies had been conducted in Unit 3. Estimates of population size or density are difficult to obtain because the species generally inhabits forested areas, and aerial surveys are impossible. Vast, remote areas in the unit also make studies difficult and expensive to undertake. Past black bear density estimates for Unit 3 were based on studies in similar habitats in western Washington state in the 1960s (Poelker and Hartwell 1973). We believe minimum densities in most of Southeast Alaska are slightly higher than the 1.4 bears per mi^2 found in the Washington study area. Assuming a density of approximately 1.5 bears per mi^2 of forested habitat, ADF&G estimated 3,340 black bears in Unit 3 in 1990 based on an estimate of 2,220 forested mi^2. Since then, it has been necessary to revise forested acreage estimates downward. Bear density is probably not consistent throughout the forested areas of the unit. For instance, although black bears occur on Zarembo Island, their numbers remain very low. Bear densities are also relatively low on Etolin and other islands south of Sumner Strait. Density is

believed to be much higher on Kuiu, Kupreanof, and Mitkof Islands, which have more abundant and productive salmon streams.

Black bears with cinnamon pelage occur on a few islands in Unit 3. A small proportion of bears taken from Mitkof, Wrangell, and Kuiu Islands are cinnamon colored. Glacier bears are uncommon in the unit. Two records exist of glacier bears being harvested in the unit since 1973, both taken from Kuiu Island. We are aware of one anecdotal report of a glacier bear that was reportedly taken at Security Bay, Kuiu Island in the years prior to 1973, when sealing began. No Kermody bears (those with white pelage) have been reported in the unit.

A declining harvest trend since 2000 combined with anecdotal reports of fewer bear sightings by hunters and guides suggests that the Unit 3 black bear population has decreased during the last decade.

Population Composition

We lack quantitative information to estimate sex and age composition of the Unit 3 black bear population. The male to female ratio in the harvest may provide a better indicator of harvest sustainability and population status than average skull size. Considering their high reproductive potential, survival of breeding females is critical to sustained yield management. Prolonged overharvests of females will likely result in population declines. A decreasing trend in the male to female harvest ratio could signal a decline in that segment of the population composed of older, larger males. Region I staff established the 3:1 male to female guideline in the late 1980s, based on work done on black bears elsewhere.

In addition to seeing fewer bears in general, in recent years hunters and guides have reported seeing relatively few sows accompanied by cubs, particularly on Kuiu Island. It is therefore possible that low recruitment may be partially responsible for the suspected decline in the Unit 3 black bear population.

Distribution and Movements

Quantitative information about home ranges and movement patterns of Unit 3 black bears is not available. The only quantitative information on black bear movement patterns in Southeast comes from a single denning study conducted on Mitkof Island during 1980–1981 (Erickson et al. 1982). Black bear movement patterns are influenced to a large degree by seasonal changes and annual differences in the occurrence, abundance, and quality of preferred food items. Reproductive activities also influence bear movement patterns, particularly for males. As a result, males typically have larger home ranges than females.

Black bears typically emerge from winter dens in March and April. Following emergence from dens, bears typically occupy low elevation habitats, where they feed on greening vegetation. As spring proceeds into summer, bears typically disperse throughout forested and alpine habitats, where they continue to feed on grasses, sedges, forbs, and berry-producing shrubs. In the late summer and early fall, bears typically congregate near anadromous fish streams, where they feed on spawning salmon. As fish runs decline in the late summer and fall, bears disperse from salmon streams and feed primarily on berries and alpine vegetation before denning in October and November.

MORTALITY

Harvest

Season	Bag Limit
1 Sep–30 Jun	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear.
1 Sep–30 Jun	Nonresident hunters: 1 bear.

Game Board Action and Emergency Orders. At its Region I meeting in Nov 2008 the Board of Game passed a regulation requiring black bear hunters in Units 1–7, 11–17, 19D, and 20 to obtain a black bear harvest ticket prior to hunting. In a separate action designed to address the relatively high harvest of female bears during the fall season, the board created a controlled use area prohibiting the use of motorized land vehicles for black bear hunting in Units 2 and 3 during the month of September, with the exception of transportation directly to and from public transportation facilities and boat launches.

No emergency orders were issued regarding Unit 3 black bears during this report period.

Hunter Harvest. Unit 3 hunter harvests ranged from 169 to 225 bears annually during this report period (Table 1). The average annual harvest of 200 bears annually during this report period, was below the preceding ten-year average of 254 bears annually. The 169 bears killed in 2009–10 represent the lowest annual harvest since the 1992–93 season.

Males made up 80% of the Unit 3 harvest in both 2007, and 2008, and 79% in 2009. During this report period, the average male skull size ranged from 18.3 inches to 18.6 inches (Table 2). The male to female ratio during this report period was 3.9:1—slightly above the management objective of 3:1.

Harvest in Particular Areas. Harvest occurred in 21 individual Unit 3 Wildlife Analysis Areas (WAAs) during this report period. Of the 601 bears harvested, 50% were taken from 6 WAAs on Kuiu Island, and 41% were taken from 9 WAAs on Kupreanof Island. WAA 5012 alone, on northern Kuiu Island, accounted for 20% of the total unitwide harvest. Combined, the harvest from 6 other Unit 3 WAAs, including those on Mitkof, Wrangell, Etolin, and Woronkofski, Rynda and Greys Islands, accounted for just 9% of the unitwide harvest (Table 5).

Hunter Residency and Success. Although the percentage varies annually, from 2007 to 2009 nonresidents took approximately 79% of the bears harvested in the unit, nonlocal Alaskans took about 13%, and local residents about 9% (Table 7).

Harvest Chronology. During this report period, 80–86% of the overall harvest occurred during the spring season, with 55–60% of all bears killed in May (Table 8).

Harvest in Particular Areas. Harvest occurred in 21 individual Unit 3 Wildlife Analysis Areas (WAAs) during this report period. Of the 601 bears harvested, 50% were taken from 6 WAAs on Kuiu Island, and 41% were taken from 9 WAAs on Kupreanof Island. WAA 5012 alone, on northern Kuiu Island, accounted for 20% of the total unitwide harvest. Combined, the harvest

from 6 other Unit 3 WAAs, including those on Mitkof, Wrangell, Etolin, and Woronkofski, Rynda and Greys Islands, accounted for just 9% of the unitwide harvest (Table 5).

Bait Stations. A total of 17 individuals were issued bear baiting permits during the report period. Each bear baiting permit allows a hunter to establish up to 2 individual bait stations. Fifteen permittees requested authorization to establish 2 bait stations, while 2 individuals requested a permit to establish a bait station at a single site.

A record number of permits were issued in 2004, when 11 individuals requested authorizations to establish up to 20 bait stations. In 2007, 9 individuals were authorized to establish 17 bait stations. In 2008 5 individuals were issued permits to establish 9 bait stations. In 2009, 7 individuals were issued permits to establish 12 bait stations.

Hunting with Dogs. No one requested permits to hunt bears with dogs during this report period.

Guided Hunter Harvest. During the report period, harvest by guided nonresident hunters accounted for 39% of the overall harvest. Guided nonresidents accounted for 38% of the harvest in 2007, 41% in 2008, and 37% in 2009.

Transport Methods. Hunter transportation is primarily by boat, highway vehicle and airplane, respectively (Table 9). During this report period the unitwide percentage of hunters using highway vehicles to access hunt areas decreased from the previous report period. The percentage of Kuiu Island hunters using vehicles increased at a rate of 214% annually from 1995 to 2000 before peaking at 20% in 2000. Since 2003, however, the percentage of hunters using highway vehicles on the island has steadily decreased and was just 1% during this report period.

Other Mortality

No DLPs were documented during the report period; however, some DLPs likely go unreported, particularly in the communities of Wrangell and Kake. We continue to receive unconfirmed reports of bears being shot and left in the field by individuals believing that bears are detrimental to deer and moose populations.

One registered guide reported that, despite the use of heavy caliber rifles and backup shots by professional guides, his clients failed to recover 13 (21%) of 63 black bears struck and wounded between spring 2001 and fall 2004. It is reasonable to assume that wounding loss rates for nonguided hunters are considerably higher than for guided hunters.

Although the amount of wounding loss is possibly significant, little information is currently available on how much is occurring in the unit. Between 2001 and 2003 a special permit was issued to a registered big game guide interested in experimenting with the use of a dog to track and aid in the recovery of black bears wounded by clients. During a 3-year period, the guide reported that his clients struck a total of 63 black bears, 13 (21%) of which were wounded and never recovered. Three wounded bears (5%) that might otherwise have been lost were successfully recovered with the aid of a tracking dog. Wounding loss experienced by nonguided hunters is likely much higher than that of guided hunters who have the benefit of expert advice on caliber selection, shot placement, shooting distance, back-up shots and tracking experience.

HABITAT ASSESSMENT

Assessment

Timber harvest continues to pose the most serious threat to black bear habitat in the unit. Clearcut logging reduces habitat diversity associated with old growth forests and eliminates denning trees. While postlogging increases in berry production, primarily *Vaccinium* sp., may contribute to short-term bear population growth, this forage source will be lost as second growth stands regenerate and the canopy closes. Roads associated with logging increase human access and can make bears increasingly vulnerable to harvest. The long-term effects of logging will be detrimental to black bears. Roads associated with logging increase human access and can make bears increasingly vulnerable to harvest. The long-term effects of logging will be detrimental to black bears.

During this report period, timber harvest occurred on, Kupreanof, Mitkof, Zarembo, and Wrangell Islands. Timber harvest is planned or already scheduled for additional sale areas on Etolin, Kupreanof, Kuiu, Mitkof, Zarembo, and Wrangell Islands.

Enhancement

No habitat enhancement projects specifically intended to benefit black bears have been attempted in the unit. Although primarily intended as a silvicultural practice, precommercial thinning and pruning has been performed in some young, second-growth stands in the unit. This effort does provide a secondary benefit to wildlife by improving and extending habitat suitability in the short-term by reducing canopy cover, which permits sunlight to reach the forest floor and increase the production of understory forage plants. These benefits are relatively short-lived, approximately 20–25 years, before canopy closure again results in loss of understory vegetation. The long-term effects of clearcut logging will be detrimental to black bear populations.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Nuisance Bear Problems. Black bears in close proximity to human settlements quickly learn to seek out human-related food sources, including livestock, pet food, and improperly secured garbage. During this report period there were no documented instances of a black bear being killed in the unit under defense of life and property (DLP) regulations. Historically, the majority of documented DLPs occur during late summer and early fall, when bears are drawn into communities as a result of improper waste management and the declining availability of natural food sources.

It is likely that additional DLPs in Wrangell and Kake went unreported. In 1998 ADF&G and the Petersburg Police Department (PPD) entered into a cooperative Black Bear Response Program. Under the terms of this agreement, PPD must report any bears destroyed due to public safety concerns. In the absence of similar agreements between ADF&G and the City of Wrangell and the Organized Village of Kake, DLPs in these communities have a higher likelihood of going unreported. For example, we continue to receive occasional reports of carcasses or remains of bears at the Kake landfill. It is unclear if these mortalities are the result of DLPs or other legal or illegal harvests, but the presence of unsealed skulls and hides with carcasses suggests that some of these mortalities were not the result of legal harvests.

CONCLUSIONS AND RECOMMENDATIONS

The Unit 3 black bear harvest steadily declined from 232 bears in 2006 to 169 in 2009. The unitwide harvest of 169 bears in 2009–10 was the lowest since 1992–93, and the average annual harvest of 200 bears during this report period was well below the preceding 10-year average of 254 bears annually. The reason for the declining harvest trend remains unclear. Prior to 2009 there was no mandatory hunt reporting requirement for unsuccessful black bear hunters. In the absence of information from this group of hunters we were unable to evaluate whether the unusually low harvest in recent years is indicative of a black bear population decline, or the result of reduced effort, low hunter success, or if other environmental factors such as atypical winter or spring weather conditions contributed to the low harvests.

A decreasing harvest trend, combined with anecdotal reports from big game guides, hunters and agency biologists suggests that over the last decade black bear populations have declined on some Unit 3 islands. Guides report seeing fewer bears in general, and a lack of sows accompanied by cubs in particular. The exact cause of the suspected population decline remains unclear and could be the result of one or more contributing factors. Factors potentially contributing to the population decline may include overharvest, climatic or environmental factors, or reductions in carrying capacity resulting from clearcut logging. Guides and agency biologists have also noted that a high percentage of wolf scats examined on Kuiu Island contain the remains of black bear suggesting that predation by wolves may be contributing to the suspected decline in the unit's black bear populations.

In order to ensure that the bear population is managed on a sustained yield basis, additional research is needed to estimate the black bear population in the unit, particularly on Kuiu and Kupreanof Islands. Research is also needed to identify possible correlations between sealing data and population trends. A better understanding of the short- and long-term impacts of clearcut logging on black bear populations is needed. Some estimate of black bear mortality as a result of wounding loss is needed.

In light of a declining harvest trend and growing concern about a potential population decline, ensuring that black bear populations are managed within sustainable harvest limits will remain a formidable challenge for wildlife managers. Although the Unit 3 black bear harvest dropped below the preceding 10-year average, during the report period the percentage of males in the harvest met the management objective. Although the average male skull size met the management objective in 2007–08, it fell slightly below the objective in both 2008–09 and 2009–10.

Due to increasing concern about the status of black bear populations, the department is considering several potential regulatory changes intended to reduce the black bear harvest regionwide. The department intends to present the Board of Game with a list of regulatory options designed to reduce the black bear harvest. The Board will consider the list of potential regulatory changes to black bear hunting at its fall 2010 meeting.

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Table 1. Unit 3 black bear harvest, 1999–2009.

	Hunter kill						Nonhunting kill[a]			Total estimated kill					
	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	(%)	F	(%)	Unk.	Total
Fall 99	29	31	52	0	60	NA	0	4	3	29	45	35	55	3	67
Spring 00	195	32	14	0	227	2	0	0	0	195	86	32	14	0	227
Total	224	63	22		287	2	0	4	3	224	77	67	23	3	294
Fall 00	47	24	34	0	71	NA	1	2	2	48	65	26	35	2	76
Spring 01	203	35	15	0	238	2	0	0	0	203	85	35	15	0	238
Total	250	59	19	0	309	2	1	2	2	251	80	61	20	2	314
Fall 01	28	20	42	0	48	NA	0	0	0	28	58	20	42	0	48
Spring 02	201	37	16	0	238	1	0	0	1	201	84	37	16	1	239
Total	229	57	20	0	286	1	0	0	1	229	80	57	20	1	287
Fall 02	24	19	44	0	43	NA	0	0	2	24	56	19	44	2	45
Spring 03	147	38	21	0	185	2	0	0	0	147	79	38	21	0	185
Total	171	57	25	0	228	2	0	0	2	171	75	57	25	2	230

Table 1 continues next page

Table 1. continued.

	Hunter kill						Nonhunting kill[a]			Total estimated kill					
	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	(%)	F	(%)	Unk.	Total
Fall 03	25	13	34	0	38	NA	1	0	0	26	67	13	33	0	39
Spring 04	135	34	20	0	169	5	0	0	0	135	80	34	20	0	169
Total	160	47	23	0	207	5	1	0	0	161	77	47	23	0	208
Fall 04	34	17	33	0	51	NA	0	0	0	34	67	17	33	0	51
Spring 05	115	32	22	0	147	4	0	0	0	115	78	32	22	0	147
Total	149	49	25	0	198	4	0	0	0	149	75	49	25	0	198
Fall 05	34	28	45	0	62	NA	0	0	0	34	55	28	45	0	62
Spring 06	137	29	17	0	166	0	0	0	0	137	83	29	17	0	166
Total	171	57	25	0	228	0	0	0	0	171	75	57	25	0	228
Fall 06	35	17	33	0	52	NA	0	0	0	35	67	17	33	0	52
Spring 07	153	27	15	0	180	2	0	0	0	153	85	27	15	0	180
Total	188	44	19	0	232	2	0	0	0	188	81	44	19	0	232
Fall 07	18	15	45	0	33	0	0	0	0	18	56	15	45	0	33
Spring 08	161	31	16	0	192	1	0	0	0	161	84	31	16	0	192
Total	179	46	20	0	225	1	0	0	0	179	80	46	20	0	225
Fall 08	24	18	43	0	42	0	0	0	0	24	57	18	43	0	42
Spring 09	141	24	15	0	165	2	0	0	0	141	85	24	15	0	165
Total	165	42	20	0	207	2	0	0	0	165	80	42	20	0	207
Fall 09	21	14	40	0	35	0	0	0	0	21	60	14	40	0	35
Spring 10	113	21	16	0	134	2	0	0	0	113	84	21	16	0	134
Total	134	35	21	0	169	2	0	0	0	134	79	35	21	0	169

[a] Includes DLP kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Unit 3 harvested black bear mean skull size[a], 1998–2009.

Regulatory year	Males	*n*	Females	*n*
1998–1999	18.6	232	16.6	48
1999–2000	18.5	216	16.7	60
2000–2001	18.5	249	16.9	58
2001–2002	18.5	222	16.8	57
2002–2003	18.3	167	16.8	56
2003–2004	18.5	157	16.6	45
2004–2005	18.3	148	16.7	49
2005–2006	18.6	168	16.7	56
2006–2007	18.6	184	16.4	43
2007–2008	18.6	177	16.7	44
2008–2009	18.3	162	17.0	42
2009–2010	18.3	130	16.7	35

[a] Skull size = total length + zygomatic width in inches.

Table 3. Unit 3 harvested black bear mean age, 1998–2009.

Regulatory year	Males	*n*	Females	*n*
1998–1999	7.3	222	8.5	46
1999–2000	7.4	217	9.4	59
2000–2001	7.2	245	9.3	58
2001–2002	7.3	228	9.3	57
2002–2003	7.4	171	9.1	57
2003–2004	N/A		N/A	
2004–2005	7.4	148	9.3	49
2005–2006	8.0	166	10.1	53
2006–2007	8.2	180	9.3	41
2007–2008	8.3	172	9.2	44
2008–2009	7.6	163	11.0	42
2009–2010	7.6	127	10.0	33

Table 4. Unit 3 harvested black bear mean days hunted per successful hunter, 1998–2009[a].

Regulatory year	Total days	Total hunters	Total harvest	Average days hunted
1998–1999	892	292	292	3.1
1999–2000	871	282	287	3.1
2000–2001	930	309	309	3.0
2001–2002	964	286	286	3.4
2002–2003	775	228	228	3.4
2003–2004	682	207	207	3.3
2004–2005	651	195	198	3.3
2005–2006	696	223	228	3.1
2006–2007	751	227	232	3.2
2007–2008	728	221	225	3.2
2008–2009	671	201	207	3.2
2009–2010	610	164	169	3.6

[a]Totals do not include DLP.

Table 5. Unit 3 black bear hunter harvest by island and density, 1998–2009.

	Kupreanof 1090 mi^2				**Kuiu** 746 mi^2				**Mitkof** 211 mi^2			
Regulatory year	Kill	Percent of Unit 3	Average mi^2/bear kill Male	Female	Kill	Percent of Unit 3	Average mi^2/ bear kill Male	Female	Kill	Percent of Unit 3	Average mi^2/ bear kill Male	Female
1998	107	37	12	78	161	55	6	25	11	4	26	70
1999	104	38	13	52	168	59	6	19	5	2	42	No females
2000	124	40	11	40	165	53	6	25	10	3	26	106
2001	161	56	9	29	106	37	8	41	14	5	18	106
2002	97	43	15	42	111	49	9	26	11	5	19	No females
2003	69	33	21	64	121	58	8	31	13	6	26	42
2004	77	39	19	55	114	58	9	27	2	1	106	No females
2005	108	47	15	33	107	47	9	36	8	4	35	106
2006	104	45	14	39	110	47	8	57	11	5	26	70
2007	84	37	17	55	130	58	7	31	4	2	53	No females
2008	88	43	15	68	96	46	9	44	15	7	30	26
2009	73	43	20	57	76	45	12	57	13	8	19	106

Table 6. Unit 3 black bear mean male skull size[a] and percent of harvest by major island and season, 2001–2009.

		2001				2002				2003			
Island	Season	Nr males	(%)	Average	*n*	Nr males	(%)	Average	*n*	Nr males	(%)	Average	*n*
Kupreanof	Fall	22	55	17.8	22	10	59	18.8	10	3	60	18.7	2
	Spring	102	84	18.4	97	61	76	18.2	58	49	77	18.5	49
	Total	124	77	18.3	119	71	73	18.3	68	52	75	18.5	51
Kuiu	Fall	3	60	18.0	3	8	42	17.0	8	21	72	17.9	20
	Spring	85	84	18.8	84	74	80	18.5	74	76	83	18.6	75
	Total	88	83	18.8	87	82	74	18.4	82	97	80	18.5	95
Mitkof	Fall	2	100	19.0	2	5	100	16.8	5	1	33	15.5	1
	Spring	10	83	17.2	9	6	100	17.5	5	7	70	17.5	7
	Total	12	86	17.5	11	11	100	17.1	10	8	62	17.2	8

Table 6. continued.

		2004				2005				2006			
Island	Season	Nr males	(%)	Average	*n*	Nr males	(%)	Average	*n*	Nr males	(%)	Average	*n*
Kupreanof	Fall	11	61	17.6	11	17	50	18.0	17	11	50	17.4	11
	Spring	37	67	18.2	37	58	78	18.8	58	65	79	19.0	62
	Total	48	71	18.1	48	75	69	18.6	75	76	73	18.7	73
Kuiu	Fall	21	58	18.3	21	12	57	17.8	11	21	84	18.2	21
	Spring	64	83	18.7	64	74	86	18.8	73	76	89	18.8	75
	Total	85	75	18.6	85	86	81	18.7	84	97	88	18.7	96
Mitkof	Fall	0	0	0	0	3	60	17.4	3	3	60	16.3	3
	Spring	2	100	17.0	1	3	100	18.9	3	5	83	18.7	5
	Total	2	100	17.0	1	6	75	18.2	6	8	73	17.8	8

[a]Skull size = total length + zygomatic width.

Table 6. continued.

		2007				2008				2009			
Island	Season	Nr males	(%)	Average	*n*	Nr males	(%)	Average	*n*	Nr males	(%)	Average	*n*
Kupreanof	Fall	6	67	18.4	6	10	53	16.2	10	6	40	17.4	6
	Spring	58	77	18.5	58	62	90	18.2	60	48	83	18.1	46
	Total	64	76	18.5	64	72	82	17.9	70	54	74	18.0	52
Kuiu	Fall	11	48	18.2	11	12	63	18.6	11	8	73	18.1	8
	Spring	95	89	18.9	93	67	87	18.6	67	55	85	18.8	55
	Total	106	82	18.8	104	79	82	18.6	78	63	83	18.7	63
Mitkof	Fall	1	100	NA	1	1	33	NA	1	5	83	17.2	4
	Spring	3	100	17.1	3	6	50	17.7	6	6	86	17.0	6
	Total	4	100	16.0	4	7	47	17.7	7	11	85	17.1	10

[a]Skull size = total length + zygomatic width.

Table 7. Unit 3 black bear successful hunter residency, 1998–2009.

Regulatory year	Local resident[a]	(%)	Nonlocal resident	(%)	Nonresident	(%)	Total successful hunters
1998–1999	45	15	41	14	206	71	292
1999–2000	25	9	31	11	231	80	287
2000–2001	27	9	36	12	246	80	309
2001–2002	28	10	44	15	214	75	286
2002–2003	24	11	29	13	175	77	228
2003–2004	12	6	16	8	179	86	207
2004–2005	8	4	19	10	168	86	195
2005–2006	15	7	11	5	197	88	223
2006–2007	10	4	34	15	183	81	227
2007–2008	17	8	28	13	177	80	222
2008–2009	19	9	23	11	159	79	201
2009–2010	14	9	23	14	127	77	164

[a]Local residents are those that reside in Petersburg, Wrangell, or Kake.

Table 8. Unit 3 black bear harvest chronology by percent, 1998–2009.

Regulatory year	Month									*n*
	September	October	November	December	March	April	May	June	July	
1998–1999	22	3	1	0	0	10	49	15	0	292
1999–2000	19	2	0	0	1	9	50	19	0	287
2000–2001	20	3	0	0	0	16	49	12	0	309
2001–2002	15	1	0	0	0	8	56	20	0	286
2002–2003	16	1	0	0	0	11	51	21	0	228
2003–2004	18	0	0	0	0	12	56	14	0	207
2004–2005	24	2	1	0	0	14	42	18	0	198
2005–2006	25	2	0	0	0	10	43	21	0	228
2006–2007	20	2	0	0	0	3	49	25	0	232
2007–2008	13	1	0	0	0	10	60	16	0	225
2008–2009	18	2	0	0	0	8	59	13	0	207
2009–2010	15	6	0	0	0	11	55	14	0	169

Table 9. Unit 3 black bear harvest, in percent by transport method, 1998–2009

Regulatory year	Airplane	Boat	3-4 wheeler	Snowmachine	Off-road vehicle	Highway vehicle	Foot	Unknown	*n*
1998–1999	8	72	1	0	0	17	2	0	292
1999–2000	2	71	0	0	0	27	0	0	287
2000–2001	3	75	0	0	0	20	2	0	309
2001–2002	1	78	0	0	0	21	0	0	285
2002–2003	1	79	0	0	0	19	1	0	228
2003–2004	7	77	0	0	0	16	0	0	207
2004–2005	8	74	<1	0	<1	17	0	0	198
2005–2006	7	77	0	0	0	14	1	0	228
2006–2007	7	70	1	0	2	19	1	0	232
2007–2008	4	87	0	0	0	8	0	0	225
2008–2009	4	91	0	0	0	3	1	0	207
2009–2010	2	79	2	0	0	14	1	2	169

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 5 (5,800 mi^2)

GEOGRAPHICAL DESCRIPTION: Cape Fairweather to Icy Bay, Eastern Gulf Coast.

BACKGROUND

Within Game Management Unit 5, black bears are found almost exclusively in Unit 5A. Unit 5B, dominated by the Malaspina Glacier, has accounted for only a few harvested black bears since sealing records have been kept; all have been reported from the head of Disenchantment Bay, at the junction of the subunits 5A and B. "Glacier" (gray pelage color variant) bears occur more frequently in Unit 5 than in other management units, and usually several are harvested each year. The opportunity to harvest one of these unusual bears attracts hunters not only from other parts of Alaska, but also from throughout the world.

HABITAT DESCRIPTION

The entire Yakutat Forelands between the coast and the ice fields is potentially good black bear habitat. The forelands contain a variety of habitats, including open sedge meadows, willow flats, mixed stands of spruce and cottonwood, thick stands of spruce and hemlock, riparian stream corridors, beach fringes, and mountainous regions. These habitats contain vegetative forages such as grasses, sedges, devil's club, skunk cabbage, cow parsnip, blueberries, salmonberries, strawberries, and cranberries, to name a few. In addition, the forelands are rich in salmon, including sockeye, chum, pink, Chinook, and coho. Streams containing salmon are distributed throughout the forelands, and bears have widespread access to fish. There are also eulachon (*Thaleichtys pacificus*) present in some streams during the early spring. Calf moose might provide additional feeding opportunities in the spring; the forelands harbor an estimated 600–800 moose (Barten 2008a). In spite of this apparently productive habitat for black bears, they are common only near the mountainous regions due to the presence of numerous brown bears in the remainder of the area. Managers estimate there are 522 brown bears in Unit 5A (ADFG 1993, unpublished data), and they likely displace black bears from lower elevations.

Habitat alterations and concerns are mostly in the form of successional changes of logged areas. There are 9 townships of land near the town of Yakutat that have been largely logged by clearcutting. Although some of these areas produce abundant berries that black bears can feed on, much of the clearcut habitat seems to be growing up into thick stands of small conifers that prohibit other types of forage from growing. These areas provide little in the way of food for black bears.

HUMAN USE HISTORY

Black bears have long been hunted in Unit 5, but reliable harvest data is only available from 1973 when sealing became a requirement. Prior to 2009, hunters only needed a hunting license to take black bears in Southeast, Alaska. Beginning in 2009 however, hunters were required to attain a harvest ticket prior to hunting black bears in Unit 1-5. Data from harvest ticket reports will allow us to quantify unsuccessful hunting effort as well as successful.

Regulatory history

Since statehood, black bear hunting season has been from 1 September through 30 June, and the bag limit for residents has been 2 bears annually, only 1 of which can be a blue or glacier bear. Nonresident bag limits were the same as residents until 1990, when the nonresident limit was reduced to 1 bear per year. Use of dogs for hunting black bears has been allowed since 1966, although this requires a permit issued by ADF&G. To date no one has ever applied for one of these permits. Since 1996, hunters have had to salvage the edible meat of any black bears they kill in Southeast Alaska during the period 1 January–31 May. Many black bear hunters in Southeast avoid taking fall bears because of concern about the palatability of bears that may have been feeding on salmon. While this concern may be valid for bears found in areas with salmon streams, many bears feed in high elevation meadows in the fall and provide excellent table fare.

Historical harvest patterns

Black bear harvest averaged 14 bears per year during the 1970s. During the 1980s, the average annual harvest increased to 24 bears, then decreased to 19 bears annually in the 1990's. The highest harvest occurred in 1985, when hunters took 39 bears. That year was the first that subsistence moose hunting regulations were in place, and nonresidents and many nonlocal Alaska residents were prohibited from hunting moose. It may be that many nonlocal hunters chose to hunt black bear rather than abandon their Yakutat area hunting trip entirely. Moose regulations in subsequent years reinstated a nonresident general season.

More glacier bears are taken in the Unit 5 harvest, an average of 2–3 a year, than from other areas of Southeast Alaska. The percentage of glacier bears in the harvest ranged from 13% to 17% during 1971 to 2006; Unit 5A is one of the few areas where hunters target glacier bears.

The spring season often accounts for 100% of the annual harvest, and although baiting is legal in Unit 5, few bears are taken over bait. Nonresidents generally take 50% or more of the bears, with the goal of finding a glacier bear the impetus for hunting black bears in Unit 5. Aircraft and boats are the two predominant means of transport for Unit 5 black bear hunters, regularly accounting for more than 90% of reported hunts.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Maintain a 3:1 male to female ratio in the harvest.

Maintain a mean annual male skull size (length plus width) of at least 17.0 inches.

METHODS

Staff members of the departments of fish and game and public safety sealed black bear hides and skulls. Biological and hunt information collected at the time of sealing included pelage color, sex, skull size (length plus width), date and location of kill, transportation method, and the type of any commercial services used. A premolar was collected from most bears and sent to Matson's Laboratory in Montana for age determination. Anecdotal information about conditions in the field was gathered at the same time.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population information is not available for Unit 5 black bears, and because only data from successful hunters are available (Tables 1 and 2), effort information is incomplete. This reporting period's harvest remained the same as the previous period (49 black bears), with little variation in the demographics (local resident, Alaska resident, nonresident) of successful black bear hunters (Table 3). In 2007, 22 bears were taken, with 14 bears taken in 2008, and 13 bears in 2009. Mean total skull size for male bears was essentially unchanged from the previous report period, meeting the management goal of 17.0 inches. A 3:1 male to female harvest ratio continued to be maintained, with 86% males in the harvest during the report period. Although the percentage of males in the harvest decreased from the previous report, 86% is well above the management goal, which is intended to ensure a reproductively sound population by maintaining female bears in the population. The mean age of male and female bears was 8.5 and 11.3 years, respectively. The mean age for male bears in the report period is slightly lower than the previous report period (9.9 years). The female mean age increased from approximately 9 years during the previous report period (2004–2006) to 11.3 years during the current period. The age calculation is based on 7 harvested female bears, one of which was 12 years old. Because of the small number of bears aged a single, older animal can skew the age structure of the harvest towards older bears; so caution should be used interpreting the age structure of a single year's harvest when so few bears are sampled.

Population size

No Unit 5 black bear population studies have been conducted. Population size or density estimates are difficult to obtain, and have never been attempted in Unit 5. The species generally inhabits forested areas, where aerial surveys are impractical, and vast remote areas also make studies difficult and expensive. Barten (2008b) provided an estimate of 600 black bears in Unit 5. This estimate is based loosely on black bear densities of 1.4 mi^2 bears in western Washington State (Poelker and Hartwell 1973). We believe minimum densities in mainland Southeast Alaska are slightly higher than found in the Washington study area. Although the 1.4 mi^2 density is used in Unit 1C, it probably is too high for the number of Unit 5 black bears due to their displacement from some habitats by brown bears. We need studies to better estimate black bear densities and the overall population in Unit 5.

Population composition

Our management objective of a 3:1 male to female harvest ratio is aimed at keeping harvest of female bears to a minimum. We lack reliable information on the composition of the bear population, but use the harvest sex ratio for insight as an indirect index of the availability of male

bears in the population. We interpret an increase in the female harvest as an indication of fewer large male bears available to hunters. The current high percentage of male bears in the harvest suggests there are plenty of male bears in the population.

Glacier bears occur more frequently in Unit 5 than in other management unit and are regularly harvested in small numbers. No cinnamon or Kermode (white) pelage black bears have been reported in Unit 5.

Distribution and movements

Our most reliable information on Unit 5 black bear distribution comes from hunter harvest. Unit 5B has few black bears and Unit 5A has black bears distributed throughout the unit. Brown bears are also abundant throughout the unit and they displace black bears from many non-mountainous locales. Because of this displacement, most black bear harvest and sightings are along the coast or in foothills and mountainous areas within the subunit. Managers are increasingly interested in the distribution of black bears in Unit 5 because of a growing interest in black bear hunting across Southeast Alaska. For many years the number of black bear hunters and the bear harvest in Unit 5 has been consistent for a long period but with harvest decreasing, and hunters reporting seeing fewer bears in other areas of Southeast, Alaska, Unit 5 may be an area that sees an increase in black bear hunter effort and likely an increased harvest. Harvest location information is collected when the department seals hides and skulls. Collecting location information helps us to better understand the distribution of black bears in Unit 5 and to identify areas where access may make bears more vulnerable to harvest.

One human-caused factor that may affect the Unit 5 black bear distribution is the presence of an open landfill at the city of Yakutat. Black bears have occasionally been seen foraging at the landfill and some harvest occurs nearby.

MORTALITY

Harvest

Season	Bag Limits
1 Sep–30 June	Resident hunters: 2 bears, not more than 1 of which may be a blue or glacier bear.
1 Sep–30 Jun	Nonresident hunters: 1 bear.

Board of Game Actions and Emergency Orders. In 2008, the Alaska Board of Game implemented a regulation requiring the use of general season harvest tickets to hunt black bears in Southeast, Alaska. The regulation was effective on 1 July 2009; harvest tickets were required when the fall 2009 black bear hunt opened on 1 September. No emergency orders were issued relating to black bears in Unit 5 during this report period.

Hunter Effort and Harvest. Black bear harvests ranged from 13 to 22 during 2007—2009, averaging 16 per regulatory year (Table 3), a decrease of 6 bears annually over the previous report period. Seven female bears were harvested compared to 42 males during the report period, yielding 86% males. This is an extremely high male:female sex ratio, and easily exceeds our

management goal of 3:1. Five bears, or approximately 10% of the harvest during this reporting period, were glacier bears (Table 3).

Effort expended by successful hunters per bear killed was 2.9 days compared to the long-term previous 7-year mean of 3.7 days. Hunter effort for all groups (local resident, Alaska resident and nonresident) decreased by a day or more per successful hunter (Table 1). Based on the initial return of harvest ticket information, 33 ticket holders hunted in Unit 5 during 2009. Eleven (33%) hunters reported being successful. Successful hunters took approximately 3 days to harvest a black bear, and unsuccessful hunters spent 5.5 days hunting. One frustrating aspect of the new harvest ticket report is that only 6 of 33 ticket holders recorded hunt location information beyond a GMU level. Unlike registration permits, there is no penalty for failing to report black bear hunting activity if unsuccessful (successful hunters must still have bears sealed by the department).

Hunter Residency and Success. As with the previous report period, resident hunters took the majority of Unit 5 black bears. The percentage of all successful black bear hunters who were nonresidents was 35%, compared to 49% during 2004–2006 (Table 1). Alaskans residing outside of Unit 5 harvested 16% of the bears taken this report period, and Unit 5 residents harvested 49%.

Harvest Chronology. Historically, most Unit 5 black bears have been harvested during the spring. The trend continued through this report period, with 43 of 49 bears taken in spring (Table 3). The reason for the concentrated spring harvest has to do with black bear accessibility and palatability. In spring black bears forage along beaches or hillsides that are visible from beaches and accessible by boat, allowing hunters to hunt large areas fairly easily. In the fall however, bears are much harder to find and access because they are foraging on fish streams bordered by dense vegetation, or they are in mountainous terrain that is difficult to access. Also, most hunters consider bears taken in the spring to be much more palatable than those taken in the fall.

Harvest in Particular Areas (WAAs). No changes stand out in analysis of the harvest distribution, although different WAAs were the big producers in different years (Table 4). The area near Yakutat Bay on the Puget Peninsula (WAA's 4506 and 4508) always accounts for a large portion of the harvest and did again during this report period, with 69% of the harvest coming from that area. Hunters can easily access this area from small skiffs, and are never far from protected waters. They can scan miles of shoreline or hillside from a moving boat, increasing their chances of finding a bear. Another area in which hunters consistently harvest black bears is the foothills of the Brabazon Mountains (WAA 4503). During the report period, 14% of the harvest came from this area. Although the access in this area isn't nearly as easy as WAA 4506 and 4508, hunters still manage to get to bears using boats and in some cases small airplanes. Several hunting guides offer fly in hunting opportunities in this area. The Russell Fjord and Nunatak Fjord areas (WAA 4505) represented 8% of the harvest for the period. They provide hunting opportunity for boat-based black bear hunts.

Bait Stations. Although baiting is legal during the Unit 5 spring season, very few hunters use bait. During the report period a total of 4 baiting permits were issued, all in Unit 5A, and only 1 bear was taken over bait.

Guided Hunter Harvest. Guided hunters accounted for 12 of 49 bears harvested, or 24% of the total during the report period. During the previous report period guided hunters took 33% of the harvest. Often, the hunters who hire a guide are searching for a glacier bear, and take a black colored bear only because they fail to find a blue colored animal. The decrease in hunters using registered guides or other commercial services may be linked to an overall downturn in the national economy. Anecdotal information from guides suggests bookings are generally down across Southeast Alaska.

Transport Methods and Commercial Services Used. Boats were the predominant transport means for Unit 5 black bear hunters (Table 1), with 73% of the hunters using this method of transport. Highway vehicles and aircraft were the second most common, with 10% of hunters using each. Commercial services were used by 18 (37%) of the 49 successful hunters; 12 of these used a commercial guide and 3 others used commercial services for transportation to the field (Table 2).

Other mortality

We do not have records of any DLP kills, road kills, or illegal kills for black bears during the report period.

HABITAT

Assessment

Concerns about habitat alterations center on successional changes of logged areas. Future logging on U.S. Forest Service lands is likely to be confined to the area at the southern end of Russell Fjord. Most private land in the Yakutat area has already been logged.

NONREGULATORY MANAGEMENT PROBLEMS

In small communities, fish camps, and remote areas it is unusual to receive nuisance bear complaints because such issues are often dealt with locally without alerting ADF&G. We do not believe that we have a significant issue with illegal harvest in Unit 5.

CONCLUSIONS AND RECOMMENDATIONS

The management objective of maintaining a 3:1 male to female harvest ratio was achieved in all 3 years of this report period. Our objective for male skull size was also met in each of the years. Although the number of black bears harvested from this unit is not large, continued monitoring is necessary to determine appropriate management strategies for black bears in Unit 5. Managers are concerned with black bear populations in multiple locations in Southeast Alaska. These concerns are based mostly on a decreasing harvest and anecdotal information from big game hunting guides and recreational hunters. The cause of the harvest decrease is unknown but is likely due to a high proportion of female black bears in the annual harvest. Unit 5 is an area where managers do not have concerns about the black bear population. Trends in harvest parameters should be examined regularly for indications of possible conservation concerns.

The second year of this reporting period (2009) is the first time black bear hunters have been required to have a harvest ticket and harvest report for this species. Over time unsuccessful hunter data can be used to monitor trends in hunter effort, location, and access. The information will provide greater insight into the status of black bear populations and help us select appropriate strategies for future management.

Staff is collecting DNA samples from black bears harvested in Unit 5. These samples will be used to analyze the genetics of bears with different pelage coloration. Samples are also being collected in other areas of the region in hopes of identifying genetic distribution and diversity of black bears in Southeast Alaska.

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Table 1. Unit 5 residency, mean days hunted, and transportation used by successful black bear hunters, 2000 through 2009.

Regulatory Year	Unit resident hunters	Unit resident days	Other AK resident hunters	Other AK resident days	Nonresident hunters	Nonresident days	Total effort hunters	Total effort days	Plane	Boat	ORV	Hwy vehicle	Foot	Unk
2000	2	3.5	1	1.0	13	5.1	16	4.6	3	10	3	0	0	0
2001	13	2.3	4	4.0	10	2.6	27	2.7	4	22	1	0	0	0
2002	12	2.3	1	7.0	8	3.6	21	3.0	0	16	0	5	0	0
2003	8	1.9	1	1.0	10	5.9	19	3.9	3	12	2	2	0	0
2004	3	4.3	2	4.5	3	7.0	8	5.4	0	5	1	2	0	0
2005	10	3.1	3	7.7	7	3.6	20	4.0	2	10	2	6	0	0
2006	5	2.4	3	4.3	13	3.8	21	3.6	2	16	2	1	0	0
2007	10	2.5	5	3.4	7	3.7	22	3.1	2	15	1	3	1	0
2008	8	2.1	1	2.0	5	4.2	14	2.9	1	13	0	0	0	0
2009	6	2.2	2	1.5	5	3.4	13	2.5	2	8	1	2	0	0
2000–2006 Mean	7.6	2.6	2.1	4.7	9.3	4.5	18.9	3.7	2.1	13.0	1.6	2.3	0	0
2007–2009 Mean	8.0	2.3	2.7	2.8	5.7	3.8	16.3	2.9	1.7	12.0	.7	1.7	.3	0

Table 2. Unit 5 commercial services used by successful black bear hunters, 2000 through 2009.

Regulatory year	Unit residents		Other AK residents		Nonresidents		Total use		Transport	Registered guide
	No	Yes	No	Yes	No	Yes	No	Yes		
2000	2	0	1	0	0	13	3	13	0	13
2001	13	0	3	1	2	8	18	9	2	7
2002	12	0	0	1	0	8	12	9	2	7
2003	8	0	1	0	0	10	9	10	6	4
2004	3	0	2	0	2	1	7	1	0	1
2005	10	0	3	0	0	7	13	7	0	7
2006	5	0	2	1	5	8	12	9	1	8
2007	10	0	1	4	3	4	14	8	2	6
2008	8	0	1	0	2	3	11	3	0	3
2009	3	3	1	1	2	3	6	7	1	3
2000–2006 Mean	7.6	0	1.7	.4	1.3	8.0	10.6	8.4	.6	7.9
2007–2009 Mean	7	1.0	1.0	1.7	2.3	3.3	10.3	6.0	1.0	4.0

Table 3. Unit 5 black bear harvest, 2000 through 2009.

Regulatory year		Harvest	Males	Females	Unk.	Male Mean skull	Male (n)	Male Mean age	Male (n)	Female Mean skull	Female (n)	Female Mean age	Female (n)	Color variant black	Color variant blue
2000	Total	16	15	1	0	17.2	15	6.9	15	15.8	1	6.0		14	2
	Fall	0	0	0	0	--									
	Spring	16	15	1	0	17.2	15								
2001	Total	27	24	3	0	17.1	21	7.7	18	15.9	3	6.0	1	24	3
	Fall	0	0	0	0	--	0								
	Spring	27	24	3	0	17.1	21								
2002	Total	21	18	3	0	17.0	17	8.7	15	15.9	3	13.5	2	18	3
	Fall	3	3	0	0	16.6	3								
	Spring	17	14	3	0	17.0	14								
2003	Total	19	17	2	0	17.7	17	10.0	12	16.0	2	7.5	2	15	4
	Fall	2	2	0	0	16.1	2								
	Spring	17	15	2	0	17.9	15								
2004	Total	8	7	1	0	17.3	5	8.3	4	---	0	10.0	1	7	1
	Fall	0	0	0	0	--	0			---	0				
	Spring	8	7	1	0	17.3	5			---	0				
2005	Total	20	20	0	0	18.2	18	9.9	14	---	0	--	0	19	1
	Fall	0	0	0	0	--	0			--	0				
	Spring	20	20	0	0	18.2	18			---	0				
2006	Total	21	19	2	0	17.7	18	10.3	16	16.2	1	8.5	2	20	1
	Fall	0	0	0	0	--	0			--	0				
	Spring	21	19	2	0	17.7	18			16.2	1				
2007	Total	22	18	4	0	17.5	16	8.9	17	15.9	4	11.0	4	21	1
	Fall	3	2	1	0	--	0			--	0				
	Spring	19	16	3	0	17.7	16			15.9	4				

Table 3. continued

Regulatory year	Harvest	Males	Females	Unk.	Male Mean skull	Male (n)	Male Mean age	Male (n)	Female Mean skull	Female (n)	Female Mean age	Female (n)	Color variant Black	Color variant Blue
Total	14	13	1	0	17.6	12	7.8	13	14.8	1	0	4	12	2
2008 Fall	-	-	-	0	--	0			--	0				
Spring	14	13	1	0	17.6	12			14.8	1				
Total	13	11	2	0	17.6	11	8.5	10	15.8	2	12.0	2	11	2
2009 Fall	0	0	0	0	--	0			--	0				
Spring	13	11	2	0	17.6	11			15.8	2				
2000–2006	133	121	12	0	17.5	112	8.9	89	15.9	10	9.0	9	118	15
2007–2009	49	42	7	0	17.5	39	8.5	40	15.7	7	11.3	6	44	5

Table 4. Unit 5A black bear harvest from all Wildlife Analysis Areas (WAA), regulatory years 2000 through 2009.

	Regulatory year										
WAA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
2101	0	0	0	2	0	1	0	1	1	1	6
2102	1	0	2	3	0	0	2	0	1	0	9
4503	5	5	4	5	3	8	1	5	1	1	38
4504	0	1	1	0	1	0	0	0	0	0	3
4505	3	4	2	5	0	2	3	2	0	2	23
4506	5	12	3	4	3	4	11	10	9	5	66
4508	1	5	9	0	1	5	4	4	2	4	35
4607	0	0	0	0	0	0	0	0	0	0	0
Unknown	2	0	0	0	0	0	0	0	0	0	2
TOTAL	17	27	21	19	8	20	21	22	14	13	182

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 6 (10,140 mi^2)

GEOGRAPHIC DESCRIPTION: Prince William Sound and North Gulf of Alaska coast

BACKGROUND

Black bears are common throughout most of Unit 6, with the exception of Montague, Hinchinbrook, several smaller islands in Prince William Sound (PWS), and Kayak and Middleton islands along the North Gulf of Alaska Coast (NGC). Density is highest in western PWS and lower in eastern PWS and along the NGC. Modafferi (1978) roughly estimated densities of 0.5, 0.23, and 0.3 bears/km^2 in western PWS, eastern PWS, and along the NGC, respectively. Other density estimates for good habitat in PWS have ranged from 0.4 to 10 bears/km^2 (Grauvogel 1967; McIlroy 1970; Modafferi 1982). None of these estimates, however, were obtained by methods considered reliable for estimating bear population size or density.

Hunting pressure may have occasionally affected local populations. McIlroy (1970) reported declining harvest and hunter success, and increasing hunter-days per harvested bear indicated a declining black bear population in Valdez Arm (Unit 6D) between 1966 and 1969. Relatively high hunter effort documented by Modafferi (1978) around Whittier in 1977 may also have indicated a reduced population in western Unit 6D. In Unit 6C average skull size of male bears decreased during the mid to late 1990s, coincident with an increase in hunter harvest and effort.

Food abundance and weather conditions can affect black bear populations in Unit 6. Harvest data and incidental observations by guides, charters, and local hunters indicated that distribution and general abundance increased throughout Unit 6 during the 1990s to a high level, possibly in response to new salmon hatcheries coming online during the 1980s. Competition and predation by brown bears also may influence black bear numbers locally. The highest density occurs in western PWS where very few brown bears are present.

Harvest monitoring began in 1973 with mandatory sealing of hides. Before this requirement, annual harvests ranged from “practically nil” (Robards 1954) to more than 100 during 1965 and 1966 (McIlroy 1970). Sealing records indicated an average annual take of 118 bears from 1973 to 1983, 232 from 1984 to 1994, and 294 from 1995 to 2000. The Anton Anderson Memorial Tunnel (Whittier road) opened to highway vehicles in June 2000, which has allowed easier access for bear hunters in Unit 6D. Although the increasing trend in harvest began 4 years before the Whittier road opened, easier access has allowed the number of hunters to continue increasing in Unit 6D.

MANAGEMENT OBJECTIVES

The management objective for Unit 6 black bear is to maintain a black bear population that will sustain a 3-year average annual harvest of 200 bears composed of at least 75% males with a minimum average skull size of 17 inches.

METHODS

We sealed hides and skulls of all black bears in the reported harvest. Reported harvest included bears taken by licensed hunters and bears killed in defense of life or property. Staff checked each hide for sex identifiers and took skull measurements for total length and zygomatic width. We recorded harvest date, days hunted, transportation used, and location of harvest within Uniform Coding Units (UCUs). UCUs are small, defined areas within Unit 6 bounded by watersheds, islands, or island groups. We estimated unreported and illegal kills. Unreported harvest included wounding loss and bears taken by hunters and not sealed. Tooth samples were collected from bears harvested in Unit 6D to determine age and female reproductive histories (Coy and Garshelis 1992) and compared to age data collected during 1970s and early 1990s. In 2009 the Board of Game approved the use of a harvest reporting system for Unit 6 that will allow the Department to assess effort in addition to harvest.

I assessed age structure of harvested black bears in Unit 6D using the relationship between skull size and harvest density during the last 15 years. I subtracted alpine rock and ice from the total area of each UCU to obtain a measure of available habitat. I grouped UCUs into 8 geographic hunt areas similar to those established by Modafferi (1982), calculated annual mean skull size (males only) and harvest density estimates for each area, and used Pearson correlation and linear regression to examine the relationship over time.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Harvest assessment by UCU suggested that black bear densities ranged from 0.25 to 1.6 bears/km^2 with an overall density of 0.59 bears/km^2 in Unit 6D (Crowley 2008). Population size indicated by this method was approximately 3,500 bears in Unit 6D, however this was not a population estimate.

MORTALITY

Harvest

Season and Bag Limit. The seasons for Unit 6 were as follows: 6A and B was 20 August–30 June, 6C was 1 September–30 June, and 6D was 10 September–10 June. The bag limit was 1 bear in Unit 6.

Board of Game Actions and Emergency Orders. The Board of Game changed the season opening date for black bears in Unit 6D from 1 September to 10 September beginning in regulatory year 2009. This was the latest in a series of incremental steps to reduce harvest in 6D. In 2009 the Board of Game also approved the use of a harvest reporting system for Unit 6

Hunter Harvest. The majority of the bear harvest in Unit 6 was male (Table 1. 74–76%). Most bears were taken in Unit 6D (83–86%), where harvest declined for 2 years in a row for the first

time since the early 1990s. Reported annual harvest during the past five regulatory years averaged 585 bears, with an all-time high harvest reported in 2007–08. The proportion of females in the harvest exceeded the management objective of 25% during 2 of the last 5 years (Table 1). Unit 6D is of special concern because of high harvest and easy access into Prince William Sound from Anchorage, the largest population center of Alaska. Mean skull size among males harvested during the past 3 years was 17.2 inches (Table 2). The largest skulls (average = 18.2 inches) came from Unit 6A, and the smallest (average = 17.1 inches) were reported in Unit 6D.

Mean male skull size exhibited a decreasing trend with increasing harvest density in Unit 6D (Figure 1). This relationship was stronger during the most recent 5-year period than during the previous two 5-year periods, suggesting that harvest was increasingly impacting age of bears harvested. The best-fitting model with linear regression used reported harvest density along with a year effect to describe the negative relationship with male skull size ($F=22.06$, $R^2=0.304$, $p<0.001$). The strongest model was achieved by eliminating 1 hunt zone from the analysis: the Esther Passage area has either unusually large bears or dense population, possibly related to availability of hatchery-produced salmon. Anecdotal evidence from guides and outfitters have also suggested that large, mature males were being seen less frequently than in the past. Although assessing black bear populations using harvest data can be fraught with bias (Garshelis 1993), this relationship could also signify a population-level affect of harvest on bear age. Female skull sizes did not show a similar trend. Male and female mean ages did not change significantly during the reporting period.

Harvest distribution in Unit 6D has changed during the last 15 years. Much of the harvest was focused near Whittier and Valdez during the 1990s but is now distributed to the far reaches of PWS. An increasing number of transporters, fuel-efficient four-stroke engines, and inexpensive GPS (global positioning system) units have contributed to the longer range of bear hunters.

Hunter Residency. Nonresident hunters killed the majority of bears in Units 6A and 6B (Table 3). Nonlocal residents took most bears in Units 6C and 6D. Residency of successful hunters did not change significantly over the past 5 years in Units 6A–C. In Unit 6D the proportion of nonresident harvests peaked in 2007 at 45% but has since declined (Table 3). This trend began during the early 1990s, when the proportion of nonresident hunters in Unit 6D was approximately 18%.

Harvest Chronology. Most bears were taken in May during this reporting period (Table 4) and during the past 5 years. Black bears exhibited sexual segregation during the spring (Modafferi 1982). Male black bears in Unit 6D tended to move down to beaches after emerging from winter dens to feed on new sedges and grasses, making them more vulnerable to harvest during this period. Females tended to remain away from beaches, instead favoring south-facing slopes and avalanche chutes that green up early in the season. Both in Alaska (Schwartz et. al. 1986) and Minnesota (Rogers 1987), den emergence was correlated with weather conditions. By the time the fall season opened, most bears were feeding on berries at higher elevations, where they were much less vulnerable to hunting, as indicated by the fall harvest in Table 4. The delayed opening in Unit 6D substantially reduced fall harvest, which was the objective of the regulation change. Most bears were in the den by mid October.

Transport Methods. Most successful hunters used boats and airplanes for transportation during the past 3 years (Table 5). Airplanes provided most of the transportation in Units 6A and 6B. Highway vehicles, boats and 4-wheelers were important in Unit 6C, and boats were used most in Unit 6D.

CONCLUSIONS AND RECOMMENDATIONS

Black bear populations and harvest in Units 6A–6C were at acceptable levels. I recommend no changes or management actions in these subunits. The management objective for Unit 6D should be changed to restrict harvest to 350–400 bears with 25%-30% females in the harvest. This would better indicate our ongoing efforts to reduce harvest in Unit 6D.

If harvest continues to decline in Unit 6D to below 400 bears, further restrictions may not be necessary. If required the next harvest restrictions should target nonresidents. We should continue to collect teeth from harvested bears to determine age structure in the harvest and female reproductive histories.

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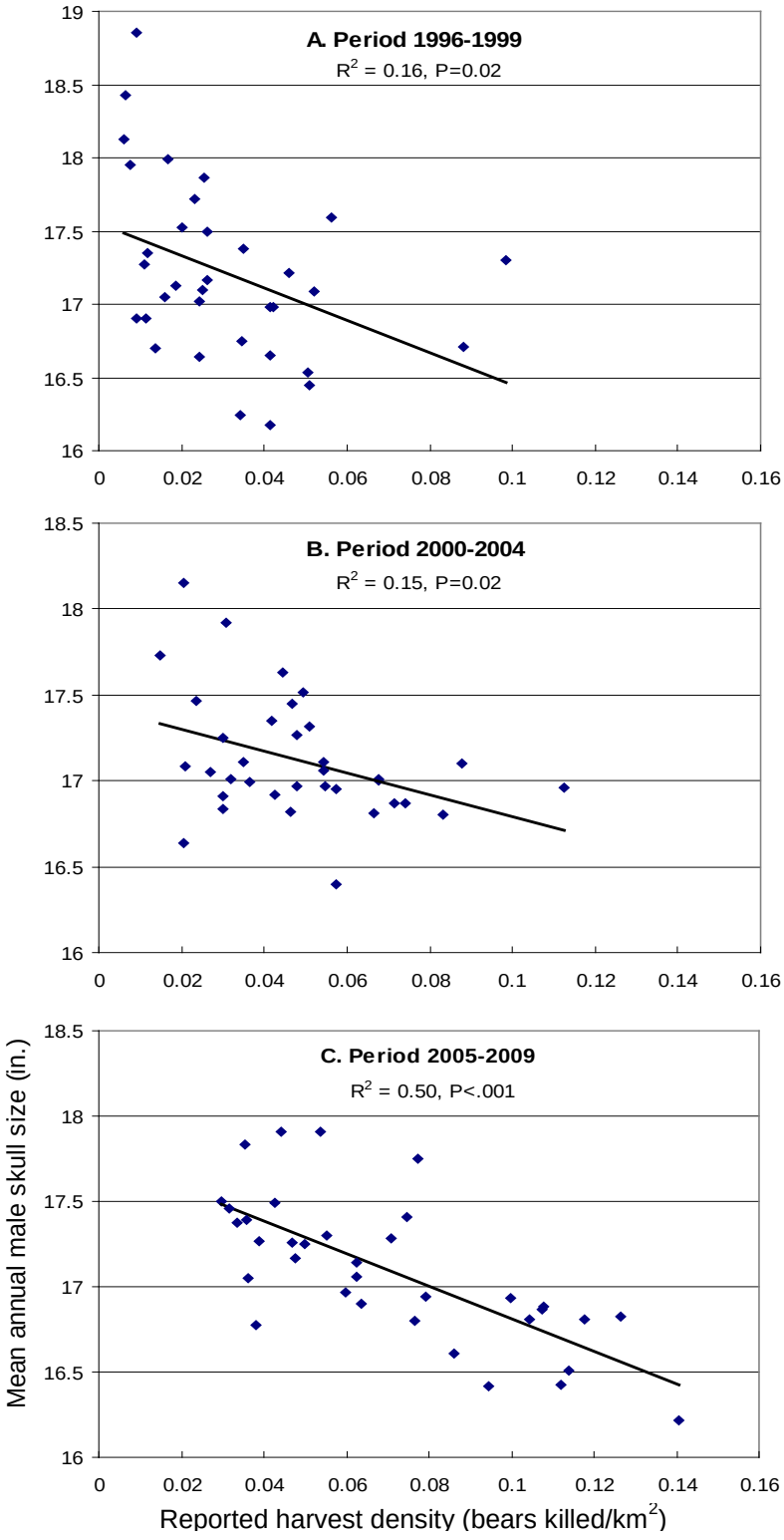

Figure 1. Pearson correlation of black bear skull size and reported harvest density (RHD) in Unit 6D by five-year period. Age of harvested bears has decreased as RHD and duration of high harvest level has increased.

Table 1. Unit 6 black bear harvest, 2007–2010.

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
Year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%	F	(%)	Unk.	Total
6A/Fall 05	9	1	(10)	0	10	0	0	0	0	1	0	9	(90)	1	(10)	1	11
Spring 06	30	1	(3)	0	31	12	0	0	0	4	0	30	(97)	1	(3)	4	35
6A/Total	39	2	(5)	0	41	12	0	0	0	5	0	39	(95)	2	(5)	5	46
6A/Fall 06	2	1	(33)	0	3	0	0	0	0	0	0	2	(67)	1	(33)	0	3
Spring 07	49	5	(9)	0	54	0	0	0	0	6	0	49	(91)	5	(9)	6	60
6A/Total	51	6	(11)	0	57	0	0	0	0	7	0	51	(89)	6	(11)	7	64
6A/Fall 07	14	6	(30)	0	20	0	0	0	1	2	0	14	(70)	6	(30)	3	23
Spring 08	22	2	(8)	0	24	11	0	0	0	3	0	22	(92)	2	(8)	3	27
6A/Total	36	8	(18)	0	44	11	0	0	1	5	0	36	(82)	8	(18)	6	50
6A/Fall 08	16	3	(16)	0	19	0	0	0	0	2	0	16	(84)	3	(16)	2	21
Spring 09	21	3	(13)	0	24	13	0	0	0	3	0	21	(88)	3	(13)	3	27
6A/Total	37	6	(14)	0	43	13	0	0	0	5	0	37	(86)	6	(14)	5	48
6A/Fall 09	1	3	(75)	0	4	0	0	0	0	0	0	1	(25)	3	(75)	0	4
Spring 10	34	2	(6)	0	36	21	0	0	0	4	0	34	(94)	2	(6)	4	40
6A/Total	35	5	(13)	0	40	21	0	0	0	5	0	35	(88)	5	(13)	5	45
6B/Fall 05	1	0	(0)	0	1	0	0	0	0	0	0	1	(100)	0	(0)	0	1
Spring 06	10	1	(9)	0	11	0	0	0	0	1	0	10	(91)	1	(9)	1	12
6B/Total	11	1	(8)	0	12	0	0	0	0	1	0	11	(92)	1	(8)	1	13
6B/Fall 06	1	1	(50)	0	2	0	0	0	0	0	0	1	(50)	1	(50)	0	2
Spring 07	2	2	(50)	0	4	12	0	0	0	0	0	2	(50)	2	(50)	0	4
6B/Total	3	3	(50)	0	6	12	0	0	0	1	0	3	(50)	3	(50)	1	7
6B/Fall 07	0	0	(0)	0	0	0	0	0	0	0	0	0	(0)	0	(0)	0	0
Spring 08	11	3	(21)	0	14	0	0	0	0	2	0	11	(79)	3	(21)	2	16
6B/Total	11	3	(21)	0	14	0	0	0	0	2	0	11	(79)	3	(21)	2	16
6B/Fall 08	1	1	(50)	0	2	0	0	0	0	0	0	1	(50)	1	(50)	0	2
Spring 09	6	3	(33)	0	9	0	0	0	0	1	0	6	(67)	3	(33)	1	10
6B/Total	7	4	(36)	0	11	0	0	0	0	1	0	7	(64)	4	(36)	1	12

Table 1. continued.

Subunit/ Regulatory Year	Reported																	
	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill						
	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.		Total
6B/Fall 09	2	0	(0)	0	2	0	0	0	0	0	0	2	(100)	0	(0)	0		2
Spring 10	8	0	(0)	0	8	0	0	0	0	1	0	8	(100)	0	(0)	1		9
6B/Total	10	0	(0)	0	10	0	0	0	0	1	0	10	(100)	0	(0)	1		11
6C/Fall 05	1	3	(75)	0	4	0	0	0	0	0	0	1	(25)	3	(75)	0		4
Spring 06	26	7	(21)	0	33	4	0	0	0	4	0	26	(79)	7	(21)	4		37
6C/Total	27	10	(27)	0	37	4	0	0	0	4	0	27	(73)	10	(27)	4		41
6C/Fall 06	5	4	(44)	0	9	0	5	2	1	1	0	10	(63)	6	(38)	2		18
Spring 07	21	6	(22)	0	27	4	0	1	0	3	0	21	(75)	7	(25)	3		31
6C/Total	26	10	(28)	0	36	4	5	3	1	4	0	31	(70)	13	(30)	5		49
6C/Fall 07	16	4	(20)	0	20	0	0	2	0	2	0	16	(73)	6	(27)	2		24
Spring 08	19	7	(27)	0	26	4	0	0	0	3	0	19	(73)	7	(27)	3		29
6C/Total	35	11	(24)	0	46	4	0	2	0	6	0	35	(73)	13	(27)	6		54
6C/Fall 08	6	0	(0)	0	6	0	0	0	0	1	0	6	(100)	0	(0)	1		7
Spring 09	20	6	(23)	0	26	4	2	0	0	3	0	22	(79)	6	(21)	3		31
6C/Total	26	6	(19)	0	32	4	2	0	0	4	0	28	(82)	6	(18)	4		38
6C/Fall 09	9	3	(25)	0	12	0	2	2	0	1	0	11	(69)	5	(31)	1		17
Spring 10	22	9	(29)	0	31	9	0	0	0	4	0	22	(71)	9	(29)	4		35
6C/Total	31	12	(28)	0	43	9	2	2	0	5	0	33	(70)	14	(30)	5		52
6D/Fall 05	38	13	(25)	0	51	0	0	0	0	6	0	38	(75)	13	(25)	6		57
Spring 06	299	64	(18)	0	363	34	4	0	0	44	1	303	(83)	64	(17)	45		412
6D/Total	337	77	(19)	0	414	34	4	0	0	50	1	341	(82)	77	(18)	51		469
6D/Fall 06	59	46	(44)	0	105	0	2	1	0	13	0	61	(56)	47	(44)	13		121
Spring 07	283	78	(22)	1	362	52	0	0	0	43	1	283	(78)	78	(22)	45		406
6D/Total	342	124	(27)	1	467	52	2	1	0	56	1	344	(73)	125	(27)	58		527
6D/Fall 07	124	83	(40)	1	208	0	0	0	0	25	0	124	(60)	83	(40)	26		233
Spring 08	252	106	(30)	1	359	61	2	1	0	43	0	254	(70)	107	(30)	44		405
6D/Total	376	189	(33)	2	567	61	2	1	0	68	0	378	(67)	190	(33)	70		638

Table 1. continued.

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
Year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
6D/Fall 08	85	43	(34)	0	128	0	2	0	1	15	0	87	(67)	43	(33)	16	146
Spring 09	317	89	(22)	0	406	54	0	1	0	49	0	317	(78)	90	(22)	49	456
6D/Total	402	132	(25)	0	534	54	2	1	1	64	0	404	(75)	133	(25)	65	602
6D/Fall 09	26	26	(50)	0	52	0	0	2	0	6	0	26	(48)	28	(52)	6	60
Spring 10	310	107	(26)	0	417	66	0	0	0	50	0	310	(74)	107	(26)	50	467
6D/Total	336	133	(28)	0	469	66	0	2	0	56	0	336	(71)	135	(29)	56	527
Fall 05	49	17	(26)	0	66	0	0	0	0	8	0	49	(74)	17	(26)	8	74
Spring 06	365	73	(17)	0	438	50	4	0	0	53	1	369	(83)	73	(17)	54	496
Total	414	90	(18)	0	504	50	4	0	0	60	1	418	(82)	90	(18)	61	569
Fall 06	67	52	(44)	0	119	0	7	3	1	14	0	74	(57)	55	(43)	15	144
Spring 07	355	91	(20)	1	447	68	0	1	0	54	1	355	(79)	92	(21)	56	503
Total	422	143	(25)	1	566	68	7	4	1	68	1	429	(74)	147	(26)	71	647
Fall 07	154	93	(38)	1	248	0	0	2	1	30	0	154	(62)	95	(38)	32	281
Spring 08	304	120	(28)	1	423	76	2	1	0	51	0	306	(72)	119	(28)	52	477
Total	458	213	(32)	2	671	76	2	3	1	81	0	460	(68)	214	(32)	84	758
Fall 08	108	47	(30)	0	155	0	2	0	1	22	1	110	(70)	47	(30)	24	181
Spring 09	364	101	(22)	0	465	74	2	1	0	93	13	366	(78)	102	(22)	106	574
Total	472	148	(24)	0	620	74	4	1	1	115	14	476	(76)	149	(24)	130	755
Fall 09	38	32	(46)	0	70	0	2	4	0	14	2	40	(53)	36	(47)	16	92
Spring 10	374	118	(24)	0	492	96	0	0	0	81	7	374	(76)	118	(24)	88	580
Total	412	150	(27)	0	562	96	2	4	0	95	9	414	(73)	154	(27)	104	672

Table 2. Unit 6 black bear harvest mean skull size (length + width), 2005–2010, and mean age (years) in Unit 6D only.

	Regulatory	Males				Females			
Subunit	year	Skull (in)	*n*	Age	*n*	Skull (in)	*n*	Age	*n*
6A	2005–06	18.26	37			15.69	2		
	2006–07	18.25	47			16.37	5		
	2007–08	17.87	36			16.53	8		
	2008–09	17.88	36			15.64	6		
	2009–10	18.04	35			15.88	5		
6B	2005–06	18.39	11			15.38	1		
	2006–07	17.56	3			16.21	3		
	2007–08	18.64	11			16.02	3		
	2008–09	17.89	7			16.14	4		
	2009–10	17.63	9				0		
6C	2005–06	17.15	26			15.13	10		
	2006–07	16.96	25			15.63	9		
	2007–08	16.68	35			15.34	11		
	2008–09	16.61	25			15.22	6		
	2009–10	17.10	31			15.63	11		
6D	2005–06	16.90	323	5.9	84	15.48	74	8.1	27
	2006–07	17.03	334	6.9	96	15.74	125	11.5	28
	2007–08	16.75	368	6.4	75	15.67	180	10.1	33
	2008–09	16.80	391	6.5	61	15.81	128	8.9	29
	2009–10	17.10	330	7.2	82	15.58	127	7.4	33
Unit 6	2005–06	17.09	397			15.48	87		
Total	2006–07	17.17	409			15.74	142		
	2007–08	16.88	450			15.67	202		
	2008–09	16.89	459			15.81	144		
	2009–10	17.18	405			15.58	143		

Table 3. Unit 6 black bear successful hunter residency, 2005–2010.

Subunit	Regulatory year	Local resident [a] Nr.	(%)	Nonlocal resident Nr.	(%)	Nonresident Nr.	(%)	Total successful hunters [b]
6A	2005–06	2	(5)	4	(10)	35	(85)	41
	2006–07	0		10	(18)	47	(82)	57
	2007–08	2	(5)	7	(16)	35	(80)	44
	2008–09	1	(2)	9	(21)	33	(77)	43
	2009–10	0	(0)	4	(10)	36	(90)	40
6B	2005–06	0		3	(25)	9	(75)	12
	2006–07	1	(17)	2	(33)	3	(50)	6
	2007–08	1	(7)	2	(14)	11	(79)	14
	2008–09	2	(18)	2	(18)	7	(64)	11
	2009–10	0	(0)	6	(60)	4	(40)	10
6C	2005–06	8	(22)	21	(57)	8	(22)	37
	2006–07	18	(50)	6	(17)	12	(33)	36
	2007–08	15	(33)	13	(28)	18	(39)	46
	2008–09	11	(34)	9	(28)	12	(38)	32
	2009–10	14	(33)	20	(47)	9	(21)	43
6D	2005–06	21	(5)	228	(55)	165	(40)	414
	2006–07	35	(7)	252	(54)	179	(38)	467
	2007–08	38	(7)	273	(48)	256	(45)	567
	2008–09	26	(5)	307	(57)	201	(38)	534
	2009–10	26	(6)	278	(59)	164	(35)	469
Unit 6 Total	2005–06	31	(6)	256	(51)	217	(43)	504
	2006–07	54	(10)	270	(48)	241	(43)	566
	2007–08	56	(8)	295	(44)	320	(48)	671
	2008–09	40	(6)	327	(53)	253	(41)	620
	2009–10	40	(7)	308	(55)	213	(38)	562

[a] Residents of Unit 6.

[b] Total includes hunters with unknown residency and subunit.

Table 4. Unit 6 black bear harvest chronology percent by harvest period, 2007–2010.

		Harvest periods [a]										
	Regulatory	September		October		April		May		June		
Subunit	year	1–15	16–30	1–15	16–31	1–15	16–30	1–15	16–31	1–15	16–30	*n*
6A	2005–06	2	22	0	0	0	12	34	29	0	0	41
	2006–07	0	4	0	0	0	9	25	33	21	7	57
	2007–08	5	14	9	0	0	0	5	50	0	0	44
	2008–09	16	7	7	0	0	0	16	37	2	0	43
	2009–10	3	0	0	0	0	3	50	18	20	0	40
6B	2005–06	0	8	0	0	0	0	42	25	25	0	12
	2006–07	0	0	17	0	0	0	17	50	0	0	6
	2007–08	0	0	0	0	0	0	21	79	0	0	14
	2008–09	0	18	0	0	0	9	45	27	0	0	11
	2009–10	0	0	20	0	0	0	40	30	10	0	10
6C	2005–06	8	0	3	0	0	0	16	62	3	8	37
	2006–07	17	0	8	0	0	6	19	44	6	0	36
	2007–08	20	20	4	0	0	0	13	30	13	0	46
	2008–09	0	6	6	0	0	3	22	50	13	0	32
	2009–10	14	7	7	0	0	0	28	28	16	0	43
6D	2005–06	8	3	0	0	0	0	15	59	13	0	414
	2006–07	16	6	1	0	0	0	18	40	19	1	467
	2007–08	23	9	3	1	0	0	3	42	19	1	567
	2008–09	17	6	1	0	0	0	10	50	16	0	533
	2009–10	9	1	1	0	0	0	21	48	19	1	469
Unit 6	2005–06	8	5	1	0	0	1	17	56	12	1	504
Total	2006–07	14	5	2	0	0	1	19	39	18	1	566
	2007–08	21	10	3	0	0	0	4	42	17	0	671
	2008–09	16	6	1	0	0	0	11	49	15	0	619
	2009–10	9	1	2	0	0	0	24	44	19	1	562

[a] Bears were not taken during November–March.

Table 5. Unit 6 black bear harvest percent by transport method, 2007–2010.

Subunit	Regulatory year	Percent of harvest							
		Airplane	Horse	Boat	3- or 4-wheeler	Snow-machine	Highway Vehicle	Unknown	*n*
6A	2005–06	49	0	39	10	0	2	0	41
	2006–07	33	0	47	11	0	0	9	57
	2007–08	68	0	18	14	0	0	0	44
	2008–09	63	0	14	23	0	0	0	43
	2009–10	33	0	13	28	0	0	13	40
6B	2005–06	75	0	0	8	0	17	0	12
	2006–07	20	0	0	0	0	80	0	5
	2007–08	57	0	14	0	0	29	0	14
	2008–09	64	0	9	0	9	9	9	11
	2009–10	30	0	20	10	10	30	0	10
6C	2005–06	5	0	19	11	0	59	5	37
	2006–07	0	0	28	19	0	50	3	36
	2007–08	4	0	24	9	0	57	7	46
	2008–09	9	0	9	28	0	50	3	32
	2009–10	2	0	12	19	0	60	7	43
6D	2005–06	3	0	92	2	0	2	1	414
	2006–07	3	0	89	5	0	2	1	467
	2007–08	3	0	89	4	0	3	1	567
	2008–09	2	0	90	4	0	2	1	534
	2009–10	2	0	87	3	0	1	5	469
Unit 6 Total	2005–06	8	0	80	3	0	7	1	504
	2006–07	6	0	80	6	0	5	2	565
	2007–08	9	0	78	5	0	7	1	671
	2008–09	8	0	79	7	0	4	1	620
	2009–10	5	0	75	6	0	6	6	562

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNITS: 7 and 15 (8,397 mi^2)

GEOGRAPHIC DESCRIPTION: Kenai Peninsula

BACKGROUND

Black bear densities in Unit 15A were estimated at 205 bears/1,000 km^2 within the 1947 burn and 265/1,000 km^2 in the 1969 burn (Schwartz and Franzmann 1991). No other surveys to assess population size have been conducted. There have been several studies conducted on black bears on the Kenai Peninsula looking at predation (Franzmann and Schwartz 1986; Schwartz and Franzmann 1983 and 1989), food habits (Smith 1984), habitat (Schwartz and Franzmann 1991), dispersal (Schwartz and Franzmann 1992), and denning (Schwartz et al. 1987).

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Provide the opportunity to hunt black bears, using seasons and bag limits to regulate the take so we do not exceed an average of 40% females in the harvest during the most recent 3-year period.

METHODS

The department monitors the harvest of black bears through a mandatory sealing program established in 1973. Hides and skulls of all black bears reported killed are sealed with metal locking tags, and information is collected and entered on bear sealing forms. All of the harvest data is now kept at the department's Web-based database called WinfoNet. This report reflects updated tables using data from WinfoNet; therefore, data may differ slightly from past reports.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The black bear population on the Kenai Peninsula appears stable. Using Schwartz and Franzmann's (1991) density estimates of 205 bears/1,000 km^2 and 265/1,000 km^2 from Unit 15A, both of which underestimated certain cohorts due to the limitations of their technique, and assumed higher densities along the southern outer coast, we estimate well over 4,000 black bears throughout Units 7 and 15.

Distribution and Movements

The distribution and abundance of devil's club is an important factor affecting distribution and movements of black bears (Schwartz and Franzmann 1991). Devil's club may be affected by spruce beetle infestation when more light penetrates to the forest floor after the removal of the canopy. Black bears appear in greater densities along the southern outer coast in suitable habitat, probably due to healthy salmon runs coupled with lower densities of competing brown bears.

MORTALITY

Harvest

Season and Bag Limit. Black bear hunting has been open year-round on the Kenai Peninsula since 1980. From 1994–2008, the bag limit was 2 bears per regulatory year (1 bear July 1 – December 31, and 1 bear January 1– June 30). In 2009, the bag limit was changed to 2 bears for residents (no season restriction), and 1 bear for nonresidents.

Bear baiting is allowed through a registration permit except in Resurrection Creek and its tributaries in Unit 7 or within 1/4 mile along the Kenai, Kasilof, and Swanson rivers in Units 7 and 15. Baiting is also restricted within the Kenai National Wildlife Refuge. Completion of a bear baiting clinic is required by all bait permit holders in Units 7 and 15. The season was April 15 – June 15 from 1988 through the spring of 2009. Starting in the spring of 2010, the season was April 15 – June 15.

Board of Game Action and Emergency Orders. In the spring of 2009, the Board of Game changed the bag limit and the black bear baiting season, both outlined above.

Hunter Harvest. During the most recent 5-year period, the annual average for percent females in the harvest was 27%. The 5-year average annual harvest was 573 bears taken annually (Table 1). The 5-year average annual bait harvest was 85 bears taken per year (Table 2).

Hunter Residency and Success. The percentage of successful hunters who are nonresidents fluctuates annually (Table 3), but has increased over the past decade.

Harvest Chronology. May is the month when most of the black bear harvest occurs (Table 4).

Transport Methods. Transport by boat was the top method used by successful bear hunters (Table 5), which is probably driven by the popularity of hunting black bears around the outer coast in the southern part of the Kenai Peninsula.

CONCLUSIONS AND RECOMMENDATIONS

Black bears are an important big game species, leading all other big game species in the numbers of animals harvested annually for Units 7 and 15. Black bear hunting continues to increase in popularity because of a long season, liberal bag limit, and an alternative meat source to other big game. The department will continue to assess the sustainability of the harvest by monitoring the percent females in the harvest, skull size trends, and anecdotal assessments while flying surveys for other species. We have been within our management objective using the current seasons and bag limits.

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Selinger, J. 2011. Units 7 & 15 black bear management report. Pages 143–148 *in* P. Harper, editor. Black bear management report of survey and inventory activities 1 July 2007–30 June 2010. Alaska Department of Fish and Game. Project 17.0. Juneau, Alaska.

Table 1 Black bear harvest[a] by season in Units 7, 15A, 15B, and 15C, 2005–2009.

Regulatory		Fall				Spring				Fall + Spring			
year	Unit	Male	Female	Unk	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
2005–06	7	40	23	1	64	122	27		149	162	50	1	213
	15A	16	3		19	20	8		28	36	11		47
	15B	19	11		30	3	2		5	22	13		35
	15C	37	17	1	55	130	26		156	167	43	1	211
	totals	112	54	2	168	275	63		338	387	117	2	506
2006–07	7	34	15	1	50	112	35		147	146	50	1	197
	15A	15	4		19	14	9		23	29	13		42
	15B	13	7		20	12	3		15	25	10		35
	15C	57	22		79	142	47	1	190	199	69	1	269
	totals	119	48	1	168	280	94	1	375	399	142	2	543
2007–08	7	52	23		75	95	29	1	125	147	52	1	200
	15A	14	5		19	32	7		39	46	12		58
	15B	9	10		19	9	3		12	18	13		31
	15C	54	26	1	81	172	54		226	226	80	1	307
	totals	129	64	1	194	308	93	1	402	437	157	2	596
2008–09	7	84	30		114	109	39		148	193	69		262
	15A	16	11	1	28	23	14		37	39	25	1	65
	15B	21	17		38	6	3	1	10	27	20	1	48
	15C	48	25		73	113	40		153	161	65		226
	totals[b]	169	83	2	254	251	96	1	348	420	179	2	602
2009–10	7	46	33		79	89	29	1	119	135	62	1	198
	15A	15	10		25	38	19		57	53	29		82
	15B	25	19		44	8	2		10	33	21		54
	15C	79	35		114	132	38	1	171	211	73	1	285
	totals	165	97		262	267	88	2	357	432	185	2	619

[a]Includes defense of life or property kills, deaths due to vehicle collision, research mortalities, illegal kills, and unknown causes of mortalit.y
[b]Includes one unknown sex bear taken from unknown location in Unit 15 in the fall.

Table 2. Number of registered bait stations and baiting harvest in Units 7, 15A, 15B, and 15C, 2005–2009.

Spring	Unit 7		Unit 15A		Unit 15B		Unit 15C		Units 7&15	
Year	# stations	Harvest	# stations	Harvest	# stations	Harvest	# stations	Harvest	# stations	Harvest
2006	159	51	38	15	8	2	17	1	222	69
2007	126	69	61	18	10	3	20	3	217	93
2008	130	53	74	23	7	4	26	1	237	81
2009	136	54	89	27	12	3	25	7	262	91
2010	137	44	91	36	11	3	21	7	260	90

Table 3. Black bear harvest by residency in Units 7 and 15, 2005–2009.

Regulatory	Residents									Total successful
year	Local[a]	(%)	Nonlocal	(%)	Total	(%)	Nonresident	(%)	Unk	hunters[b]
2005–06	150	(30)	156	(31)	306	(61)	187	(37)	13	506
2006–07	170	(31)	179	(33)	349	(64)	187	(34)	7	543
2007–08	190	(32)	180	(30)	370	(62)	213	(36)	13	596
2008–09	190	(32)	220	(37)	410	(69)	181	(30)	11	602
2009–10	236	(38)	182	(29)	418	(67)	189	(31)	12	619

[a] Local residents are residents of the Kenai Peninsula
[b] Includes nonsport harvest

Table 4. Black bear harvest chronology in Units 7 and 15, 2005–2009.

Regulatory year	July	(%)	Aug.	(%)	Sep.	(%)	Oct.	(%)	Nov.	(%)	Apr.	(%)	May	(%)	June	(%)	unk	Total harvest
2005–06	4	(1)	35	(7)	102	(20)	16	(3)	0	(0)	8	(2)	254	(50)	73	(14)	14	506
2006–07	18	(3)	30	(6)	89	(16)	23	(4)	1	(0)	6	(1)	247	(45)	122	(22)	7	543
2007–08	14	(2)	44	(7)	87	(15)	40	(7)	1	(0)	5	(1)	234	(39)	159	(27)	12	596
2008–09	25	(4)	84	(14)	116	(19)	18	(3)	1	(0)	2	(0)	230	(38)	115	(19)	11	602
2009–10	19	(3)	86	(14)	125	(20)	22	(4)	2	(0)	5	(1)	243	(39)	107	(17)	10	619

Table 5. Black bear harvest by transportation method in Units 7 and 15, 2005–2009.

Regulatory year	Airplane	(%)	Dog/ Horse	(%)	Boat	(%)	ATV	(%)	Snow-machine	(%)	Other ORV	(%)	Highway Vehicle	(%)	Walk	(%)	Other/ Unk	(%)	Total harvest
2005–06	39	(8)	10	(2)	250	(49)	34	(7)	1	(0)	0	(0)	95	(19)	62	(12)	15	(3)	506
2006–07	35	(6)	8	(1)	286	(53)	38	(7)	0	(0)	0	(0)	100	(18)	65	(12)	11	(2)	543
2007–08	40	(7)	3	(1)	308	(52)	40	(7)	1	(0)	1	(0)	120	(20)	70	(12)	13	(2)	596
2008–09	32	(5)	8	(1)	286	(48)	43	(7)	1	(0)	0	(0)	151	(25)	70	(12)	11	(2)	602
2009–10	33	(5)	10	(2)	301	(49)	39	(6)	0	(0)	4	(1)	148	(24)	48	(8)	36	(6)	619

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 11 (12,785 mi^2)

GEOGRAPHIC DESCRIPTION: Wrangell Mountains

BACKGROUND

Black bears are numerous in the portions of Unit 11 that have favorable forested habitat. Black bears have been gaining status as desirable big game animals over the past 30 years as evidenced by the increase in average harvest from 8 (range = 1–14) black bears per year during the 1980s to 18 (range = 10–29) during the 2000s.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Provide the greatest sustained opportunity to participate in hunting black bears.

METHODS

We monitored the black bear harvest by interviewing successful hunters when black bears are presented for sealing. We measured skulls of sealed bears, determined sex of bears, and extracted a premolar tooth for aging.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Black bear surveys or censuses have not been conducted in Unit 11. However, field observations and harvest data indicate black bears are abundant in suitable habitat throughout the unit. The lower Chitina River Valley is especially favorable bear habitat with salmon available in a number of streams. National Park Service (NPS) biologists estimated 100–200 black bears per1,000 km^2 in the McCarthy area during 2001 (Mason Reid, Wrangell St. Elias National Park biologist, personal communication). This figure approaches densities observed elsewhere in Southcentral Alaska.

MORTALITY

Harvest

Season and Bag Limit. There was no closed season for black bears in Unit 11, and the bag limit was 3 bears.

Board of Game Actions and Emergency Orders. In March 2009 the Board of Game passed regulations requiring a black bear harvest ticket prior to hunting, and extending the bear baiting season to June 30.

Hunter Harvest. Hunters reported taking 29 black bears during (RY) 2009 (RY09 = 1 July 2009 through 30 June 2010), a 71% increase over the prior 4 years' average take of 17 (range = 13-22) (Table 1). Males made up 74% of the harvest for the last 5 years (RY05–RY09). Since sealing of black bears started in RY73, males have been 71% (range = 25–100%) of the Unit 11 bear harvest. The mean skull size for males taken in RY09 was 16.1 inches, slightly below the 37-year mean of 16.7 inches. The average skull size of females last year was 15.4 inches, similar to the 30-year average of 15.7.

Hunter Residency and Success. Nonresident hunters have taken 31% of the Unit 11 black bears harvested (average = 6 bears per year) during the last 5 years, with 26 nonresidents harvesting 30 bears. From RY73 through RY04, nonresidents averaged 3 bears per year (range = 0–18), or 24% of the harvest. Most nonresidents reported using a guide and usually harvested a bear during the fall while hunting other big game species such as sheep. The percent of black bears in the harvest taken by local residents varied each year but averaged 20% (4 bears) a year during the past 5 years. Successful bear hunters spent an average of 3.9 days hunting during RY09, similar to the 5-year average of 3.4 days.

Data from bear sealing certificates indicates 86% of successful hunters were specifically hunting black bears during this reporting period. The remainder reported taking a bear incidentally to other hunting activities. In the last 5 years, 72% of successful hunters salvaged some or all of the bear meat. Bear-baiting activity fluctuates considerably between years but data suggest a marked increase in recent years. Only 1 black bear was reported taken over bait each year from RY90 to RY92, but 10 (49% of the total harvest) on average have been reported annually the past 5 years (Table 1).

Since RY09 it has been mandatory for hunters to obtain a general black bear harvest ticket/report to be returned at the completion of the season. Comparing the number of bears sealed to the number of bears hunters reported taken from harvest ticket report cards indicates that hunters are complying with sealing requirements at a higher rate than they are complying with the new harvest ticket reporting requirement.

Harvest Chronology. May, June, and August are important months for harvesting black bears in Unit 11 (Table 3). During the last 5 years on average, 6 (32%) bears have been taken in the fall and 13 (68%) bears have been taken in the spring. Since RY73, 55% of the black bear harvest has occurred during the fall season. Harvest chronology data shows that between RY93 and RY09 spring harvests exceeded fall harvests due to the increased interest in bear baiting during the spring by nonlocal Alaska residents.

Transportation Methods. Boats, highway vehicles, aircraft, and walking were the methods of transportation most often reported by successful black bear hunters (Table 4). Aircraft use was primarily by nonresidents on mixed-bag hunts during the fall, and walking was common with locals.

Other Mortality

Remote rural residents are likely most responsible for unreported harvests, which are probably tied to defense of life or property (DLP) kills around remote cabins and home sites. Hunters taking a bear under DLP conditions are required to turn over the hide and skull to the Alaska Department of Fish and Game. Reporting is minimal, mostly because of the difficulty transporting skulls and hides from remote portions of the unit. Only 1 DLP was recorded in Unit 11 during this reporting period. Some DLP bears are claimed under the general season take because of the liberal bag limit and 12-month season.

CONCLUSIONS AND RECOMMENDATIONS

Although yearly fluctuations are observed, the Unit 11 black bear harvest has increased over the long term average. Much of the observed harvest increase since RY93 can be attributed to increased popularity of spring bear baiting. Considering access is so limited in Unit 11, the increase in baiting activities is not likely to affect the population. It may actually keep problem bears away from communities and keep DLP kills down. Males continue to dominate the harvest. Even with the increased take in recent years, the harvest of black bears remains quite low for the amount of available habitat. Black bear numbers in Unit 11 are thought to be similar to other timbered areas in southcentral Alaska, and current low harvest has little impact on unitwide bear numbers.

Because most of Unit 11 is included in Wrangell-St Elias Park/Preserve, the black bear population will always receive relatively light hunting pressure. Federal NPS regulations prohibit hunting by nonlocal residents in portions of the unit designated as park. Subsistence hunting by local rural residents continues in these areas; however, aircraft cannot be used to access park areas, although they can be used in the preserve. This effectively closes most of the park to hunting. As a result, most harvest is along the road system. No changes in season length or bag limits are recommended.

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Table 1. Unit 11 black bear harvest, regulatory years 2005–06 through 2009–10.

Regulatory	Reported hunter kill							Nonhunting kill[a]			Total kill			
Year	M	(%)	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	F	Unk.	Total
2005–06														
Fall 05	6	(100)	0	(0)	0	6		0	0	0	6	0	0	6
Spring 06	6	(86)	1	(14)	0	7		0	0	0	6	1	0	7
Total	12	(92)	1	(8)	0	13	3	0	0	0	12	1	0	13
2006–07														
Fall 06	3	(75)	1	(25)	0	4		0	0	0	3	1	0	4
Spring 07	9	(90)	1	(10)	0	10		0	0	0	9	1	0	10
Total	12	(86)	2	(14)	0	14	8	0	0	0	12	2	0	14
2007–08														
Fall 07	1	(50)	1	(50)	0	2		0	0	0	1	1	0	2
Spring 08	13	(76)	4	(24)	0	17		0	0	0	13	4	0	17
Total	14	(74)	5	(26)	0	19	14	0	0	0	14	5	0	19
2008–09														
Fall 08	5	(71)	2	(29)	0	7		1	0	0	6	2	0	8
Spring 09	12	(80)	3	(20)	0	15		0	0	0	12	3	0	15
Total	17	(77)	5	(23)	0	22	11	1	0	0	18	5	0	23
2009–10														
Fall 09	4	(33)	8	(67)	0	12		0	0	0	4	8	0	12
Spring 10	13	(76)	4	(24)	0	17		0	0	0	13	4	0	17
Total	17	(59)	12	(41)	0	29	12	0	0	0	17	12	0	29

[a] Includes DLP kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Unit 11 black bear successful hunter residency, regulatory years 2005–06 through 2009–10[a].

Regulatory year	Local[b] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
2005–06	2	(15)	8	(62)	3	(23)	13
2006–07	3	(23)	5	(38)	5	(38)	13
2007–08	1	(8)	7	(58)	4	(33)	12
2008–09	6	(29)	10	(48)	5	(24)	21
2009–10	5	(20)	11	(44)	9	(36)	25

[a] Adjusted for multiple harvests by individual hunters.
[b] Resident of Unit 11 or NPS subsistence community for Wrangell-St. Elias National Park/Preserve.

Table 3. Unit 11 black bear harvest chronology (percent) by month, regulatory years 2005–06 through 2009–10.

Regulatory year	Harvest periods													
	July		August		September		October		April		May		June		*n*
2005–06	1	(8)	3	(23)	2	(15)	0	(0)	0	(0)	5	(38)	2	(15)	13
2006–07	1	(7)	2	(14)	1	(7)	0	(0)	0	(0)	2	(14)	8	(57)	14
2007–08	0	(0)	1	(5)	1	(5)	0	(0)	0	(0)	7	(37)	10	(53)	19
2008–09	0	(0)	4	(18)	3	(14)	0	(0)	0	(0)	8	(36)	7	(32)	22
2009–10	0	(0)	10	(34)	2	(7)	0	(0)	0	(0)	8	(28)	9	(31)	29

Table 4. Unit 11 black bear harvest (percent) by transport method, regulatory years 2005–06 through 2009–10.

Regulatory year	Airplane	Horse	Boat	3- or 4-Wheeler	Snowmachine	Highway vehicle	Walk	Unknown	*n*
2005–06	2 (15)	0 (0)	4 (31)	1 (8)	1 (8)	3 (23)	2 (15)	0 (0)	13
2006–07	1 (7)	0 (0)	4 (29)	0 (0)	0 (0)	5 (36)	4 (29)	0 (0)	14
2007–08	2 (11)	0 (0)	7 (37)	0 (0)	0 (0)	7 (37)	3 (16)	0 (0)	19
2008–09	2 (9)	0 (0)	9 (41)	4 (18)	0 (0)	3 (14)	4 (18)	0 (0)	22
2009–10	2 (8)	1 (4)	6 (23)	3 (12)	0 (0)	8 (31)	6 (23)	0 (0)	26

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010[1]

LOCATION

GAME MANAGEMENT UNIT: 12 (10,107 mi^2)

GEOGRAPHIC DESCRIPTION: Upper Tanana and White River drainages, including the northern Alaska Range east of the Robertson River, and the Mentasta, Nutzotin, and northern Wrangell Mountains

BACKGROUND

Historically, human use of black bears in Unit 12 was relatively low, despite liberal hunting regulations and moderate bear population levels. Most black bear hunting occurred along the highway system and the Tanana River.

In 1992 interest in black bear hunting increased, particularly at bait stations, and has remained high relative to previous levels. Most bears are taken by local residents in the spring and are an important meat source. Even before regulations were implemented requiring salvage of black bear meat from 1 January to 31 May, meat was salvaged from over 90% of all black bears harvested by local residents. In the fall most black bears were harvested incidentally during hunts for other species.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance the black bear population and its habitat in concert with other components of the ecosystem.

- Provide the greatest sustained opportunity to participate in hunting black bears.

MANAGEMENT OBJECTIVE

- Manage for a harvest of black bears that maintains 55% or more males in the combined harvests during the most recent 3 years.

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

METHODS

All harvest data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY07 = 1 July 2007–30 June 2008). In RY07 and RY08 harvest information was collected from hunters during the mandatory sealing process of hunter-killed bears and bears killed in defense of life or property. These reports provided data on harvest location and date, hunter residency and effort, sex of the bear, skull size, baiting, salvage of meat, incidental take, and defense of life or property. Starting in RY10 Alaska Department of Fish and Game (ADF&G) stopped sealing most black bears harvested in large portions of Interior Alaska, including Unit 12, in favor of a harvest ticket requirement that allowed managers to assess hunter participation and success rates in the area. Only black bears removed from Alaska or sold were required to be sealed. Hunters were required to register all black bear bait stations and the distribution of bait stations and harvest were monitored.

Blueberry abundance has been monitored at 5 permanent blueberry sample areas in Unit 12 and 3 sample areas in adjacent Unit 20E since 2000. Sample sites were selected for the presence of blueberry plants in a variety of habitat types, aspects, elevations, and slopes. Annual rainfall and temperature was monitored at each site to determine their effects on blossom and berry production. Berry production is estimated by counts of berries within 5 1-m^2 plots in each area in late July and early August of each year. Through continued monitoring it may be possible to compare berry production between years and sites, and to evaluate effects of berry abundance on bear harvest and problem bear incidents.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

During RY07–RY09 no population surveys were conducted in Unit 12 to determine the black bear population size and trend. Based on limited radiotelemetry data collected in Unit 12 (Kelleyhouse 1990) and on more rigorous data collected in Unit 20A (Hechtel 1991), estimated black bear density in Unit 12 was 16–22 bears of all ages/100 mi^2 of black bear habitat and the estimated population size was ~700–1000 bears.

Grizzly and black bear populations are being assessed in the adjacent upper Yukon–Tanana grizzly bear control area of Unit 20E. In 2006, ADF&G (C. Gardner, ADF&G unpublished data, Fairbanks, 2007) conducted a DNA-based mark–recapture population estimate using barbed wire bear hair traps with scent lures. Although Unit 20E may have lower black bear densities than Unit 12, preliminary data from this study suggest black bear densities in Unit 12 may be significantly below previous estimates.

No major climatic anomalies or habitat alterations occurred in Unit 12. Black bear habitat that burned during RY07–RY09 in Unit 12 was limited to approximately 28 mi^2 (73 km^2) during the Eagle Trail fire in May and June of 2010. Some bears may have been displaced from the burned area but due to the small size of the area affected the overall population trend was likely stable.

Population Composition

Few data were available on population composition in Unit 12. Sex ratios in the harvest were not representative of the population because females with cubs were protected by regulation.

During RY07–RY09, productivity of the black bear population in Unit 12 appeared adequate based on the animals harvested and on numerous sightings of sows with cubs. The reproductive interval (length of time between parturition and weaning), determined by observations of radiocollared bears, was 2–3 years (Kelleyhouse 1990), similar to other black bear populations in Interior Alaska (Miller 1987).

Distribution and Movements

Black bears are distributed throughout the forested areas that include 4,396 mi^2 (11,386 km^2) of Unit 12 based on LANDFIRE™ (2009) vegetation classifications using the 2001 Landsat™ imagery (ADF&G, unpublished data, Fairbanks). In fall and spring, bears move into the shrub zones to feed on berries and succulent vegetation. In 1990 a forest fire burned approximately 156 mi^2 of black bear habitat in the Tok River valley. Observations by members of the public as well as information gathered incidental to other fieldwork suggested black bear use of the area was subsequently reduced. By 1994 bears began using the edges of the burn for feeding. Beginning in 1997, incidental sightings indicated black bears were utilizing most areas of the burn. In 2004 and 2010, wildfires burned 434 mi^2 and 28 mi^2 of black bear habitat in Unit 12. These fires initially reduced habitat availability, but likely will result in long-term positive effects on black bear habitat.

Kelleyhouse (1990) investigated black bear movements in a portion of Unit 12. He reported home ranges of 16 mi^2 for an adult female, 3 mi^2 for a subadult male, and 63 mi^2 for an adult male.

MORTALITY

Harvest

Season and Bag Limit. There was no closed season for black bears in Unit 12, and the bag limit was 3 bears. Harvest of cubs (in first year of life) or females accompanied by cubs was prohibited.

Alaska Board of Game Actions and Emergency Orders. During the spring 2006 meeting, the Alaska Board of Game (board) adopted regulations to allow the sale of black bear hides and skulls, and same day airborne hunting of black bears over bait in active predator control areas, including the Upper Yukon–Tanana Predator Control Area in Unit 12 north of the Alaska Highway. Starting in RY09 the Board required hunters to possess harvest tickets for black bears in all units where black bear sealing was required, including Unit 12. The sealing requirement in Unit 12 was eliminated in RY10, except for bears removed from Alaska or sold. No emergency orders were issued during RY07–RY09.

Harvest by Hunters. During RY07–RY09, 23–58 ($\bar{x}$ = 42) black bears were harvested annually in Unit 12 (Table 1). Estimated harvest rate was 3–7% of the adult population, but without detailed population estimates the precise harvest rate is unknown. Annual average black bear harvest has increased from 25.1 bears during RY80–RY91 to 36.1 bears during RY92–RY03 and

43 bears during RY04–RY06. Males composed 67–74% of the harvest ($\bar{x}$ = 68%) during RY07–RY09 (Table 1), meeting the harvest objective.

Mean skull size of males taken during RY07–RY09 was 16.6 inches (RY07 = 16.4, RY08 = 16.9, RY09 = 16.5). Increased harvest since RY92 has not affected male skull size. Average skull size of male black bears harvested in Unit 12 has remained consistent since RY80. During RY92–RY97 average skull size was 16.4 inches (σ = 0.326), compared to 16.4 inches (σ = 0.437) during RY80–RY91.

About 80% of black bear harvest in Unit 12 occurred along the road system within the Tok and Tanana River valleys. Few hunters accessed remote portions of Unit 12 to hunt black bears.

Circumstantial evidence indicates that berry abundance may affect bear harvest. During years of poor berry production (Gardner 2002), bears may travel more in search of berries and/or may be more attracted to hunter-killed moose or caribou or other human foods. These behaviors increase the vulnerability of bears to hunters. Low blueberry abundance in fall 2006 (Table 2) coincided with the highest fall harvest of black bears since fall 1996. However black bear harvest in Unit 12 was again high in 2008 when blueberries were relatively abundant. In 2010 when blueberries were again abundant, 2 black bears were killed in defense of life and property (DLP) and numerous black bear incidents were reported in communities and campsites along the road system in Units 12 and 20E.

Hunter Residency and Success. During RY07–RY09 Alaska residents harvested 75–91% ($\bar{x}$ = 84%) of the black bears taken in Unit 12 (Table 3). Of these, Unit 12 residents took 35–58% ($\bar{x}$ = 48%) of the harvest. During the previous 5 years, the average annual percent harvest by Alaska residents was 87% and harvest by Unit 12 residents averaged 47%, a decrease from the 64% harvest by Unit 12 residents in 1997–2001. Historically, nonresidents harvested few black bears in Unit 12. From RY90 through RY95, nonresidents took an average of 1 black bear/year, 3.3% of the annual harvest. Annual harvest by nonresidents increased to an average of 4.5 bears/year (14% of the harvest) between RY96 and RY03, remained stable at 5.7 bears/year (13% of the harvest) in RY04–RY06 and 7.0 bears/year (16% of the harvest) in RY07–RY09. Guided nonresidents harvested about half of the bears killed by nonresidents.

RY09 was the first year harvest tickets were issued for black bears in Unit 12. Based on information from the RY09 harvest tickets, a total of 92 hunters reported hunting black bears. The overall success rate was 21.7%. Success rates among Alaska residents (18.8%) was much lower than among nonresidents (57.1%).

During RY07–RY09 successful hunters spent an average of 2.5 and 3.0 days afield hunting black bears during the fall and spring, respectively. The yearly average time spent hunting black bears was 2.8 days in RY07–RY09 compared to 4.7 days in RY04–RY06 and 4.2 days in RY01–RY03. During RY90–RY94 the average number of days afield was 8.7 days. The differences among the periods probably reflect improved success at bait stations and an increase in the number of hunters satisfied with harvesting only 1 bear. During RY07–RY09 an average of only 6.3% of hunters took >1 bear compared to 15.5% during RY95–RY00, and 28.0% during RY90–RY94. The average number of hunters who took >1 bear per year declined from 4.0 in RY90–RY94 to 2.8 in RY95–RY00, returned to 4.0 in RY04–RY06 and was 2.7 in RY07–RY09.

Harvest Chronology. During RY07–RY09 the average percent of the harvest taken during the spring was 67%, similar to the means of 70% in RY04–RY06, 72% in RY01–RY03 and 69% in RY96–RY00 (Table 4).

During RY07–RY09, hunters at bait stations accounted for an average of 72% (11–25 bears) of the spring harvest, compared to 75% of the spring harvest (18–28 bears) during RY04–RY06 and 85% (11–27 bears) during RY01–RY03. The use of bait stations by successful hunters increased substantially in RY01. During RY89 and RY91, 45% of the spring harvest was taken over bait (5–8 bears). During RY04–RY06 most fall harvest (60–75%) was incidental to hunts for other species.

Transport Methods. Since RY01, 3- or 4-wheelers have been the most commonly used methods of transportation for successful black bear hunters, and hunters who used this transportation averaged 33% of the harvest during RY07–RY09 (Table 5). In previous years, highway vehicles were the most common mode of transportation. During RY98–RY00, hunters who used highway vehicles killed an annual average of 44% of the reported black bears harvest. Most black bear baiting occurred in areas accessible by highway vehicles. Use of other transportation types will remain low unless the harvest success rate declines in areas where ATVs and highway vehicles can be used.

Other Mortality

There are no data on the mortality rate of cubs in this area; however, Miller (1987) found that cubs of the year in the Susitna Basin had a natural mortality rate of 35%. Additional natural mortality also occurred among radiocollared adult back bears. Other than hunting, human influence on bear survival in Unit 12 appears to be minimal.

HABITAT

Assessment

Approximately one-half of Unit 12 is suitable black bear habitat. Because grizzly bears are moderately abundant and have been documented as an important source of mortality for black bears of all age classes in other areas of Alaska (Miller 1987), they may limit black bear distribution to areas offering adequate escape cover. Berry species used by black bears in Unit 12 are generally available throughout the unit. Annual berry abundance is directly affected by climate. The Tok wildfire in 1990 burned approximately 156 mi^2 of prime black bear habitat. Its initial impact on the local black bear population is unknown, but suitable black bear food sources are increasing annually, and based on incidental sightings more black bears are using the area. Similarly, wildfires consumed 434 mi^2 and 28 mi^2 in Unit 12 during 2004 and 2010 respectively, likely improving habitat quality for black bears in the area.

Enhancement

The implementation of the Alaska Interagency Wildland Fire Management Plan (Alaska Wildland Fire Coordinating Group 1998) and the 1990, 2004, and 2010 wildfires are expected to enhance black bear habitat over the long term in Unit 12. Extensive areas of climax black spruce forest exist in the unit that have understories nearly devoid of high-quality black bear food. A younger, more diverse habitat mosaic will provide more productive food plants preferred by black bears.

CONCLUSIONS AND RECOMMENDATIONS

During RY07–RY09 we met the management objective to manage for a harvest of black bears that maintains 55% or more males in the combined harvests during the most recent 3 years, with an average of 69% males. Average male skull size was 16.6 inches and has remained consistent since 1980. An average of 84% of the black bear harvest was by Alaska residents, of which 48% were local residents. During RY07–RY09 an average of 72% of hunter-killed bears harvested in the spring were taken over bait (48% of bears taken annually). Black bear meat was an important food source for local residents, particularly in the spring. Based on hunter report data and bear sightings by the public and ADF&G staff, there was no indication that harvest was excessive. During RY07–RY09, harvest was estimated to be sustainable. I recommend no changes in the seasons and bag limits or management goals and objectives.

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Table 1. Unit 12 black bear harvest, regulatory years 1995–1996 through 2009–2010.

Regulatory year	Reported								Estimated kill		Total reported and estimated kill					
	Hunter kill					Nonhunting kill[a]										
	M	F	Unk	Total	Baited	M	F	Unk	Unreported	Illegal	M	(%)	F	(%)	Unk	Total
1995–1996																
Fall 1995	5	3	0	8	0	0	0	0	0	0	5	(63)	3	(38	0	8
Spring 1996	17	6	0	23	11	0	0	0	0	0	17	(74)	6	(26)		23
Total	22	9	0	31	11	0	0	0	0	0	22	(71)	9	(29)	0	31
1996–1997																
Fall 1996	21	2	0	23	0	0	1	0	0	0	21	(88)	3	(13	0	24
Spring 1997	14	6	0	20	16	0	0	0	0	0	14	(70)	6	(30)	0	20
Total	35	8	0	43	16	0	1	0	0	0	35	(80)	9	(20)	0	44
1997–1998																
Fall 1997	2	2	0	4	0	0	0	0	0	0	2	(50)	2	(50)	0	4
Spring 1998	30	7	0	37	27	0	0	0	0	0	30	(81)	7	(19)	0	37
Total	32	9	0	41	27	0	0	0	0	0	32	(78)	9	(22)	0	41
1998–1999																
Fall 1998	8	3	0	11	0	0	0	0	0	0	8	(73)	3	(27)	0	11
Spring 1999	19	10	0	29	18	0	0	0	0	0	19	(66)	10	(34)	0	29
Total	27	13	0	40	18	0	0	0	0	0	27	(68)	13	(33	0	40
1999–2000																
Fall 1999	7	2	0	9	0	0	0	0	0	0	7	(78)	2	(22)	0	9
Spring 2000	13	5	0	18	11	0	0	0	0	0	13	(72)	5	(28)	0	18
Total	20	7	0	27	11	0	0	0	0	0	20	(74)	7	(26)	0	27
2000–2001																
Fall 2000	13	3	0	16	0	0	0	0	0	0	13	(81)	3	(19)	0	16
Spring 2001	18	13	0	31	21	0	1	0	0	0	18	(56)	14	(44)	0	32
Total	31	16	0	47	21	0	1	0	0	0	31	(65)	17	(35)	0	48
2001–2002																
Fall 2001	4	5	0	9	0	0	0	0	0	0	4	(44)	5	(56)	0	9
Spring 2002	10	4	0	14	11	0	0	0	0	0	10	(71)	4	(29)	0	14
Total	14	9	0	23	11	0	0	0	0	0	14	(61)	9	(39)	0	23

Table continues next page

Regulatory year	Reported								Estimated kill		Total reported and estimated kill					
	Hunter kill					Nonhunting kill[a]										
	M	F	Unk	Total	Baited	M	F	Unk	Unreported	Illegal	M	(%)	F	(%)	Unk	Total
2002–2003																
Fall 2002	7	2	0	9	0	0	1	0	0	0	7	(70)	3	(30)	0	10
Spring 2003	17	14	0	31	27	0	0	0	0	0	17	(55)	14	(45)	0	31
Total	24	16	0	40	27	0	1	0	0	0	24	(59)	17	(41)	0	41
2003–2004																
Fall 2003	3	2	0	5	0	0	0	0	0	0	3	(60)	2	(40)	0	5
Spring 2004	13	4	0	17	15	0	0	0	0	0	13	(76)	4	(24)	0	17
Total	16	6	0	22	15	0	0	0	0	0	16	(73)	6	(27)	0	22
2004–2005																
Fall 2004	6	3	0	9	0	2	0	0	0	0	8	(73)	3	(27)	0	11
Spring 2005	22	7	0	29	18	0	0	0	0	0	22	(76)	7	(24)	0	29
Total	28	10	0	38	18	2	0	0	0	0	30	(75)	10	(25)	0	40
2005–2006																
Fall 2005	6	6	0	12	0	0	0	0	0	0	6	(50)	6	(50)	0	12
Spring 2006	14	13	0	27	20	0	0	0	0	0	14	(52)	13	(48)	0	27
Total	20	19	0	39	20	0	0	0	0	0	20	(51)	19	(49)	0	39
2006–2007																
Fall 2006	13	4	1	18	0	0	0	0	0	0	13	(76)	4	(24)	1	18
Spring 2007	25	7	0	32	28	0	0	0	0	0	25	(78)	7	(22)	0	32
Total	38	11	1	50	28	0	0	0	0	0	38	(78)	11	(22)	1	50
2007–2008																
Fall 2007	9	3	0	12	0	0	0	0	0	0	9	(75)	3	(25)	0	12
Spring 2008	22	12	0	34	25	0	0	0	0	0	22	(65)	12	(35)	0	34
Total	31	15	0	46	25	0	0	0	0	0	31	(67)	15	(33)	0	46
2008–2009																
Fall 2008	13	8	0	21	0	0	1	0	0	0	13	(62)	9	(41)	0	22
Spring 2009	25	11	0	36	25	0	0	0	0	0	25	(69)	11	(31)	0	36
Total	38	19	0	57	25	0	1	0	0	0	38	(67)	20	(34)	0	58
2009–2010																
Fall 2009	4	4	0	8	0	0	0	0	0	0	4	(50)	4	(50)	0	8
Spring 2010	13	2	0	15	11	0	0	0	0	0	13	(87)	2	(13)	0	15
Total	17	6	0	23	11	0	0	0	0	0	17	(74)	6	(26)	0	23

[a] Includes defense of life or property kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Total counts[a] of blueberries surveyed at 8 sites in Units 12 and 20E between 25 July and 5 August 2000–2010.

Year	Location/Unit								Total
	Clearwater (Unit 12) N63°09' W143°10'	7 mile (Unit 12) N63°12' W143° 04'	Pipeline (Unit 12) N63°15' W142°27'	RCA (Unit 12) N63°23' W143°47'	4 mile (Unit 12) N63°21' W142°34'	9 mile (Unit 20E) N63°24' W142°28'	Fairplay 1 (Unit 20E) N63°40' W142°15'	Fairplay 2 (Unit 20E) N63°41' W142°15'	
2000	137	3	19	7	55	51	124	46	442
2001	285	23	278	23	356	400	379	599	2343
2002[b]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2003	806	24	135	220	676	209	667	996	3733
2004	164	19	67	6	burned	152	274	358	1040
2005	630	55	490	238	0	205	199	292	2109
2006	27	56	47	298	15	24	239	87	793
2007	285	7	47	231	46	999	457	125	2197
2008	375	31	112	93	352	394	453	269	2079
2009	447	13	119	167	433	344	382	418	2323
2010	203	26	157	42	705	189	507	167	1996

[a] Sum of all blueberries counted on 5 plots at each sample site.
[b] No surveys were conducted in 2002.

Table 3. Unit 12 successful black bear hunter residency, regulatory years 1990–1991 through 2009–2010.

Regulatory year	Unit resident (%)	Other residents (%)	Nonresident (%)	Total successful hunters[a]
1990–1991	15 (63)	7 (29)	2 (8)	24
1991–1992	10 (56)	8 (44)	0 (0)	18
1992–1993	26 (74)	8 (23)	1 (3)	35
1993–1994	21 (78)	5 (19)	1 (4)	27
1994–1995	24 (73)	8 (24)	1 (3)	33
1995–1996	20 (69)	8 (28)	1 (3)	29
1996–1997	32 (73)	7 (16)	5 (11)	44
1997–1998	27 (73)	5 (14)	5 (14)	37
1998–1999	25 (63)	12 (30)	3 (8)	40
1999–2000	18 (67)	6 (22)	3 (11)	27
2000–2001	30 (64)	12 (26)	5 (11)	47
2001–2002	12 (52)	4 (17)	7 (30)	23
2002–2003	23 (58)	11 (28)	6 (15)	40
2003–2004	10 (45)	10 (45)	2 (9)	22
2004–2005	22 (58)	13 (34)	3 (8)	38
2005–2006	12 (31)	17 (44)	10 (26)	39
2006–2007	21 (42)	25 (50)	4 (8)	50
2007–2008	27 (58)	15 (33)	4 (9)	46
2008–2009	20 (35)	23 (40)	14 (25)	57
2009–2010	12 (52)	8 (35)	3 (13)	23

[a] Total may include hunters who did not specify whether or not they were residents.

Table 4. Unit 12 black bear harvest chronology percent by month, regulatory years 1990–1991 through 2009–2010.

Regulatory year	Harvest chronology percent by month								
	Jul	Aug	Sep	Oct	Nov	Apr	May	Jun	*n*
1990–1991	0	4	21	0	0	0	54	21	24
1991–1992	0	6	6	0	0	0	41	47	17
1992–1993	3	11	20	0	0	3	46	17	35
1993–1994	0	7	7	0	0	0	41	44	27
1994–1995	7	7	10	0	0	0	33	43	34
1995–1996	7	10	10	0	0	0	38	34	29
1996–1997	9	7	36	0	0	0	39	9	44
1997–1998	5	0	5	0	0	0	71	20	41
1998–1999	0	8	20	0	0	0	58	15	40
1999–2000	0	15	19	0	0	0	33	33	27
2000–2001	4	11	19	0	0	2	43	21	47
2001–2002	9	9	17	4	0	0	35	26	23
2002–2003	0	5	18	0	0	2	48	27	40
2003–2004	0	14	9	0	0	0	54	23	22
2004–2005	3	8	13	0	0	3	53	21	38
2005–2006	0	13	18	0	0	0	36	33	39
2006–2007	2	6	26	0	0	0	44	20	50
2007–2008	0	20	7	0	0	0	40	33	46
2008–2009	0	14	23	0	0	0	28	35	57
2009–2010	0	13	17	4	0	0	49	17	23

Table 5. Unit 12 black bear harvest by transport method, regulatory years 1990–1991 through 2009–2010.

Regulatory year	Harvest by transport method (%)									*n*
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Walking	Unknown	
1990–1991	1 (4)	1 (4)	2 (8)	3 (13)	0 (0)	0 (0)	12 (50)	0 (0)	5 (21)	24
1991–1992	1 (6)	0 (0)	1 (6)	2 (11)	0 (0)	0 (0)	13 (71)	0 (0)	1 (6)	18
1992–1993	3 (9)	0 (0)	4 (11)	7 (20)	0 (0)	2 (6)	16 (46)	1 (3)	2 (6)	35
1993–1994	1 (4)	0 (0)	1 (4)	9 (36)	0 (0)	1 (4)	11 (44)	1 (4)	1 (4)	25
1994–1995	2 (6)	1 (3)	3 (9)	7 (21)	0 (0)	1 (3)	12 (35)	7 (21)	1 (3)	34
1995–1996	2 (7)	1 (3)	1 (3)	4 (14)	0 (0)	0 (0)	16 (55)	5 (17)	0 (0)	29
1996–1997	5 (11)	1 (2)	2 (5)	8 (18)	0 (0)	0 (0)	19 (43)	6 (14)	3 (7)	44
1997–1998	0 (0)	0 (0)	2 (5)	10 (24)	0 (0)	0 (0)	22 (54)	7 (17)	0 (0)	41
1998–1999	3 (8)	2 (5)	2 (5)	2 (5)	0 (0)	0 (0)	19 (48)	12 (30)	0 (0)	40
1999–2000	5 (19)	1 (4)	1 (4)	6 (22)	0 (0)	0 (0)	11 (41)	3 (11)	0 (0)	27
2000–2001	1 (2)	0 (0)	3 (6)	14 (30)	1 (2)	0 (0)	20 (43)	8 (17)	0 (0)	47
2001–2002	1 (4)	0 (0)	0 (0)	6 (26)	0 (0)	0 (0)	10 (43)	5 (22)	1 (4)	23
2002–2003	3 (7)	0 (0)	1 (2)	19 (46)	0 (0)	2 (5)	8 (20)	7 (17)	1 (2)	41
2003–2004	4 (18)	0 (0)	0 (0)	7 (32)	0 (0)	0 (0)	6 (27)	5 (23)	0 (0)	22
2004–2005	3 (8)	0 (0)	0 (0)	12 (32)	0 (0)	0 (0)	16 (42)	7 (18)	0 (0)	38
2005–2006	2 (5)	0 (0)	1 (3)	15 (38)	0 (0)	0 (0)	12 (31)	9 (23)	0 (0)	39
2006–2007	3 (6)	0 (0)	1 (3)	20 (40)	0 (0)	4 (8)	15 (30)	5 (10)	2 (4)	50
2007–2008	3 (6)	0 (0)	1 (2)	9 (20)	0 (0)	0 (0)	28 (61)	4 (9)	1 (2)	46
2008–2009	9 (16)	1 (2)	2 (4)	26 (45)	0 (0)	0 (0)	8 (14)	11 (19)	0 (0)	57
2009–2010	1 (4)	0 (0)	2 (9)	6 (26)	0 (0)	0 (0)	8 (35)	6 (26)	0 (0)	23

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 13 (23,367 mi^2)

GEOGRAPHIC DESCRIPTION: Nelchina Basin

BACKGROUND

Black bears are numerous in the portions of Unit 13 with suitable forest habitat. Harvest data have been available since 1973, when the sealing of black bears became mandatory. Black bear harvests averaged 67 per year during the 1970s, 81 in the 1980s, and 93 in the 1990s. During the 2000s the average yearly black bear harvest in Unit 13 increased to 132. The increasing harvest trend shows black bears are gaining in status as a desirable big game animal, and black bear hunting is much more popular than in the past.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Provide the greatest sustained opportunity to participate in hunting black bears.

METHODS

Department staff monitors the black bear harvest by interviewing successful hunters when black bears are presented for sealing. Data obtained at sealing include skull measurements, sex, hunting methods, transportation used, and effort.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

A black bear population estimate was conducted in 1985 along a portion of the upper Susitna River in conjunction with the Susitna Hydroelectric Project (Miller 1987). Results indicated a density estimate of 90 black bears per 1,000 km^2. Females had an observed mean litter size of 2.1 (range = 1–4) cubs of the year, or 1.9 (range = 1–3) yearlings. However, Miller considered the study area to be marginal black bear habitat and not indicative of bear densities in more favorable forested habitat within the unit. Field observations and harvest data indicate black bears are abundant in large portions of 13D and 13E, and to a lesser extent in 13C. We have not attempted to make a population estimate for Unit 13 because density estimates for bears in more favorable or typical forested habitat within the unit are not available. Black bear densities in the

favorable habitats within Unit 13 are thought to be similar to densities in other portions of Southcentral Alaska. Trends in bear abundance have not been documented.

Distribution and Movements

Black bears usually inhabit forested habitats except during the fall and occasionally in spring when they move into shrub zones to feed on berries and succulent vegetation (Miller 1987).

MORTALITY

Harvest

Season and Bag Limit. There is no closed season on black bears in Unit 13 and the bag limit is 3 bears per year.

Board of Game Actions and Emergency Orders. The Board of Game passed a regulation that liberalized hunting of black bear in areas with an active wolf control program, which includes 13A, 13B, 13C, and 13E east of the Parks Highway. Under this regulation hunters can sell untanned hides and skulls of black bears and take bears from a registered bait station the same day airborne provided they are more than 300 feet from the plane.

The Board of Game also passed regulations requiring hunters to obtain a black bear harvest ticket prior to hunting, and extending the bear baiting season to 30 June.

Hunter Harvest. The reported harvest of black bears during regulatory years (RY) 2007 (RY07 = 1 July 2007 through 30 June 2008) through RY09 averaged 160 bears with males making up 69% of the harvests (Table 1). Black bear harvests in Unit 13 began increasing in RY94. The average harvest during this reporting period was 203% higher than the average harvest of 79 bears per year taken between RY79 and RY93. Black bears killed in subunit 13D account for 45% of the total Unit 13 harvest, followed by 13E with 37%, 13A with 9%, 13C with 4%, 13B with 3%, and 1% in unknown subunits.

Average skull size for males was 16.6 inches in RY09, unchanged from the 5-year average. Average skull size for females was 15.8 inches in the RY09 harvest, similar to the 5-year average of 15.7 inches. The average yearly skull size for males has been stable over the last 15 years (range = 16.4–17.0 inches). This suggests that larger males continue to be prevalent in the population and the increased harvests have had no impact on the overall demographics of the population.

Hunting over bait is allowed during the spring. Hunters must register their bait station sites and are required to follow special baiting regulations. During RY07–RY09, an average of 65 bears were taken over bait each year compared to an average of 39 bears per year during the previous reporting period (range = 38–40) bears. Clearly, the popularity of bear baiting has increased since RY00 when only 12 were taken. Over the past 5 years, baiting accounted for 58% of the spring harvest and 71% of the bears taken over bait were males.

Hunter Residency and Success. The majority of successful black bear hunters in Unit 13 are Alaska residents who do not reside in the unit (other residents, Table 2). Nonresidents took an average of 27 bears per year during RY07–RY09 with 3 of the hunters taking more than 1 bear. This figure is unchanged from the previous 10-year average of 26.8. Local residents of Unit 13 harvested an average of 36 black bears per year during RY07–RY09, an increase from an

average of 27 bears taken during RY04–RY06. The remainder of the harvests (average of 97 bears per year during RY07–RY09) was taken by nonlocal Alaskan residents.

Successful black bear hunters spent an average of 3.3 days in the field in RY09 and 3.6 days on average since RY05. Successful hunters are now spending slightly less time in the field to take a bear compared to the 3.8-day average reported between RY79 and RY04 Over the past 5 years, hunters averaged 3.8 days to take a black bear in the spring versus 3.3 in the fall. The increased popularity of hunting over a bait station probably accounts for the higher seasonal effort.

Harvest Chronology. During RY09 season, the spring harvest was 107 bears (72%), compared to 41 (27%) in the fall. Harvest chronology is similar for the past 5 years with 64% of the Unit 13 black bear harvest occurred during spring. The spring harvest has exceeded the fall harvest every year since RY00. June had the highest spring harvest most years, the lone exception was May RY07. September is the most important month during the fall season (Table 3). July and August have also contributed quite a few bears to the harvest (Table 3). Bears killed during the summer usually have lower quality hides, suggesting summer kills were mainly for meat or bears were killed because they were a nuisance.

Transport Methods. Successful RY09 bear hunters reported 4-wheelers (27%) and highway vehicles (26%) as the most popular methods of transportation (Table 4). Aircraft use declined after RY95, but was relatively stable during this reporting period. The combined importance of highway vehicles, 4-wheelers, and walking indicates roadside black bear populations received the greatest hunting pressure.

Other Mortality

Miller (1987) observed 35% mortality among cubs of the year accompanying radiocollared females in the upper Susitna River study area. Additional natural mortality also occurred among radiocollared adult black bears. Miller believed predation by brown bears was an important source of natural mortality for black bears of all age classes in Unit 13.

The defense of life or property (DLP) kill averaged 2 bears per year during this reporting period. Despite increased human settlement, reported DLP kills remain low because many DLP bears are likely sealed as part of the general season take or are not reported. With a 3-bear bag limit and no closed season, there is little incentive to report the take of black bears as DLP, which would require surrendering the hide and skull to ADF&G.

DLP reports and other human sources of mortality remain low with no trends evident (Table 1). Other than hunting, human influence on bear survival appears minimal.

HABITAT

Assessment

Black bears in Unit 13 use extensive tracts of spruce forest and, to a lesser degree, forested land bordering rivers, and upland shrub zones. Units 13D and 13E have more black bears than other subunits and also have the most extensive areas of heavily timbered mature spruce forests. Current fire management objectives specify a reduction in fire suppression activities in remote portions of Unit 13, supporting a return to a natural fire regime. This may eventually result in an interspersion of forest stands in different successional stages that could reduce prime black bear

habitat. Seasonal availability of salmon can also influence numbers of black bears in subunits 13D and 13E. Salmon provide an alternative source of nutrition unavailable in more interior subunits.

CONCLUSIONS AND RECOMMENDATIONS

Black bear harvests have been high over the past 5 years. Interest in bear hunting and bear harvests increased in the late 1990s, primarily due to the growing popularity of spring bear baiting. Black bears have become a very important and primary game species, rather than being just an animal taken incidentally while hunting other more important game animals. This conclusion is supported by chronology data showing high harvests during periods when other big game hunting opportunities are limited.

The current reported black bear harvests in Unit 13 are sustainable. Unit 13 has extensive areas of forest habitat ideal for black bears, especially subunits 13D and 13E. Access is extremely limited, and harvests are low over much of the best black bear habitat. Plots of black bear bait station locations and transportation data indicate most harvest occurs near the road system. This concentrated harvest has not caused a decline in the percent males taken in the harvests or in the average skull size of male bears harvested. Because bear hunters generally target large males, these data suggest that large males are readily found in the black bear populations despite the concentrated harvest pressure and that the populations are not being overharvested. Also, the prohibition on taking cubs and sows with cubs protects reproductive females and ensures that annual productivity and recruitment will offset hunting loss.

Black bear hunting has become more popular, and this trend is expected to continue as hunters seek alternative big game hunting opportunities. Increasing competition, shorter hunting seasons, and increased hunting interest has been the recent trend for the more popular big game species. Data used to evaluate changes in hunting pressure and success rates are important in monitoring hunt conditions and, to some extent, bear abundance. Prior to the use of harvest tickets, this information was collected only from successful hunters. In the future, harvest ticket effort data for all hunters may help further our understanding of harvest as it relates to hunting effort. No changes to season length or bag limits are recommended at this time.

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Table 1. Unit 13 black bear harvest, regulatory years 2005–06 through 2009–10.

Regulatory	Reported hunter kill							Nonhunting kill[a]			Total kill			
Year	M	(%)	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	F	Unk.	Total
2005–06														
Fall 05	33	(66)	17	(34)	0	50		0	0	0	33	17	0	50
Spring 06	50	(70)	21	(30)	0	71		0	0	0	50	21	0	71
Total	83	(69)	38	(31)	0	121	38	0	0	0	83	38	0	121
2006–07														
Fall 06	30	(70)	13	(30)	0	43		1	0	0	31	13	0	44
Spring 07	61	(75)	20	(25)	0	81		0	0	0	61	20	0	81
Total	91	(73)	33	(27)	0	124	38	1	0	0	92	33	0	125
2007–08														
Fall 07	25	(64)	14	(36)	0	39		0	1	0	25	15	0	40
Spring 08	83	(79)	22	(21)	0	105		1	0	0	84	22	0	106
Total	108	(75)	36	(25)	0	144	53	1	1	0	109	37	0	146
2008–09														
Fall 08	59	(69)	26	(31)	0	85		0	1	0	59	27	0	86
Spring 09	65	(63)	38	(37)	0	103		0	0	0	65	38	0	103
Total	124	(66)	64	(34)	0	188	70	0	1	0	124	65	0	189
2009–10														
Fall 09	22	(54)	19	(46)	0	41		2	1	0	24	20	0	44
Spring 10	75	(70)	32	(30)	0	107		1	0	0	76	32	0	108
Total	97	(66)	51	(34)	0	148	73	3	1	0	100	52	0	152

[a] Includes DLP kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Unit 13 black bear successful hunter residency, regulatory years 2005–06 through 2009–10.

Regulatory Year	Local resident	(%)	Other resident	(%)	Nonresident	(%)	Successful hunters[a]
2005–06	20	(19)	59	(55)	28	(26)	107
2006–07	29	(25)	61	(54)	24	(21)	114
2007–08	34	(26)	72	(55)	24	(18)	130
2008–09	34	(20)	99	(58)	37	(22)	170
2009–10	21	(17)	89	(70)	17	(13)	127

[a] Includes hunters with unknown residency.

Table 3. Unit 13 black bear harvest chronology (percent) by month, regulatory years 2005–06 through 2009–10.

	Harvest periods												
Regulatory year	July		August		September		October		April		May		June		n[a]
2005–06	1	(1)	13	(11)	32	(26)	4	(3)	1	(1)	19	(16)	51	(42)	121
2006–07	3	(2)	15	(12)	20	(16)	5	(4)	0	(0)	28	(23)	53	(43)	124
2007–08	6	(4)	8	(6)	21	(15)	4	(3)	1	(1)	54	(38)	50	(35)	144
2008–09	6	(3)	30	(16)	44	(23)	5	(3)	0	(0)	43	(23)	60	(32)	188
2009–10	6	(4)	12	(8)	18	(12)	5	(3)	0	(0)	53	(36)	54	(36)	148

[a] May include bears with unknown harvest date.

Table 4. Unit 13 black bear harvest (percent) by transport method, regulatory years 2005–06 through 2009–10.

Regulatory year	Percent of harvest									
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Walk	Unknown	*n*
2005–06	22 (18)	1 (1)	24 (20)	31 (26)	1 (1)	1 (1)	27 (22)	13 (11)	1 (1)	121
2006–07	19 (15)	0 0	20 (16)	24 (19)	1 (1)	1 (1)	31 (25)	24 (19)	4 (3)	124
2007–08	9 (6)	0 (0)	19 (13)	21 (15)	2 (1)	3 (2)	64 (45)	16 (11)	7 (5)	141
2008–09	24 (13)	0 (0)	28 (15)	38 (20)	0 (0)	4 (2)	58 (31)	31 (17)	4 (2)	187
2009–10	5 (3)	1 (1)	35 (24)	39 (27)	0 (0)	6 (4)	38 (26)	14 (10)	8 (5)	146

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNITS: 14A and 14B (4,713 mi^2)

GEOGRAPHIC DESCRIPTION: Upper Cook Inlet

BACKGROUND

Griese (1999) evaluated total available habitat and harvest trends and projected the black bear population was near 700 with a maximum sustainable harvest of 24-30 sows. McDonough (2002) reported that the population likely remains between 500 and 1,000 bears for all of Unit 14.

In previous management reports all subunits of Unit 14 were combined in the management report. This report will cover information relevant for subunits 14A and 14B only. Subunit 14C will be covered under a separate report.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Since 1976 the management goal in subunits 14A and 14B has been to provide the greatest sustained opportunity to participate in hunting black bears. Given the low numbers of moose in subunit 14B there has been an incentive to reduce the number of black bears to increase moose calf survival.

MANAGEMENT OBJECTIVES

The human-use objective has been to provide liberal opportunities to hunt black bears with annual total harvests of less than 80 bears with the annual sow harvest not exceeding 30 (not to exceed 14 sows in subunit 14A or 8 sows in subunit 14B).

METHODS

Department staff monitored black bear mortality by collecting harvest information through the sealing of skulls and hides of bears taken by hunters or killed for other reasons. During sealing skull measurements, sex identification, hunting effort, location, and date of kill were recorded. Bears taken over bait, incidental harvest, and meat salvage were noted on the sealing reports. To

hunt bears over bait, hunters were required to have a permit from the Alaska Department of Fish and Game (department) with no more than 2 bait stations allowed per permit.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The black bear population in Unit 14 was previously projected as between 530–1,080 by Griese (1996). Earlier estimates by Harkness (1990) and Grauvogel (1990) reported a population size of 750–1,050. Based on more recent information available from Earl Becker's bear survey work in Unit 16 (unpublished data), we believe the population was similar to those previous estimates or increasing during both this and the preceding reporting periods (Peltier 2008).

MORTALITY

Harvest

Season and Bag Limit. During this reporting period there was no closed season in subunits 14A and 14B. The bag limit was 1 black bear in subunit 14A, and 3 bears per year in subunit 14B. Baiting was allowed by registration permit. Bear hunters desiring to use bait in subunits 14A and 14B were required to successfully complete a bear bait hunting class in order to get a bear bait hunting registration permit from the department.

Board of Game Actions. In the spring of 2009 the Board of Game changed the length of the spring bear baiting season in subunits 14A and 14B. The previous spring season dates were 15 April to 15 June. Beginning in regulatory year (RY) 2009 (RY = 1 July through 30 June; e.g., RY09 = 1 July 2009 through 30 June 2010) the season dates were 15 April to 30 June.

Hunter Harvest. Bear harvests in subunits 14A and 14B increased during RY07–RY09 compared to previous years (Tables 1 and 2). During RY07–RY09, hunters reported harvesting an average of 125 bears annually, including an average of 51 sows (41%). During RY07-RY09, 181 of the black bears harvested were taken over bait (Tables 1 and 2), an increase from the previous 3–year period of 173 black bears taken over bait.

Baiting Participation. An average of 284 hunters used bait to hunt black bears in subunits 14A and 14B during RY07-RY09. This was an increase from the previous 3-year average of 218 permit holders and shows an increasing trend in baiting participation (Table 3).

Hunter Residency and Success. Unit 14 residents on average took 87% of the harvest during this reporting period. Nonresident hunters reported an average harvest of 14 bears; an increase from an average harvest of 10 reported during RY04–RY06 (Table 4).

Harvest Chronology. The majority of the take of black bears in subunits 14A and 14B is in the last 2 weeks of May and the month of June (Table 5). There has been a shift toward taking more bears in the spring. It appears the changes in the fall moose hunting season have led to a decrease in the number of hunters taking a black bear as part of their hunt. Whether that is driven by bear availability or hunter motivation is unknown.

Transport Methods. The majority of hunters report using ORV/ATVs to access hunting areas in subunits 14A and 14B (Table 6). Highway vehicles were the second most common means of transportation, and hunters heading into the field on foot were the third most common method. Many of hunters that reported taking bears on foot were probably hunting bears near their homes or seasonal cabins. Black bears taken in this manner may partially explain why few nuisance bears are reported in these subunits, and why few bears are killed in defense of life or property.

Other Mortality

Nonhunting kills for subunits 14A and 14B totaled 10 bears for RY07–RY09. There are few reports of bear-human conflicts in subunits 14A and 14B, and the number of bears taken under the Defense of Life and Property Law is low. It is generally thought that problem bears are taken by licensed bear hunters during summer months, when nuisance bear activity tends to occur, and that they are reported as part of the general season harvest. It is also possible that the reduction in defense of life or property bear mortality was partially due to unit residents becoming more aware of potential bear problems through bear awareness programs promoted by the department, various federal agencies, and groups like the Bear Necessities Coalition of Talkeetna (Kavalok 2005).

CONCLUSIONS AND RECOMMENDATIONS

An accurate estimate of the black bear population in subunits 14A and 14B is problematic. Difficulties in surveying black bear habitat, budget, and time constraints are likely to prevent surveys from being conducted any time soon. Recent black bear surveys in Unit 16 may provide some insight into the Unit 14 population based on similar habitat characteristics in some of the areas.

Human-use objectives were exceeded during this report period. In fact, the management objective of a harvest of 80 bears in all of Unit 14 has been exceeded 27 of the last 30 years, and the subunit objectives have been exceeded in subunits 14A and 14B during 16 of the last 30 years. The objective of harvesting no more than 30 females in all of Unit 14 has also been exceeded in 17 of the last 30 years. During RY07–RY09, the proportion of females in the harvest in Unit 14 was 42%. However, despite the long-time failure to meet objectives for total harvest and for the total number of females in the harvest, the bear population does not appear to have been overharvested, and we continue to meet the management objective of 'maintaining a bear population that is largely unaffected by human harvest'.

Considering that management reports are now split between the Unit 14 subunits (a report for subunits 14A and 14B and a separate report for subunit 14C) and considering that harvest objectives have been consistently exceeded with no apparent impact on the population, the management objective of no more than 80 black bears a year and no more than 30 females a year for Unit 14 should be removed. Trends in bear harvest should continue to be monitored for indicators of undesirable effects on the black bear population. Based on our current analysis, black bear populations, especially in subunit 14B, can withstand higher harvest rates, and a decrease in black bear densities may be desirable in subunit 14B to reduce black bear predation on moose calves.

The expanding human population and its encroachment into bear habitat in the subunits 14A and 14B are expected to result in more bear-human conflicts and more bears being killed. Because of the potential for increased bear-human conflicts in Unit 14, the department should continue providing the public information on bears, and educating people on how to avoid problems with them.

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Table 1. Subunit 14A black bear harvest, regulatory years 2005–06 through 2009–10.

Regulatory year	Reported									Estimated unreported kill[c]	Total estimated kill					
	Hunter kill						Nonhunting kill[b]									
	M	F	(%)	Unk.	Total	Baited[a]	M	F	Unk.		M	(%)	F	(%)	Unk.	Total
2005–06																
Fall 05	11	9	(45)	0	20	0	0	1	1	2	11	(52)	10	(48)	3	24
Spring 06	39	29	(43)	2	70	46	1	0	1	7	40	(58)	29	(42)	8	77
Total	50	38	(43)	2	90	46	1	1	2	9	51	(57)	39	(43)	11	101
2006–07																
Fall 06	13	6	(32)	0	19	0	0	1	0	2	13	(65)	7	(35)	2	22
Spring 07	31	23	(43)	0	54	40	1	0	0	5	32	(58)	23	(42)	5	60
Total	44	29	(40)	0	73	40	1	1	0	7	45	(60)	30	(40)	7	82
2007–08																
Fall 07	13	12	(48)	0	25	0	1	0	0	2	14	(54)	12	(46)	2	28
Spring 08	39	27	(41)	0	66	38	0	0	0	7	39	(59)	27	(41)	7	73
Total	52	39	(43)	0	91	38	1	0	0	9	53	(58)	39	(42)	9	101
2008–09																
Fall 08	22	12	(35)	0	34	0	1	2	0	3	23	(62)	14	(38)	3	40
Spring 09	33	28	(46)	0	61	42	1	0	0	6	34	(55)	28	(45)	6	68
Total	55	40	(42)	0	95	42	2	2	0	9	57	(58)	42	(42)	9	108
2009–10																
Fall 09	7	10	(59)	0	17	0	2	1	0	2	9	(50)	9	(50)	2	20
Spring 10	44	31	(41)	0	75	58	0	0	0	8	44	(59)	31	(41)	8	83
Total	51	41	(45)	0	92	58	2	1	0	10	53	(57)	40	(43)	10	103

[a] Bears reported taken over legally established bait stations.

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality.

[c] Assumes approximately 10% of reported harvest.

Table 2. Subunit 14B black bear harvest, regulatory years 2005–06 through 2009–10.

Regulatory year	Reported									Estimated unreported kill[c]	Total estimated kill					
	Hunter kill						Nonhunting kill[b]									
	M	F	(%)	Unk.	Total	Baited[a]	M	F	Unk.		M	(%)	F	(%)	Unk.	Total
2005–06																
Fall 05	9	6	(40)	0	15	0	1	0	0	1	10	(63)	1	(37)	1	17
Spring 06	14	4	(22)	0	18	9	0	0	0	2	14	(78)	5	(22)	2	20
Total	23	10	(30)	0	33	9	1	0	0	3	24	(71)	6	(29)	3	37
2006–07																
Fall 06	8	3	(27)	0	11	0	0	1	0	1	8	(67)	4	(33)	1	13
Spring 07	20	12	(38)	0	32	18	0	0	0	3	20	(63)	12	(37)	3	35
Total	28	15	(35)	0	43	18	0	1	0	4	28	(64)	16	(36)	4	48
2007–08																
Fall 07	6	3	(33)	0	9	0	0	0	0	1	6	(67)	3	(33)	1	10
Spring 08	17	8	(32)	0	25	14	2	0	0	2	19	(70)	8	(30)	2	29
Total	23	11	(32)	0	34	14	2	0	0	3	25	(69)	11	(31)	3	39
2008–09																
Fall 08	6	5	(42)	1	12	0	0	0	0	1	6	(55)	5	(45)	1	12
Spring 09	13	10	(43)	0	23	11	0	0	0	2	13	(56)	10	(43)	2	25
Total	19	15	(44)	0	34	11	0	0	0	3	19	(51)	15	(41)	3	37
2009–10																
Fall 09	4	4	(50)	0	8	0	0	0	0	1	4	(50)	4	(50)	1	9
Spring 10	19	3	(14)	0	22	18	0	0	0	2	19	(86)	3	(14)	2	24
Total	23	7	(23)	0	30	18	0	0	0	3	23	(77)	7	(23)	3	33

[a] Bears reported taken over legally established bait stations.

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality.

[c] Assumes approximately 10% of reported harvest.

Table 3. Unit 14 black bear hunter baiting participation, regulatory years 2000–01 through 2009–10.

Regulatory year	Number of permittees	Number of stations registered	
		Subunit 14A	Subunit 14B
2000–01	141	159	43
2001–02	114	135	35
2002–03	158	183	40
2003–04	169	197	40
2004–05	194	201	55
2005–06	223	257	56
2006–07	237	234	83
2007–08	228	234	83
2008–09	311	309	91
2009–10	313	307	98

Table 4. Unit 14 black bear successful hunter residency, regulatory years 2000–01 through 2009–10.

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
2000–01	57	(93)	0	(0)	4	(7)	61
2001–02	50	(91)	1	(2)	4	(7)	55
2002–03	93	(88)	3	(3)	10	(9)	106
2003–04	90	(83)	2	(2)	16	(15)	108
2004–05	118	(88)	5	(4)	10	(8)	133
2005–06	110	(89)	0	(0)	13	(11)	123
2006–07	104	(90)	4	(3)	8	(7)	116
2007–08	105	(84)	3	(2)	17	(14)	125
2008–09	109	(85)	1	(1)	18	(14)	128
2009–10	114	(92)	1	(1)	7	(6)	122

[a] Unit 14 residents.

Table 5. Unit 14 black bear hunter harvest chronology percent by month, regulatory years 2000–01 through 2009–10.

	Percent of harvest									
Regulatory year	Jul–Aug	Sep 1–15	Sep 16–30	Oct	Nov–Mar	Apr	May 1–15	May 16–31	Jun	*n*
2000–01	8	8	16	10	0	7	13	38	0	61
2001–02	5	25	16	5	0	2	4	36	5	55
2002–03	2	8	14	3	1	2	7	40	24	106
2003–04	14	5	12	2	1	0	7	32	28	107
2004–05	11	5	8	5	0	2	14	27	30	132
2005–06	11	9	9	0	0	2	4	23	43	123
2006–07	9	5	11	1	0	2	8	34	30	115
2007–08	16	6	4	1	0	1	5	26	41	125
2008–09	24	6	5	1	0	1	6	19	38	130
2009–10	8	3	4	0	1	0	6	27	50	119

Table 6. Unit 14 black bear harvest percent by transport method, regulatory years 2000–01 through 2009–10.

	Percent of harvest								
Regulatory year	Airplane	Horse	Boat	Snow Machine	ORV/ATV	Highway Vehicle	Foot	Other / Unknown	*n*
2000–01	8	2	2	0	46	20	23	0	61
2001–02	9	5	9	0	38	22	16	0	55
2002–03	5	1	13	0	42	24	15	0	106
2003–04	8	3	7	1	45	14	21	0	108
2004–05	9	0	10	0	50	17	14	0	132
2005–06	9	0	11	0	44	20	16	0	122
2006–07	16	0	12	0	40	20	13	0	116
2007–08	11	0	14	0	45	14	15	1	125
2008–09	8	0	16	0	42	20	13	1	126
2009–10	9	3	10	0	54	11	14	0	117

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 14C (1,961 mi^2)

GEOGRAPHIC DESCRIPTION: Municipality of Anchorage

BACKGROUND

Prior to 2010, the black bear management report for GMU 14 included subunits 14A, 14B, and 14C and reported black bear population and harvest trends as they related to the unit as a whole. Griese (1999) evaluated total available habitat and harvest trends and projected the black bear population for GMU 14 was near 700, with a maximum sustainable harvest of 24–30 sows. McDonough (2002) reported that the population likely remains between 500 and 1,000 bears. In 2010, GMU 14 was split between Region II and the newly created Region IV. Units 14A and 14B were included in Region IV, while Unit 14C remained as part of Region II. The black bear management report is now in separate reports that relate to those regional areas.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Since 1976 the management goals in Unit 14C have been to provide an opportunity to hunt black bears under aesthetically pleasing conditions and to provide an opportunity to enjoy black bears through viewing and photography.

MANAGEMENT OBJECTIVES

The management objective has been to maintain a population largely unaffected by human harvest. The human-use objective has been to provide liberal opportunities to hunt black bears with annual total harvests of less than 39 bears, with the annual sow harvest not exceeding 8 sows in Unit 14C.

METHODS

Department staff monitored black bear mortality by collecting harvest information through the sealing of skulls and hides of bears taken by hunters or killed for other reasons. During sealing, skull measurements, sex identification, hunting effort, location, and date of kill were recorded. Incidental harvest and meat salvage were noted on the sealing reports. Hunting over bait for black bears is not allowed in Unit 14C.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The population estimate for black bears in Unit 14 has ranged from 530–1,080 (Griese 1996) to 750–1,050 (Grauvogel 1990, Harkness 1990). Currently, we estimate the black bear population in Unit 14C at 250–350 bears. This estimate is based on black bear density calculated for an area with habitat similar to that in Unit 14C (Miller 1987). High levels of sustained harvest suggest that our current population estimate is most likely a minimum population number, and black bears may be slightly more numerous than 350 individuals in Unit 14C. However, there has been no direct measure of population size for this subunit.

MORTALITY

Harvest

Season and Bag Limit. Black bear harvest was permitted year-round in the Remainder of Unit 14C, the day after Labor Day through June 15 in upper Eagle River valley, and from the day after Labor Day through May 31 in the Eklutna Lake and Chugach State Park Management Areas and in the lower Eagle River valley. The bag limit was 1 bear per year. Harvesting black bears over bait was prohibited in Unit 14C.

Board of Game Actions. There were no Board of Game actions during 2007–2010 that affected black bears in Unit 14C.

Hunter Harvest. Annual black bear harvest in Unit 14C increased during the 2007–2010 period, compared to previous years (Table 1). During 2007–2010, hunters harvested an average of 52 bears each year, including an average of 18 (35%) sows each year. This was a substantial increase from the previous reporting period (34 bears per year); however, there was little change in the percent females taken. During the reporting period, hunter kills accounted for 65% of the annual black bear mortality in Unit 14C (Table 2).

Hunter Residency and Success. During the reporting period, resident hunters were more successful than nonresident hunters (annual average of 85% vs. 15%, respectively; Table 3). Local resident hunters were the most successful black bear hunters (56%) in Unit 14C (Table 3),

Harvest Chronology. Most black bears in Unit 14C are harvested during the spring season, with peak harvest occurring in the latter half of May (40% of total harvest; Table 4). The fall season (September through October) yielded an average of 19% of total harvest each year. Few black bears are harvested during July and August, when only the Remainder of Unit 14C is open to black bear hunting.

Transport Methods. The majority of hunters in Unit 14C used airplanes to access hunting areas. Highway vehicles and foot travel were the next most frequently used means of transport (Table 5).

Other Mortality

Nonhunting kills for Unit 14C totaled 70 bears in 2007–2010, 29% of total reported mortality, with highs of 25 bears in both 2008 and 2009. While the majority of nonhunting mortality is attributed to defense of life and property, vehicle-bear collisions in the urban environment of Anchorage are also prevalent. In addition, we estimate 3–6 black bears are killed and not reported annually.

CONCLUSIONS AND RECOMMENDATIONS

Given current and historic harvest rates, the current population estimate of 250–350 black bears in Unit 14C is likely a minimum number. Conducting a population assessment of black bears in the heavily forested habitat of Unit 14C is very costly, and current budget constraints prohibit such a population assessment in the near future.

Human-use objectives were exceeded during this report period. The average annual harvest of 52 bears was higher than the management objective of 39 bears and the average sow harvest of 18 females was greater than the estimated allowable harvest of 8 females. During 2007–2010, the proportion of females in the harvest in Unit 14C was 35%. High sustained harvest rates suggest that the estimated population number of 250–350 black bears is probably a minimum number and that the population of black bears in Unit 14C is stable. Recent studies suggest that black bears can be sustainably harvested at higher rates than previous recommended, and that black bear populations can recover from short periods of overharvest. Therefore, we recommend a change in the harvest objective for Unit 14C from 39 to 42 black bears per year.

Black bear-human conflicts in Unit 14C are increasing as the human population expands and encroaches further into bear habitat. The majority of these conflicts are related to improper storage of garbage and pet/livestock food, as well as unsecured livestock (i.e. chickens). Food conditioning of individual bears often results in defense of life or property kills. In addition, social reactions to mauling events can increase the number of bears killed in a given year. For example, in 2008, three maulings occurred in the municipality, which coincided with a record high mortality rate for black bears. Education and enforcement of state wildlife regulations are critical to reducing bear-human conflicts in Unit 14C. We recommend that ADF&G continue to educate the public about bear safety and how to avoid human-bear conflicts in our neighborhoods.

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Table 1. Unit 14C black bear harvest composition, 2000–2009.

Regulatory	Reported Harvest					
Year	Male	(%)[a]	Female	(%)[a]	Unk	Total
2000/01	25	74%	9	26%	0	34
2001/02	27	69%	12	31%	0	39
2002/03	26	81%	6	19%	0	32
2003/04	27	77%	8	23%	0	35
2004/05	25	69%	11	31%	0	36
2005/06	25	66%	13	34%	0	38
2006/07	16	53%	14	47%	0	30
2007/08	30	61%	19	39%	0	49
2008/09	40	62%	25	38%	0	65
2009/10	30	73%	11	27%	0	41

[a]Includes bears of known sex only.

Table 2. Unit 14C black bear harvest, 2005–2009.

Regulatory year	Reported									Estimated unreported kill[c]	Total estimated kill					
	Hunter kill						Nonhunting kill[b]									
	M	F	(%)	Unk.	Total	Baited[a]	M	F	Unk.		M	(%)	F	(%)	Unk.	Total
2005																
Fall 05	7	5	(42)	0	12	0	2	3	3		9	(53)	8	(47)	3	20
Spring 06	18	8	(31)	0	26	0	2	3	0		20	(65)	11	(35)	0	31
Total	25	13	(34)	0	38	0	4	6	3	3	29	(60)	19	(40)	6	54
2006																
Fall 06	3	4	(57)	0	7	0	5	3	2		8	(53)	7	(47)	2	17
Spring 07	13	10	(43)	0	23	0	3	0	0		16	(62)	10	(38)	0	26
Total	16	14	(47)	0	30	0	8	3	2	3	24	(59)	17	(41)	5	46
2007																
Fall 07	6	4	(40)	0	10	0	6	3	3		12	(63)	7	(37)	3	22
Spring 08	24	15	(38)	0	39	0	0	2	6		24	(59)	17	(41)	6	47
Total	30	19	(39)	0	49	0	6	5	9	4	36	(60)	24	(40)	13	73
2008																
Fall 08	14	13	(48)	0	27	0	5	2	7		19	(56)	15	(44)	7	41
Spring 09	26	12	(32)	0	38	0	2	3	6		28	(65)	15	(35)	6	49
Total	40	25	(38)	0	65	0	7	5	13	6	47	(61)	30	(39)	19	96
2009																
Fall 09	5	3	(38)	0	8	0	8	6	6		13	(59)	9	(41)	6	28
Spring 10	25	8	(24)	0	33	0	4	1	0		29	(76)	9	(24)	0	38
Total	30	11	(27)	0	41	0	12	7	6	4	42	(70)	18	(30)	10	70

[a] Bears reported taken over legally established bait stations.
[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality.
[c] Assumes approximately 10% of reported harvest.

Table 3. Unit 14C black bear successful hunter residency, 2000–2010.

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
2000/01	16	(47)	14	(41)	4	(12)	34
2001/02	20	(51)	14	(36)	5	(13)	39
2002/03	17	(53)	8	(25)	7	(22)	32
2003/04	14	(40)	14	(40)	7	(20)	35
2004/05	21	(58)	5	(14)	10	(28)	36
2005/06	20	(53)	7	(18)	11	(29)	38
2006/07	13	(43)	12	(40)	5	(17)	30
2007/08	25	(51)	13	(27)	11	(22)	49
2008/09	36	(55)	20	(31)	9	(14)	65
2009/10	26	(63)	11	(27)	4	(10)	41

[a] Unit 14C residents.

Table 4. Unit 14C black bear hunter harvest chronology percent by month, 2000–2009.

	Percent of harvest									
Regulatory year	July - Aug	Sep 1-15	Sep 16-30	Oct	Nov - Mar	Apr	May 1-15	May 16-31	June	*n*
2000/01	18	0	9	15	0	3	0	44	12	34
2001/02	8	15	10	3	0	5	23	31	5	39
2002/03	3	3	16	3	0	3	28	38	6	32
2003/04	3	14	9	17	0	3	26	20	9	35
2004/05	3	14	17	6	0	3	31	19	8	36
2005/06	5	13	8	5	0	0	21	34	13	38
2006/07	0	3	10	10	0	3	23	37	13	30
2007/08	2	8	6	4	0	2	16	49	12	49
2008/09	18	5	17	2	0	0	17	26	15	65
2009/10	5	5	7	2	0	2	12	44	20	41

Table 8. Unit 14C black bear harvest percent by transport method, 2000–2010.

Regulatory year	Percent of harvest							*n*
	Airplane	Horse	Boat	Snow Machine	ORV/ATV	Highway Vehicle	Other / Unknown	
2000/01	44	0	9	0	3	21	24	34
2001/02	33	0	10	0	8	18	31	39
2002/03	34	0	9	0	0	31	25	32
2003/04	31	0	11	0	3	29	26	35
2004/05	36	0	3	0	3	33	25	36
2005/06	29	0	18	0	0	26	26	38
2006/07	30	0	20	0	3	27	20	30
2007/08	35	0	8	0	8	35	14	49
2008/09	29	0	9	0	6	20	35	65
2009/10	34	0	7	0	2	32	24	41

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 115526
JUNEAU, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 16 (12,445 mi^2)

GEOGRAPHIC DESCRIPTION: West Side of Cook Inlet

BACKGROUND

Reported harvest levels of black bears in Unit 16 have increased since sealing requirements began (range = 67–513). Trends in black bear harvest in have varied with fluctuations in the fall berry crops (Faro 1990), the length of moose season, and access conditions during late spring (Harkness 1993). Since the 1990s the chronology of the black bear harvest has shifted from a predominantly fall harvest to a predominantly spring harvest, a product of baiting opportunity and increased interest in hunting black bears.

Accurate information of black bear harvest in subunit 16B has been difficult to ascertain. Harkness (1993) expressed concern that an unknown number of nuisance bears were being killed but not reported. McDonough (2002) also concluded that black bear harvests in subunit 16B were underreported, given the disparity between the reported harvests and the reported use of black bears by residents of subunit 16B that was documented in subsistence household surveys (Scott et al., 1993). Reported harvests have increased during recent years, in part due to a program designed to increase black bear harvests in the unit.

Black bears are known to be a predator of moose calves, and poor moose calf recruitment during recent years has prevented subunit 16B from reaching management objectives for the moose population. The moose population experienced a significant decline in the 1990's after several deep snow winters (winters of 1999–2000, and 2000–2001). A study initiated in 2005 confirmed that poor calf recruitment was preventing the recovery of the moose population and that survival of calves to 5 months of age (November) was low, despite high levels of calf production and relatively good calf body weights. Predation on moose calves was found to be the primary cause of low calf survival, and black bear predation was thought to account for a significant portion of the calf mortality. A predation control program was developed to reduce black bear predation on moose calves in Unit 16 with the goal of increasing moose calf survival and recruitment. Black bear seasons, bag limits, and restrictions on bear baiting were liberalized in 2007 to increase bear harvests. By 2009 black bears could also be taken in snares.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

The management goal for Unit 16 is to provide the greatest opportunity to participate in hunting black bears and to reduce the overall population of black bears in the unit in order to increase moose calf survival.

MANAGEMENT OBJECTIVES

The population objective for the Unit 16 Predator Control Area (Unit 16 PCA), which consists of all non-federally owned land in Unit 16B and the western half of Unit 16A, is to use liberalized harvest strategies and control methods to reduce the population to 600–800 black bears and to maintain that level through sustainable harvests. The management objective for the remainder of Unit 16 is to maintain a black bear population at a population size that is largely unaffected by human harvests.

METHODS

Department staff monitored the black bear harvest by sealing skulls and hides of bears taken by hunters. Data was recorded on each bear sealed, including the bear's and sex and skull size, the date and location of kill, and the number of days the hunter spent in the field. Hunters also reported if the harvest was incidental, if the bear was taken over bait, and if any meat was salvaged. Hunters using bait were required to get a permit and to register bait sites with the department (a maximum of 2 bait stations were allowed per bait permit). In the Unit 16 PCA, predator control permits were issued that allowed participants to register a total of 4 bait stations. Beginning in regulatory year (RY) 2009 (RY09 = 1 July 2009 through 30 June 2010) predator control snaring permits were issued authorizing permit holders to use snares to take black bears.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The results of Earl Becker's line transect survey (Quang and Becker 1999) have been revised from earlier reporting (Peltier 2008). A reevaluation of the assumptions regarding the independence of bear observations led to a new density estimate of 187.3 black bears per 1000 km^2 within the available habitat below 3,500 feet in the subunit16B-North and subunit 16B-Middle study areas. Extrapolating that density to the entire unit produces an estimate of 3,200 to 3,800 black bears in all of subunit 16B. A prior estimate of black bear density (Griese 1996) produced a lower extrapolated population size estimate of 1,437–2,876 black bears for all of Unit 16. Other black bear population estimates that accounted for the different black bear densities likely due to variation in the habitat quality in the unit (1,825–3,650 black bears) are closer to the most recent estimate (Griese 1996, Griese 1999).

MORTALITY

Harvest

Season and Bag Limit. During this report period there was no closed season for black bear hunting in Unit 16. The bag limit was 3 bears, excluding cubs and sows accompanied by cubs. Baiting black bears was allowed by registration permit between 15 April and 15 June outside of Denali State Park in subunit 16A. The baiting season in subunit 16B was 15 April through 30 June. People who possessed a predator control program permit were allowed to take cubs and sows with cubs, and they were allowed to take an unlimited number of bears. They were also authorized to bait bears from 15 April to 30 June and from 10 August to 15 October during RY07 and to bait bears from 15 April to 15 October during RY08 and RY09. Beginning in RY09 black bear snaring permits were issued to people who completed a department training course.

Board of Game Actions and Emergency Orders. During the March 2007 meeting the Board of Game created a Black Bear Predation Control Program in Unit 16 to increase moose calf survival. The program was activated in RY07; authorizing permittees to bait and shoot black bears on the same day they flew in an aircraft, provided that they are over 300 feet from the airplane. There was no limit on the number of black bears that each permittee could take, and cubs and sows accompanied by cubs could also be taken. In addition control permittees were allowed to have up to 4 registered Black Bear Bait Stations at the same time. They could also sell tanned or untanned hides and skulls of black bears taken after obtaining a "sale permit" issued by ADF&G. During the March 2009 meeting the Board of Game authorized participants to snare black bears under a separate permit after they completed an orientation class.

Hunter Harvest. The average annual harvest was 483 black bears in Unit 16 during RY07–RY09. This was much greater than the RY04–RY07 average of 285 black bears. Females accounted for 34% of the harvest during this report period (Table 1). Harvests in both subunits increased, but the majority of the increase was in subunit 16B, where most of the predation control activities occur (Tables 2 and 3). During RY09 snares were used to take 77 black bears.

Baiting Participation. The number people using bait increased during this report period (Table 4), mainly due to participation in the predator control program. Bear baiting also accounted for much of the increase in the total number of bears harvested during the spring.

Hunter Residency and Success. Success rates during RY07–RY09 were similar to the previous report period (Table 5).

Harvest Chronology. Late May and June accounted for majority of this harvest. This pattern of chronology is consistent with the switch from a predominantly fall harvest to a predominantly spring harvest that occurred prior to the late 1990s. The change coincides with the decline in the moose population, suggesting that prior to that decline black bears were probably taken opportunistically by moose hunters during the fall. More recently an increasing number of hunters have participated in the spring black bear baiting season. In Unit 16 this trend has been augmented by participants in the predator control program who have mainly taken bears during the spring since RY07. During this report period an average of 72% of hunters took their bears during the late May and June period. (Table 6)

Transport Methods. The majority of bear hunters used aircraft and boats to reach hunt areas in Unit 16, although ATV use is common where there is access (Table 7). There has been little change in this pattern during the past 10 years.

Other Mortality

Nonhunting kills represented a minor portion of the total reported mortality. However, we suspect that a few nuisance black bears are killed each year and are not reported due to inconveniences associated with reporting. In addition, due to the liberal seasons and bag limits, some of the bears involved in bear-human conflicts are probably taken by licensed hunters and reported in the general season harvest. There were very few reports of problem bears during this reporting period.

CONCLUSIONS AND RECOMMENDATIONS

The black bear population and human use objectives were adjusted during this reporting period to coincide with management goals for the black bear and moose populations. Black bears in Unit 16 continue to be managed on a sustainable basis, but with also with a new goal of reducing black bear predation on moose calves to increase the moose population. Black bear hunters can still hunt black bears in Unit 16 under general harvest regulations throughout the Unit, providing ample opportunity to harvest of black bears, and will continue to be able to do so after the black bear population is reduced to the management goal of 600 to 800 bears.

The black bear population should be monitored into the future through periodic surveys and harvest data in order to determine if management goals have been met for this species, to evaluate the effectiveness of black bear reduction techniques, and to evaluate how manipulating the black bear population size and predation affects moose population recovery.

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Table 1. Unit 16 black bear harvest composition, regulatory years 2000–01 through 2009–10.

Regulatory	Reported Harvest[a]					
Year	Male	(%)[b]	Female	(%)[b]	Unk	Total
2000–01	125	(71)	50	(29)	1	176
2001–02	109	(65)	58	(35)	1	168
2002–03	143	(73)	53	(27)	1	197
2003–04	166	(73)	60	(27)	1	227
2004–05	152	(72)	59	(28)	1	213
2005–06	156	(72)	62	(28)	4	222
2006–07	298	(71)	120	(29)	2	420
2007–08	333	(66)	165	(33)	1	499
2008–09	315	(61)	194	(39)	0	513
2009–10	298	(67)	138	(33)	0	438

[a]Includes bears taken under predator control.
[b]Includes bears of known sex only.

Table 2. Subunit 16A black bear harvest, regulatory years 2005–06 through 2009–10.

Regulatory Year	Reported									Estimated unreported kill[d]	Total estimated kill					
	Hunter kill[a]						Nonhunting kill[c]									
	M	F	(%)	Unk.	Total	Baited[b]	M	F	Unk.		M	(%)	F	(%)	Unk.	Total
2005–06																
Fall 05	12	5	(29)	1	18	0	0	0	0	2	12	(67)	5	(33)	3	20
Spring 06	28	12	(30)	0	40	33	0	0	0	4	28	(70)	12	(30)	4	44
Total	40	17	(30)	1	58	33	0	0	0	6	40	(63)	17	(37)	7	64
2006–07																
Fall 06	12	9	(43)	0	21	0	0	0	0	2	12	(67)	9	(43)	2	23
Spring 07	49	23	(32)	0	72	53	0	0	0	7	49	(68)	23	(32)	7	79
Total	61	32	(34)	0	93	53	0	0	0	9	49	(69)	25	(31)	9	102
2007–08																
Fall 07	11	7	(39)	0	18	0	0	0	0	2	11	(61)	7	(39)	2	20
Spring 08	46	44	(39)	1	90	43	0	0	0	9	46	(51)	44	(49)	10	100
Total	57	51	(47)	1	109	43	0	0	0	11	57	(53)	51	(43)	12	120
2008–09																
Fall 08	15	9	(38)	0	24	0	0	1	0	2	15	(60)	10	(40)	2	27
Spring 09	53	39	(42)	0	92	52	1	0	0	9	54	(57)	39	(43)	9	102
Total	68	48	(41)	0	116	52	1	1	0	11	69	(59)	49	(41)	11	129
2009–10																
Fall 09	13	7	(35)	0	20	0	0	0	0	2	13	(65)	7	(35)	2	22
Spring 10	46	34	(43)	0	80	43	0	0	0	8	46	(58)	34	(42)	8	88
Total	59	41	(41)	0	100	43	0	0	0	10	59	(59)	41	(41)	10	110

[a] Includes bears taken by hunters and predator control permittees.

[b] Bears reported taken over legally established bait stations.

[c] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality.

[d] Assumes approximately 10% of reported harvest.

Table 3. Subunit 16B black bear harvest, regulatory years 2005–06 through 2009–10.

Regulatory Year	Reported									Estimated unreported kill[d]	Total estimated kill					
	Hunter kill[a]						Nonhunting kill[c]									
	M	F	(%)	Unk.	Total	Baited[b]	M	F	Unk.		M	(%)	F	(%)	Unk.	Total
2005–06																
Fall 05	37	13	(26)	2	52	0	0	0	0	5	37	(74)	13	(26)	2	57
Spring 06	79	32	(29)	1	112	62	0	0	0	11	79	(71)	32	(29)	1	123
Total	116	45	(28)	3	164	62	0	0	0	16	116	(66)	45	(25)	19	180
2006–07																
Fall 06	58	17	(23)	0	75	4	0	0	0	8	58	(77)	17	(23)	0	83
Spring 07	179	70	(28)	2	251	115	0	0	0	25	179	(72)	70	(28)	2	276
Total	237	87	(27)	2	326	119	0	0	0	33	237	(73)	87	(27)	35	359
2007–08																
Fall 07	54	20	(27)	0	74	0	1	0	0	7	55	(73)	20	(27)	0	81
Spring 08	222	94	(30)	0	316	155	0	0	0	32	222	(70)	94	(30)	0	348
Total	276	114	(29)	0	390	155	0	0	0	39	277	(71)	114	(29)	0	429
2008–09																
Fall 08	60	39	(39)	2	101	18	0	0	0	10	60	(61)	39	(39)	2	111
Spring 09	187	107	(36)	2	296	127	0	0	1	30	187	(64)	107	(36)	3	327
Total	247	146	(37)	4	397	145	0	0	1	40	247	(63)	146	(37)	45	438
2009–10																
Fall 09	68	32	(32)	0	100	20	0	0	0	10	68	(68)	32	(32)	0	110
Spring 10	169	65	(28)	1	235	94	0	0	0	24	169	(72)	65	(28)	1	259
Total	237	97	(29)	1	335	114	0	0	0	34	237	(71)	97	(29)	35	369

[a] Includes bears taken by hunters and predator control permittees

[b] Bears reported taken over legally established bait stations

[c] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality

[d] Assumes approximately 10% of reported harvest

Table 4. Unit 16 black bear hunter baiting participation, regulatory years 2000–01 through 2009–10.

Regulatory Year	Number of permittees	Number of stations registered	
		SU 16A	SU 16B
2000–01	93	80	74
2001–02	124	107	101
2002–03	130	93	107
2003–04	124	99	90
2004–05	130	107	96
2005–06	141	89	117
2006–07	235	146	222
2007–08	255	135	120
2008–09	287	144	143
2009–10	265	144	121

Table 5. Unit 16 black bear successful hunter residency, regulatory years 2000–01 through 2009–10.

Regulatory Year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
2000–01	6	(3)	131	(75)	39	(22)	176
2001–02	8	(5)	96	(57)	64	(38)	168
2002–03	6	(3)	148	(76)	42	(21)	196
2003–04	6	(3)	143	(63)	78	(34)	227
2004–05	4	(2)	155	(73)	53	(25)	212
2005–06	7	(3)	156	(70)	59	(27)	222
2006–07	11	(3)	282	(68)	122	(29)	415
2007–08	7	(1)	365	(73)	127	(26)	499
2008–09	14	(3)	403	(79)	94	(18)	511
2009–10	18	(4)	315	(72)	103	(24)	436

[a] Unit 16 residents.

Table 6. Unit 16 black bear hunter harvest chronology percent by month, regulatory years 2000–01 through 2009–10.

	Percent of harvest									
Regulatory Year	Jul–Aug	Sep 1–15	Sep 16–30	Oct	Nov–Mar	Apr	May 1–15	May 16–31	Jun	*n*
2000–01	18	10	13	<1	0	<1	5	23	30	173
2001–02	15	10	7	1	0	<1	2	19	46	166
2002–03	8	5	13	1	<1	1	8	25	38	191
2003–04	6	8	5	<1	0	2	4	32	42	225
2004–05	7	8	7	<1	0	3	3	35	37	211
2005–06	6	14	9	2	<1	2	8	26	32	222
2006–07	10	7	5	1	0	1	9	32	34	413
2007–08	9	3	3	3	<1	3	3	28	48	499
2008–09	14	4	5	1	<1	1	4	24	47	512
2009–10	17	6	3	1	0	1	3	29	39	436

Table 7. Unit 16 black bear harvest percent by transport method, regulatory years 2000–01 through 2009–10.

Regulatory Year	Percent of harvest							
	Airplane	Horse	Boat	Snow Machine	ORV/ATV	Highway Vehicle	Other / Unknown	*n*
2000/01	37	4	29	<1	11	13	7	174
2001/02	27	0	26	<1	20	20	6	166
2002/03	42	0	26	0	17	9	6	192
2003/04	34	0	32	1	20	5	6	221
2004/05	37	1	32	3	15	8	3	211
2005/06	41	1	28	2	15	11	2	221
2006/07	50	1	19	<1	14	11	4	415
2007/08	51	1	21	1	12	7	7	498
2008/09	55	1	17	2	13	7	5	511
2009/10	39	1	26	1	12	3	18	391

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010

LOCATION

GAME MANAGEMENT UNIT: 17A, B, and C (18,800 mi^2)

GEOGRAPHIC DESCRIPTION: Northern Bristol Bay

BACKGROUND

Black bears inhabit some of the forested areas of Game Management Unit 17 and are most visible during the fall while they forage on berries along open hillsides in Subunits 17B and 17C. Black bears are less common along salmon streams and near human settlements, primarily because of competition from and predation by brown bears. No research activities have been conducted in Unit 17, so we do not have complete understanding of the density, key denning areas, and other aspects of this bear population.

Before 1994 hunters were not required to report or seal black bears harvested in Unit 17 and the Alaska Department of Fish and Game (ADF&G) did not allocate funding specifically for black bear management. Consequently, we had no way of assessing the number of bears killed, the sex or age composition of the harvest, or the distribution of harvest. Incidental observations by biologists during caribou surveys and other flights during the past several years suggest black bears might be more common than during previous reporting periods.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance the black bear population and its habitat in concert with other components of the ecosystem.
- Provide the greatest sustained opportunity to participate in hunting black bears.

MANAGEMENT OBJECTIVES

- Maintain existing populations of black bears with a sex and age structure that will sustain a harvest of at least 60% males.

Related Management Activities

- Monitor the hunt by interviewing hunters and sealing all harvested black bears.

METHODS

Each black bear legally harvested or killed in defense of life or property (DLP) in the unit is sealed, the skull is measured, and sex is determined. At the time of sealing we record data on hunter residency, number of days hunted, date of kill, transportation used, and location of the kill. When possible, we investigate circumstances surrounding DLP and illegal kills. We collect subjective population data during caribou and moose surveys. Reports from fieldworkers are also used to evaluate bear population trends.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

No objective data are available on the population density of black bears in the unit.

Distribution and Movements

We know little about the overall distribution and movements of black bears in this unit. I suspect that the greatest densities are in the spruce forest habitats along the upper Mulchatna and Nushagak rivers and along the Chichitnok River. Black bears are also occasionally seen along the Kokwok and Nuyakuk rivers, and in the Muklung Hills. Black bears are most obvious when they feed along hillsides in the autumn where berries are abundant. We also occasionally see individual bears and family groups near postcalving aggregations of caribou in June and July. Areas important for denning remain unknown.

MORTALITY

Harvest

Season and Bag Limit.

Unit 17

August 1–May 31	Residents:	2 bears per year
	Nonresidents:	1 bear per year

Board of Game Actions and Emergency Orders. During the March 2009 meeting, the Alaska Board of Game required that black bear harvest tickets be used in Unit 17. No Emergency Orders were issued by the department during this reporting period.

Human-Induced Mortality. Before 1994 no sealing or reporting requirements existed for black bear hunters in Unit 17. Our incidental observations indicated that black bears were subject to the same increasing hunting pressure as other big game species in Unit 17B because more hunters came into the area to harvest caribou from the Mulchatna herd. Local residents also expressed concerns of overharvest by hunters and sportfishers along the upper Nushagak River drainages.

During regulatory year (RY) 2007 (RY = 1 July through 30 June; e.g., RY07 =1 July 2007 through 30 June 2008), hunters in Unit 17 reported harvesting 5 black bears, including 4 males (80%) and 1 female (20%). The average total skull size was 17.5 inches for males (n=4) and the female was 16.6 inches. Successful hunters spent an average of 4.8 days afield. No hunters killed more than 1 bear. At least some meat was salvaged from 3 bears (60%). Guided nonresident

hunters took 2 of the 5 bears. Neither of the successful nonresident hunters took black bears using big game tags for a different species.

During the RY08 season, hunters in Unit 17 reported harvesting 6 black bears, including 1 male (17%), 4 females (67%) and 1 (17%) of unknown sex. The total skull size for the lone male was 15.7 inches and average for the 4 females was 15.4 inches. Successful hunters spent an average of 9.4 days afield. No hunters reported killing more than 1 bear. At least some meat was salvaged from 5 bears (83%). Guided hunters took 3 of the 6 bears. One of the successful nonresident hunters took a black bear using a big game tag for a different species.

During RY09 season, 28 hunters (15 nonresidents, 8 local Unit 17 residents, 5 other Alaska residents), reported that they hunted for black bears in Unit 17 reported harvesting 5 black bears, including 2 males (40%), and 3 females (60%). The average total skull size was 18.6 inches for males and 17.2 inches for females. Successful hunters spent an average of 5.9 days afield. No hunters reported killing more than 1 bear. At least some meat was salvaged from 3 bears (60%). Guided hunters took 2 of the 5 bears. None of the successful nonresident hunters took black bears using big game tags for a different species (Tables 1 and 2).

Hunter Residency and Success. Nonresidents typically account for most of the reported black bear harvest in Unit 17. During RY07 season, nonresidents took 2 (40%) of the harvested bears reported in the unit, Unit 17 residents took 2 (40%) of the harvested bears, and other Alaska residents took 1 (20%). During RY08 season, nonresidents took all 6 (100%) of the harvested bears reported in Unit 17. During RY09 season, nonresidents took 5 (83%) of the bears reported harvested in the unit, Unit 17 residents reported no bears, and other Alaska residents reported 1 bear (17%) (Table 3).

Harvest Chronology. All black bears reported harvested in Unit 17 during this reporting period were killed during the fall (Table 4).

Transport Methods. Three successful black bear hunters during this reporting period used boats for access, 1 a 4-wheeler. All other successful black bear hunters reported using aircraft for access (Table 5).

Other Mortality

We do not collect data on other causes of mortalities for black bears in Unit 17.

HABITAT

Assessment

Black bear habitat in Unit 17 is virtually unaltered and in excellent condition. Salmon stocks are carefully managed and escapements are adequate for the needs of the current bear population. Ungulates and seasonally abundant berry crops provide an abundant food supply for bears. Human settlements are relatively small and unobtrusive.

NONREGULATORY PROBLEMS/NEEDS

Black bears rarely occur near human settlements in Unit 17, and there have been few reports of adversarial encounters between humans and black bears in the backcountry. There are no nonregulatory problems or needs in the unit at this time.

CONCLUSIONS AND RECOMMENDATIONS

Initiation of mandatory sealing in 1994 and restricted seasons are indications of the importance the department places on this resource in Unit 17. Data derived from these actions, when coupled with continued information from hunters and local residents, enhance our ability to evaluate the status of the black bear population and allow us to make more informed management decisions. No changes in the present hunting regulations for black bears in Game Management Unit 17 are recommended at this time.

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Table 1. Unit 17 black bear harvest, regulatory years 1994-95 through 2009-10.

Regulatory	Hunter Kill				Nonhunting Kill				Total reported kill			
Year	Male	Female	Unk	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
1994–95	6	7	0	13	0	0	0	0	6	7	0	13
1995–96	13	5	0	18	0	0	0	0	13	5	0	18
1996–97	19	6	1	26	0	0	0	0	19	6	1	26
1997–98	12	6	0	18	0	0	0	0	12	6	0	18
1998–99	17	12	0	29	0	0	0	0	17	12	0	29
1999–00	16	4	0	20	0	0	0	0	16	4	0	20
2000–01	8	2	0	10	0	0	0	0	8	2	0	10
2001–02	8	1	1	10	0	0	0	0	8	1	1	10
2002–03	4	4	0	8	0	0	0	0	4	4	0	8
2003–04	7	6	0	13	0	0	0	0	7	6	0	13
2004–05	13	8	0	21	0	0	0	0	13	8	0	21
2005–06	6	1	0	7	0	0	0	0	6	1	0	7
2006–07	9	5	0	14	0	0	0	0	9	5	0	14
2007–08	4	1	0	5	0	0	0	0	4	1	0	5
2008–09	1	4	1	6	0	0	0	0	1	4	1	6
2009–10	2	3	0	5	0	0	0	0	2	3	0	5

Table 2. Unit 17 black bear harvest by subunit, regulatory years 1994-95 through 2009-10.

Regulatory	Subunit															
	17A				17B				17C				Unit 17 total			
Year	M	F	Unk	Total	M	F	Unk	Total	M	F	Unk	Total	M	F	Unk	Total
1994–95	0	0	0	0	6	7	0	13	0	0	0	0	6	7	0	13
1995–96	0	0	0	0	12	4	0	16	1	1	0	2	13	5	0	18
1996–97	0	0	0	0	18	6	1	25	1	0	0	1	19	6	1	26
1997–98	0	0	0	0	10	5	0	15	2	1	0	3	12	6	0	18
1998–99	0	0	0	0	16	12	0	18	1	0	0	1	17	12	0	29
1999–00	0	0	0	0	14	4	0	18	2	0	0	2	16	4	0	20
2000–01	0	0	0	0	8	2	0	10	0	0	0	0	8	2	0	10
2001–02	0	0	0	0	7	1	1	9	1	0	0	1	8	1	1	10
2002–03	0	0	0	0	4	4	0	8	0	0	0	0	4	4	0	8
2003–04	0	0	0	0	7	6	0	13	0	0	0	0	7	6	0	13
2004–05	0	0	0	0	11	8	0	19	0	0	0	0	13[a]	8	0	21[a]
2005–06	0	0	0	0	5	1	0	6	1	0	0	1	6	1	0	7
2006–07	0	0	0	0	7	4	0	11	2	1	0	3	9	5	0	14
2007–08	0	0	0	0	2	1	0	3	2	0	0	2	4	1	0	5
2008–09	0	0	0	0	1	4	1	6	0	0	0	0	1	4	1	6
2009–10	0	0	0	0	2	3	0	5	0	0	0	0	2	3	0	5

[a] Includes two male bears, location unknown.

Table 3. Unit 17 black bear successful hunter residency, regulatory years 1994-95 through 2009-10.

Regulatory Year	Local[a] resident (%)	Nonlocal resident (%)	Nonresident (%)	Total successful hunters[b]
1994–95	0 (---)	2 (15%)	11 (85%)	13
1995–96	1 (6%)	4 (22%)	13 (72%)	18
1996–97	0 (---)	4 (15%)	22 (85%)	26
1997–98	0 (---)	2 (11%)	16 (89%)	18
1998–99	0 (---)	3 (10%)	26 (90%)	29
1999–00	0 (---)	0 (---)	20 (100%)	20
2000–01	0 (---)	2 (20%)	8 (80%)	10
2001–02	0 (---)	3 (30%)	7 (70%)	10
2002–03	0 (---)	1 (13%)	7 (87%)	8
2003–04	0 (---)	2 (15%)	11 (85%)	13
2004–05	0 (---)	1(5%)	20 (95%)	21
2005–06	1(14%)	0 (---)	6 (86%)	7
2006–07	1 (7%)	1 (7%)	12 (86%)	14
2007–08	2 (40%)	1 (20%)	2(40%)	5
2008–09	0 (---)	0 (---)	6 (100%)	6
2009–10	0 (---)	1 (20%)	4 (80%)	5

[a] Residents of Unit 17.

[b] Total may be higher than the sum of the columns due to hunters of unknown residency.

Table 4. Unit 17 black bear harvest chronology percentage by month, regulatory years 1994-95 through 2009-10.

Regulatory Year	Month of harvest										
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
1994–95[a]	46%	39%	15%	0%	0%	0%	0%	0%	0%	0%	13
1995–96[a]	33%	67%	0%	0%	0%	0%	0%	0%	0%	0%	18
1996–97[a]	42%	58%	0%	0%	0%	0%	0%	0%	0%	0%	26
1997–98[a]	33%	67%	0%	0%	0%	0%	0%	0%	0%	0%	18
1998–99	10%	90%	0%	0%	0%	0%	0%	0%	0%	0%	29
1999–00	15%	85%	0%	0%	0%	0%	0%	0%	0%	0%	20
2000–01	20%	70%	10%	0%	0%	0%	0%	0%	0%	0%	10
2001–02	30%	70%	0%	0%	0%	0%	0%	0%	0%	0%	10
2002–03	38%	62%	0%	0%	0%	0%	0%	0%	0%	0%	8
2003–04	31%	69%	0%	0%	0%	0%	0%	0%	0%	0%	13
2004–05	19%	81%	0%	0%	0%	0%	0%	0%	0%	0%	21
2005–06	29%	57%	0%	0%	0%	0%	0%	0%	0%	14%	7
2006–07	14%	86%	0%	0%	0%	0%	0%	0%	0%	0%	14
2007–08	20%	60%	20%	0%	0%	0%	0%	0%	0%	0%	5
2008–09	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	6
2009–10	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	5

[a] Season dates: August 1–May 31; 2 bears for residents, 1 bear for nonresidents.

Table 5. Unit 17 black bear harvest percentage by transport method, regulatory years 1994-95 through 2009-10.

Regulatory Year	Percent of harvest									
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Walk	Unknown	Total
1994–95	39%	0%	54%	0%	0%	0%	0%	8%	0%	13
1995–96	78%	22%	0%	0%	0%	0%	0%	0%	0%	18
1996–97	81%	19%	0%	0%	0%	0%	0%	0%	0%	26
1997–98	89%	0%	0%	0%	0%	0%	0%	11%	0%	18
1998–99	72%	0%	28%	0%	0%	0%	0%	0%	0%	29
1999–00	85%	0%	10%	5%	0%	0%	0%	0%	0%	20
2000–01	70%	0%	30%	0%	0%	0%	0%	0%	0%	10
2001–02	100%	0%	0%	0%	0%	0%	0%	0%	0%	10
2002–03	100%	0%	0%	0%	0%	0%	0%	0%	0%	8
2003–04	100%	0%	0%	0%	0%	0%	0%	0%	0%	13
2004–05	95%	0%	5%	0%	0%	0%	0%	0%	0%	21
2005–06	86%	0%	0%	0%	0%	0%	14%	0%	0%	7
2006–07	93%	0%	0%	0%	0%	0%	7%	0%	0%	14
2007–08	40%	0%	40%	20%	0%	0%	0%	0%	0%	5
2008–09	100%	0%	0%	0%	0%	0%	0%	0%	0%	6
2009–10	80%	0%	20%	0%	0%	0%	0%	0%	0%	5

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. Box 115526
Juneau, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010[1]

LOCATION

GAME MANAGEMENT UNITS: 19, 21A, and 21E (55,278 mi^2).

GEOGRAPHIC DESCRIPTION: Unit 19, all drainages into the Kuskokwim River upstream from a straight line drawn between Lower Kalskag and Paimiut. Unit 21A, the Innoko River drainage upstream from and including the Iditarod River drainage. Unit 21E, the Yukon River drainage from Paimiut upstream to, but not including, the Blackburn Creek drainage, and the Innoko River drainage downstream from the Iditarod River drainage.

BACKGROUND

Black bears are distributed throughout Units 19A, 19B, 19C, 19D, 21A, and 21E, and bear densities and hunter interest vary among units. Lower elevation areas associated with boreal forest and river floodplains (Units 19A, 19D, 21A, and 21E) provide good hunting opportunity, however harvest pressure is low. Harvest pressure is also light in Units 19B and 19C. Overall, reported harvest is low not only because there is no sealing requirement in most of Units 19, 21A and 21E, but also because harvest is low.

In 2001 the department established the Experimental Micro Management Area (EMMA) surrounding McGrath (528 mi^2, Fig. 1). The purpose of the EMMA was to focus predator management around McGrath to provide more moose for subsistence harvest opportunity. This area (termed the Bear Control Area in March 2009) encompasses the highest density of moose in Unit 19D East (the Kuskokwim River drainage upstream from the Selatna and Black River drainages; Fig. 1) and was established as a treatment area where predator population manipulations and other management actions could be tested. This included capture and removal of black bears in 2003 and 2004 by department personnel.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Unit 19, Unit 21A and Unit 21E

- Provide for the opportunity to harvest black bears.

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

MANAGEMENT OBJECTIVE

- Maintain reported harvest of at least 30 black bears in Unit 19D East as part of the intensive management program.

METHODS

Black bear harvest data in the McGrath management area are limited. Bear harvest data are typically provided from sealing certificates; however sealing was required only in Unit 19D East. In the remainder of Unit 19D sealing was required only for bears taken between 1 January and 31 May if removed from Unit 19, or any bear hides and skulls removed from Alaska. Information related to bear harvest in other units in the McGrath area came primarily from the requirement that any untanned hide or skull removed from Alaska had to be sealed. Beginning in regulatory year (RY) 2009 (RY09 = 1 July 2009 through 30 June 2010) harvest tickets were required before hunting black bears in 19D East in addition to sealing harvested bears. Beginning in regulatory year RY06 black bear hides or skulls taken from Unit 19A that were intended for sale also needed to be sealed. Using all available data, we summarized information related to black bear harvest by regulatory year.

Methods for black bear population estimates are described by Boudreau (2005), and are based on known bear densities (Miller et al. 1997) in similar habitats in other game management units in Interior Alaska. In the Bear Control Area the black bear population was measured using a mark–recapture technique (Keech et al. 2011).

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size and Composition

Based on Boudreau's (2005) estimates, and subtracting the portion of Unit 21A transferred to Unit 21B in RY06, the black bear population for the entire 55,278 mi^2 management area is estimated to be 8,300–16,600 independent black bears, based on overall densities of 15–30 bears/100 mi^2. The population has probably been stable or slowly increasing since 1995, based on local observations.

Peirce (2008) estimated Unit 21A to have 2,325–2,775 independent black bears and Boudreau (2005) estimated 1,900–2,275 black bears in Unit 21E.

Population surveys have been conducted only in the Bear Control Area in Unit 19D East. However, Boudreau (2005) estimated the entire Unit 19 black bear population to be 7,700–9,235 bears and further separated this estimate as 2,475–2,970 black bears in Unit 19A, 1,250–1,500 in Unit 19B, 975–1,165 in Unit 19C, and 3,000–6,000 in Unit 19D.

We removed 102 black bears from the Bear Control Area in 2003 (n = 67 independent bears + 8 dependent juveniles) and 2004 (n = 26 independents + 8 dependents; 7 of these bears were recaptured from 2003). The pre-removal population in 2003 was estimated at 96 independent black bears and the post-removal estimate in 2004 was 4 independent black bears. This represents approximately 96% removal. A mark–recapture survey was conducted in May 2007 and the Bear Control Area was estimated to have 70 independent black bears (Keech et al. 2011). This survey was again conducted in May 2010 and preliminary results suggest 102 independent

black bears in the Bear Control Area (M. Keech, ADF&G unpublished data, Fairbanks). In 6 years the population has recovered to approximately pre-removal levels.

MORTALITY

Harvest

Hunting Seasons and Bag Limits.

Units and Bag Limits	Resident and Nonresident Open Season	Resident and Nonresident Baiting Season
RY07–RY09		
Units 19B, 19C, 21A, and 21E, 3 bears	No closed season	15 Apr–30 Jun
Unit 19D East, 5 bears	No closed season	15 Apr–30 Jun 1 Sep–30 Sep
Units 19A and 19D, remainder, 5 bears	No closed season	15 Apr–30 Jun

Harvest of cubs (in first year of life) or females accompanied by cubs was prohibited in all hunting seasons. In Unit 19D East and Unit 19A same-day-airborne hunting was allowed at registered bait stations, provided the hunter was at least 300 feet from the airplane and sale of untanned hides (with claws attached) and skulls was permitted. Beginning in RY09 a harvest ticket was required to hunt black bears in Unit 19D East.

Bear Predation Control Regulations and Bag Limits.

Units and Bag Limits	Residents-Only Open Season	Residents-Only Baiting Season
RY07–RY09		
Unit 19D Bear Control Area. No limit, but permit required.	1 Jul–30 Jun	1 Jul–30 Jun

The bear control program began in RY06 and bear predation control regulations prohibited the harvest of cubs (in first year of life) or females accompanied by cubs in RY07 and RY08. In RY09 this prohibition was lifted and permittees were also allowed to take black bears same-day-airborne, provided they were at least 300 feet from the airplane, including at bait stations. Sale of untanned hides (with claws attached) and skulls was permitted under control regulations in RY07 and RY08. In RY09 permittees could also sell tanned hides (with claws attached). Bucket-style foot snares were permitted beginning on 15 April in RY09.

Alaska Board of Game Actions and Emergency Orders. No emergency orders were issued for any units in this area during the report period (RY07–RY09). Since RY03, the Board of Game (board) has made several major changes to black bear regulations, as listed below.

RY03 **—** The board increased the hunting bag limit from 3 to 5 bears in Unit 19D upstream from the Selatna and Black Rivers, but the additional 2 bears required a registration permit (RL338)**.**

RY04 — No changes.

RY05 — No changes.

RY06 Hunting Changes — The board eliminated registration permit hunt RL338 in Unit 19D, expanded the 5-bear bag limit to all of Unit 19D under general season hunting regulations, and increased the Unit 19A general season bag limit to 5 bears. The board legalized same-day-airborne black bear hunting at bait stations in the Unit 19A and 19D East wolf control areas, provided hunters were at least 300 feet from the airplane and allowed snowmachines to be used to position hunters to select individual bears for harvest. Sale of untanned black bear hides (with claws attached) and skulls of bears taken by hunting or by predation control in active predation control areas (including wolf control areas) was allowed after sealing.

RY06 Predation Control Changes — The predation control implementation plan for Unit 19D was updated to establish a black (and brown) bear predation control plan within the Bear Control Area, allowing predation control permittees to take an unlimited number of black bears and register up to 10 bait stations. However, no females with cubs or cubs were allowed to be taken under predation control. Same-day-airborne access was allowed at bait stations, provided permittees were at least 300 feet from the airplane.

RY07 — No changes.

RY08 — No changes.

RY09 Hunting Changes — The board passed regulations that required a harvest ticket prior to hunting black bear in Unit 19 East. The board also allowed resident hunters to use artificial light at den sites during 15 October– 30 April in order to take black bears from dens in many units, including Unit 19A and 19D East and required salvage of meat resulting from this activity. The prohibition on taking cubs and females with cubs was also lifted for this traditional-use activity in case cubs or females with cubs were taken. The Department of Law clarified that taking bears from dens had not been previously prohibited, just the taking of cubs and females with cubs and the use of artificial light.

RY09 Predation Control Changes — The board clarified that brown bears or black bears taken under a predation control permit in Unit 19D did not count against the statewide bag limit in other units of the state. The predation control implementation plan for Unit 19D was updated to allow permittees to take any bear (including cubs and females with cubs); same-day-airborne take, provided permittees were at least 300 feet from the airplane; use of bucket-style foot snares; and expanded legal sale to tanned hides as well as untanned hides.

RY10 Hunting Changes — In January 2010, the board classified black bears as furbearers as well as big game. Although the board did not open a black bear trapping season, this furbearer classification and other regulatory changes allow hunters to legally sell black bear hides and parts of bears, except gall bladders. The board subsequently amended this regulation so that sale of black bear meat remained illegal. Effective in April 2011, regulations allow registered guides in many units, including Units 19, 21A and 21E, to register up to 10 bait stations at a time and to personally, or through licensed class-A assistant or assistant guides, establish and maintain up to 10 bait stations simultaneously, provided that a signed guide-client agreement is used for each

hunter that uses any of the sites. The board also eliminated the sealing requirements in Unit 19D and changed salvage requirement to allow hunters to salvage black bear meat during 1 January – 31 May and to salvage either the hide or meat with no requirement to salvage the skull. Sealing requirements remained in place for any black bear hides or skulls sold or removed from Alaska.

Harvest by Hunters. During RY05–RY09, 242 black bears were sealed from Units 19, 21A, and 21E (Table 1). On average 61% of these bears were males. Forty-eight of these bears were harvested in Unit 19D (where sealing was required for all black bears taken in 19D East) and 78 were from Unit 19B (Table 2) where sealing was not required unless the hide and skull were taken out of Alaska. Unit 19B typically has a high percentage of nonresident hunters. During RY05–RY09, 2 defense of life or property kills were reported in RY07, however it is likely that more nuisance bears were killed at fish camps or by local residents and not reported.

Harvest by Bear Control Permittees. Interest in black bear control permits increased substantially in RY09 once foot snaring became a legal method of take under bear predation control regulations. Forty-two predation control permits were issued (ML301); however only 6 bears were taken by 4 permittees and overall participation was low.

Harvest Chronology. There was likely unreported harvest of bears by residents during spring and summer, but overall harvest reporting was greatest in the fall (Table 3). This is primarily due to nonresident hunters who had their bears sealed in order to take the hides and skulls out of Alaska.

Transport Methods. During RY05–RY09, 69% of hunters who had their black bears sealed used airplanes as their primary access method. This is consistent with the high number of black bears sealed from Unit 19B, which receives a large amount of nonlocal hunting pressure. Boats are also important and account for much of the harvest by local residents.

CONCLUSIONS AND RECOMMENDATIONS

Black bears are common throughout the McGrath management area. Studies recently completed in the Bear Control Area have indicated that black bears are a significant source of moose calf mortality in Unit 19D East (Keech et al. 2011) As a result, hunting regulations were liberalized in Units 19A and 19D and a black bear predation control program was established in the Unit 19D Bear Control Area. These actions were taken to increase harvest of black bears with the intent of improving moose calf survival.

Liberal hunting seasons have not resulted in higher harvest. In Units 19A and 19D only 5 hunters took 2 bears, 1 took 3 bears and 1 took 4 bears during RY05–RY09. Most black bear harvest in Units 19A and 19D was opportunistic and current bag limits appeared to be sufficient to allow hunters to take as many black bears as they wanted. No changes to bag limits or seasons are warranted at this time.

The bear predation control program through RY09 has had limited success. Prior to RY09 no bears were taken under this program. Foot snaring began in spring 2010 (RY09) and generated a large amount of interest from the public (42 permits were issued). Both participation and take (n = 6 bears) were low. Although there may be a steep learning curve for the first few years, several hurdles exist that may prevent this program from becoming successful enough to reduce

predation on moose calves. Bear snaring is both time consuming and expensive, and the incentive to harvest a large numbers of bears is low. Predation control trappers quickly become saturated with bear meat after only 1 or 2 bears, and hides taken in midsummer are of poor quality.

During RY07–RY09, we did not meet our management objective to maintain an annual reported harvest of at least 30 black bears in Unit 19D East as part of the intensive management program (Table 2). There were ample opportunities to harvest black bears, including same-day-airborne and liberal hunting bag limits, as well as foot snaring with a control permit; however interest among local residents was low. Gasoline prices were high ($6.10/gallon in McGrath as of 20 March 2011) and daily trap checks required for foot snaring were time consuming. Local interest in bear meat is low and raw black bear hides are worth approximately $100. These factors combined are likely reasons harvest remained low.

The harvest ticket used in 19D worked well and in RY10 hunters only needed to seal black bears if they wanted to sell the hide or remove it from Alaska. Under predation control regulations, sealing was also only required if the hide was going to be sold. Hunters and predation control permittees seemed to like this system and ADF&G continued to receive important harvest data.

The management objective of harvesting 30 bears in Unit 19D East will remain in place while there is a bear control program. If the program is terminated this high harvest objective should be reexamined.

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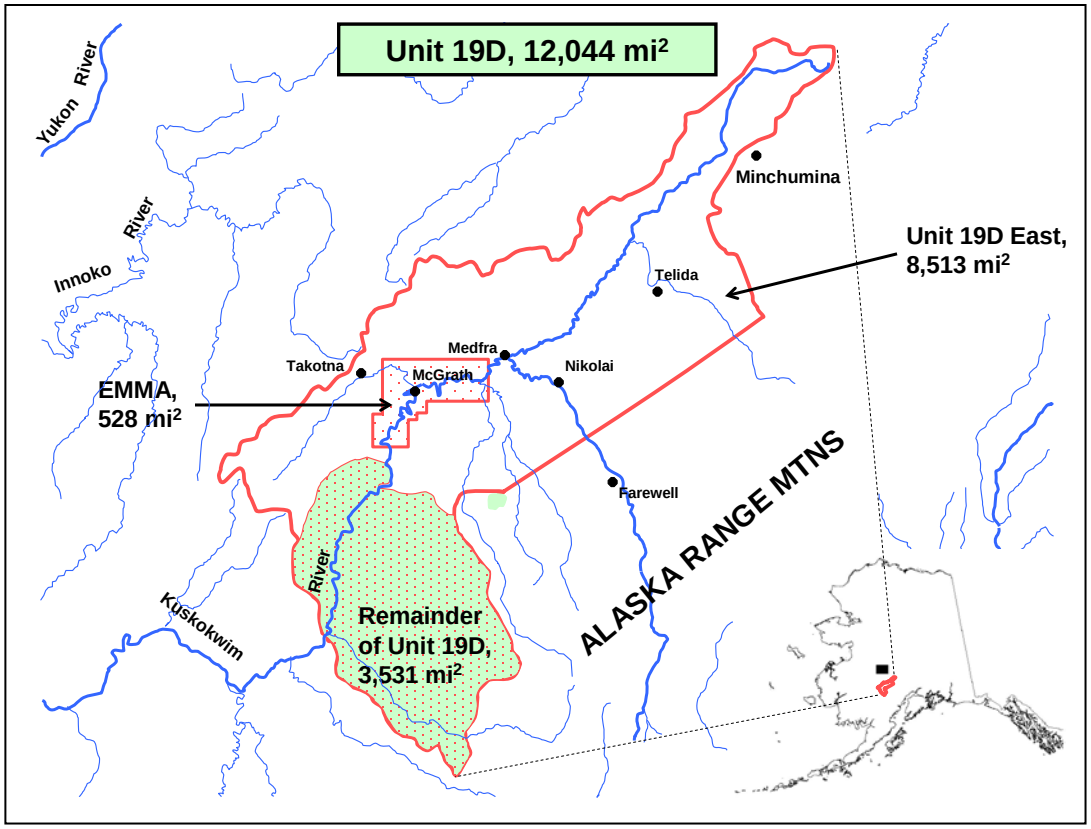

Figure 1. Detail area map of Unit 19D.

Table 1. Reported black bear harvest in Units 19, 21A and 21E by type of kill[a], regulatory years 2005–2006 through 2009–2010.

Regulatory	Hunter kill				Nonhunting kill				Total reported kill				
year	M	F	Unk	Total	M	F	Unk	Total	M	(%)	F	(%)	Total
2005–2006	21	9	0	30	0	0	0	0	21	(70)	9	(30)	30
2006–2007	18	18	0	36	0	0	0	0	18	(50)	18	(50)	36
2007–2008	38	10	0	48	2[b]	0	0	2	40	(80)	10	(20)	50
2008–2009	21	37	0	58	0	0	0	0	21	(36)	37	(64)	58
2009–2010	41	21	0	62	5[c]	1[c]	0	6	46	(68)	22	(31)	68

[a] Sealing was only required in Unit 19D East and in the remainder of Unit 19D for bears taken between 1 January and 31 May if removed from Unit 19, or if the hide was going to be sold. Sealing was required for all bear hides and skulls removed from the state of Alaska.
[b] Defense of life or property.
[c] Predation control.

Table 2. Reported black bear harvest by unit[a], regulatory years 2005–2006 through 2009–2010.

Regulatory	Unit							
year	19A	19B	19C	19D	19 Unknown	21A	21E	Total
2005–2006	2	11	4	8	1	3	1	30
2006–2007	8	14	5	1	3	3	2	36
2007–2008	6	14	10	17	0	2	1	50
2008–2009	14	21	13	8	0	1	1	58
2009–2010	15	18	15	14	0	3	3	68
Total	45	78	47	48	4	12	8	242
Ave/Year	9	16	9	10	1	2	2	48

[a] Sealing was required only in Unit 19D East and in the remainder of Unit 19D for bears taken between 1 January and 31 May if removed from Unit 19, or if the hide was going to be sold. Sealing was required for all bear hides and skulls removed from the state of Alaska.

Table 3. Units 19, 21A, and 21E black bear harvest chronology[a] 2005–2006 through 2009–2010.

Regulatory year	Month									
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Unk/other	Total
2005–2006	0	1	2	7	0	5	14	1	0	30
2006–2007	0	0	0	0	3	13	20	0	0	36
2007–2008	0	0	6	12	1	8	23	0	0	50
2008–2009	0	0	3	5	0	24	26	0	0	58
2009–2010	0	0	8	7	0	21	30	1	1	68

[a] Sealing was only required in Unit 19D East and in the remainder of Unit 19D for bears taken between 1 January and 31 May if removed from Unit 19, or if the hide was going to be sold. Sealing was required for all bear hides and skulls removed from the state of Alaska.

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. Box 115526
Juneau, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010[1]

LOCATION

GAME MANAGEMENT UNITS: 20A, 20B, 20C, and 20F (34,079 mi^2)

GEOGRAPHIC DESCRIPTION: Central–Lower Tanana and Middle Yukon River drainages

BACKGROUND

Black bears live throughout Interior Alaska. We estimate there are 2,000–4,000 black bears in the 4 units discussed in this report; however, only a few studies of black bear ecology or population dynamics have been completed. During 2003–2007, population estimates of black bears in Unit 19D near McGrath were part of a larger study of moose, predation and predator removal (Keech et. al. 2011). A population estimate was also conducted in 2009–2010 in the Yukon flats near Beaver (J. Caikoski, ADF&G, unpublished data, Fairbanks 2010). During 1988–1991 a cooperative project conducted by the Alaska Department of Fish and Game (ADF&G) with support from the U.S. Army yielded important information about black bear reproduction, mortality, and density on the Tanana Flats (Hechtel 1991). A portion of that project involved a study of black bear habitat use and denning ecology (Smith 1994). In 1967, Hatler completed a master's thesis on Interior Alaska black bear ecology (Hatler 1967). Johnson (1982) investigated production of offspring by female black bears in Units 20A and 20B.

Black bears provide an important source of meat, hides, and recreation for hunters in some areas. Because of the size of the Fairbanks human population, interest in hunting black bears is high, especially during spring. Information we obtain about black bear ecology and population dynamics has helped ADF&G ensure that the current year-round season and 3-bear bag limit is sustainable.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect and maintain the black bear population and its habitat in concert with other components of the ecosystem.
- Provide the greatest sustained opportunity to participate in hunting black bears.
- Protect human life and property in human–bear interactions.

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

MANAGEMENT OBJECTIVES

Sex ratio of the harvest is a key indicator of appropriate levels of harvest used for management in these units; therefore, management objectives call for a minimum percentage of males in the harvest.

- Maintain a black bear population that sustains a harvest of at least 55% males in the combined harvests for the most recent 3 years in all units.

- Maintain the defense of life or property (DLP) take of less than 10% of the total bear take in Unit 20B.

METHODS

We collected annual harvest data from sealing reports and harvest tickets of black bears killed by hunters and in defense of life or property (DLP). Prior to 2009, sealing was the only reporting requirement for black bears in Units 20A, 20B, 20C, and 20F. In regulatory year (RY) 2009 (which begins 1 July and ends 30 June. e.g., RY09 = 1 July 2009 through 30 June 2010), hunters reported harvest using harvest ticket reports, as well as having harvested bears sealed. Black bear sealing certificates included data on kill date and location, sex, skull size, amount of meat salvaged, DLP kills, hunter residency, incidental take, commercial services used, and baiting. Harvest tickets included data on days hunted, whether a bear was harvested, kill date, sex, location, commercial services used, and transportation. We recorded the distribution of bears killed using uniform coding units. During sealing, we collected premolars and sent them to Matson's Laboratory (Milltown, Montana, USA) for sectioning and age determination. To determine if we met management objectives in each unit, we calculated the percentage of males harvested by dividing known-sex males by all bears harvested, regardless of whether the sex was known. This allowed us to conservatively determine if we were meeting the objectives.

Since 1989, hunters have been required to register bait stations before hunting black bears over bait in spring. We also prepared hunter information leaflets and held free clinics to summarize black bear baiting regulations and encourage hunters to harvest males instead of females.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Current estimates for the number of black bears in the central and lower Tanana River and middle Yukon River drainages included 500–700 bears in the Tanana Flats in Unit 20A, 750–1,200 bears in Unit 20B, 700–1,000 in the portion of Unit 20C outside Denali National Park, and 400–700 in Unit 20F. We based our population estimates on Hechtel's (1991) density estimate of 12–18 black bears/100 mi^2 (46–67/1,000 km^2), excluding cubs of the year, inhabiting the Tanana Flats study area in 1989. This density is similar to the estimate of 18 bears/100 mi^2 in the McGrath area (Keech et al. 2011), but is much lower than the 40 bears/100 mi^2 estimated to inhabit portions 25D near the village of Beaver (J. Caikoski, ADF&G, unpublished data, Fairbanks 2010). We applied Hechtel's density estimate to the estimated amount of suitable black bear habitat in each unit. Based on estimates by Keech et al and Caikoski, it is likely that the black bear populations in Units 20A, 20B, 20C and 20F are near the upper end of our

estimated ranges. ADF&G is currently conducting a population estimation study in north-central 20A. Results are pending.

Population Composition

No estimate of population composition is available for this black bear population. Sex ratios in the harvest were not representative of sex ratios in the population because females with cubs were protected by regulation. In addition, behavioral differences of male and female bears may have resulted in higher vulnerability of males, and many hunters try to select adult males.

Distribution and Movements

The distribution of black bears shifts seasonally. During spring, bears use moist lowlands where early growing vegetation, especially *Equisetum,* makes up the bulk of their diet (Hatler 1967). Dispersal of young occurs in the spring usually before the breeding season. Immature males disperse longer distances from maternal home ranges than immature females. During fall, black bears feed primarily on berries. Black bears usually den after freeze-up in autumn, and denning habitat can be found within most bear home ranges. Mean home range sizes of marked black bears in the Tanana Flats were 23 mi^2 for adult females, 32 mi^2 for subadult females, 230 mi^2 for adult males, and 93 mi^2 for subadult males (Hechtel 1991).

MORTALITY

Harvest

Season and Bag Limit. The black bear hunting season was open year-round in Unit 20 with a bag limit of 3 bears (baiting is restricted to 15 April–30 June). The taking of cubs (first year of life) and females accompanied by cubs was prohibited.

Alaska Board of Game Actions and Emergency Orders**.** The Board of Game made major changes to black bear regulations during RY07–RY09. In March 2008, the board added a requirement for hunters in many units, including Unit 20, to be in possession of a black bear harvest ticket. In January 2010, the board classified black bears as furbearers as well as big game. Although the board did not open black bear trapping season, this furbearer classification and other regulatory changes have allowed hunters to legally sell black bear hides and parts, except gall bladders. In March 2010 the board eliminated sealing requirements in Unit 20 except in Unit 20B. The board also changed salvage requirement for black bears harvested 1 June –31 December by allowing hunters in Unit 20B to salvage the skull and either the hide or meat, and allowing hunters in the remainder of Unit 20 salvage either the hide or meat with no requirement to salvage the skull. The board increased the maximum number of bait stations registered by guides from 2 to 10.

Prior to 2009, nonresident military personnel stationed in Alaska could hunt on military lands without a hunting license or the $225 nonresident metal locking black bear tag. The legislature amended Alaska Statute (AS) 16.05.340, effective 1 January 2009, to require these nonresident military hunters who hunted on any land in Alaska (including military lands) to purchase a nonresident military hunting license at the resident-hunter rate of $25.00. These nonresident military personnel continue to be exempt from purchasing a black bear metal locking tag.

Harvest by Hunters. In Unit 20A the average annual black bear harvest during RY07–RY09 was 34 bears with a range of 25–44 bears and 69% male (Table 1). This is lower than the average annual harvest of 39 bears during RY00–RY06.

In Unit 20B the average annual harvest of black bears during RY07–RY09 was 135 bears with a range of 126–151 bears and 65% males (Table 1). This is lower than the average annual harvest of 150 bears during RY00–RY06.

In Unit 20C the average annual harvest of black bears during RY07–RY09 was 40 bears with a range of 30–51 bears and 58% males (Table 1). This is higher than the average annual harvest of 31 bears during RY00–RY06.

In Unit 20F the average annual harvest of black bears during RY07–RY09 was 40 bears with a range of 29–49 bears and 73% known to be males (Table 1). This is higher than the average annual harvest of 29 bears during RY00–RY06.

In all units combined, the average annual reported harvest during RY07–RY09 was 249 bears, compared to an average annual reported harvest of 250 bears during RY00–RY06 (Table 1). The range during RY00–RY09 was 189–311. Several factors may contribute to the variability in harvest, including changes in military deployment, inclement weather that may have hampered hunters or use of transportation methods, and availability of alternative food sources which may have made bears less vulnerable.

The estimated maximum sustainable exploitation rate for Interior black bear populations is approximately 12% (Hechtel 1991). Based on our population estimates for each unit and the mean harvest during RY07–RY09, we estimated the harvest rate to be 5–7% in Unit 20A, 11–20% in Unit 20B, 4–6% in Units 20C, and 6–10% in Unit 20F. The harvest rate in Unit 20B has been sustained at or above the estimated maximum harvest rate of 12% for 16 of the 21 years during RY89–RY09. This suggests the estimates of maximum harvest rate may be inaccurate there is immigration into the area from surrounding lightly harvested areas, or our population and density estimates were lower than the true population.

To further investigate the possibility that black bears were overharvested in Unit 20B, we examined age and skull size of bears harvested during RY89–RY09. During times of overharvest, older and larger animals are expected to become scarcer in populations, thus, skull size and average age is expected to decrease over time. In RY07–RY09 the average skull size was 16.0 inches for males and 15.6 for females compared to 16.5 for males and 15.7 for females during RY00–RY06 (Table 2). The average skull size during RY00–RY09 suggests that hunters continued to harvest adult bears despite sustained high harvests. Therefore, enough bears lived to adulthood for a consistent harvest of adult bears. Similarly, data from RY89 to RY09 show no decrease in mean age of harvested bears. The mean age of harvested black bears during RY89–RY97 was 4.9 (Seaton 2008) compared to 5.5 during RY00–RY09 (Table 3), an average of 13% older than during RY89–RY09. This trend is contrary to the expectation that if the population is overharvested, age and skull size would decrease over time.

Distribution of Harvest. Most black bear harvest occurred at bait stations during the spring baiting season within the road-accessible portions of Unit 20B. The density of bait stations

decreased with distance from Fairbanks and the road system. Some hunters intentionally travelled farther from the road system and farther from Fairbanks to hunt black bears, possibly to avoid crowding by other hunters and to find better hunting.

Nonresident military hunters who hunted on military land were allowed to hunt black bears without purchasing a big game tag or hunting license through December 31, 2008. Therefore, military land such as the Yukon Training Area in Unit 20B and the Tanana Flats Training Area in Unit 20A were hunted more intensively than some other areas of Units 20A, 20B, 20C, and 20F.

Registration of Bait Stations. Black bear baiting regulations have changed several times during the past 20 years. Prior to RY81, black bear baiting was legal with minimal regulations. From mid 1982 through 1983, permits were required to hunt bears at bait stations. During RY84–RY87, baiting was legal without permits or restrictions in season. Since RY88, baiting has been limited to a spring season, and hunters using baits have been limited to 2 bait stations, have been required to register bait stations prior to set-up and post a sign at bait stations that includes their hunting license number.

Hunters who registered black bear bait stations increased from 220 hunters registering 314 bait stations in spring 1989 when registration became mandatory to a peak of 615 hunters registering 1,154 bait stations in RY91 (Seaton 2008). Those numbers have steadily decreased to an average of 470 hunters registering an average of 688 bait stations during RY05–RY09 (Table 4). During years of high military deployment, such as RY05, the number of registered bait stations has been noticeably lower than other years. This will likely be the case in RY10.

Harvest at Bait Stations. The proportion of the harvest taken over bait has increased steadily since RY89. During RY89–RY91, 64% of black bear harvest occurred at bait stations (Seaton 2008). The average was 77% during RY05–RY09 (Table 4).

Hunter Residency and Success. During RY07–RY09, most black bears (82%) were taken by residents of Alaska, with 77% by local residents of Unit 20 (Table 5).

Baiting success (the number of bears taken over bait compared to the number of bait stations registered) was 37% during RY07–RY09, compared to 40% during RY02–RY06 (Table 4). Prior to RY09 we used this data as an indicator of take per unit effort (success rate). These data indicated an increasing trend in baiting success from 32% in RY89 to 43% in RY06. Potential factors that may contribute to baiting success include 1) increasing knowledge and experience of bear baiters through time and baiting clinics, 2) increasing number of guided nonresidents taking bears, and 3) an increasing bear population.

Harvest tickets and reports were required beginning in RY09 so we have no data on typical success rates for all hunters in prior years. RY09 harvest report data showed that 15% of hunters took bears in Unit 20A, 19% in Unit 20B, 29% in Unit 20C and 51% in Unit 20F. A total of 154 hunters reported hunting in Unit 20A, 543 in Unit 20B, 66 in Unit 20C, and 63 in Unit 20F. However, data from harvest ticket reports do not match sealing data. Twenty-three bears from Unit 20A were reported on harvest reports, but 25 were sealed. In Unit 20B, 103 bears were

reported on harvest reports and 129 were sealed. In Unit 20C, 19 bears were reported on harvest reports and 30 were sealed. Unit 20F had 32 bears reported on harvest reports and 49 sealed.

Harvest Chronology. During RY07–RY09, 84% of the harvest occurred during May and June (Table 6), which coincides with emergence from dens and the baiting season. Factors that influenced harvest chronology for black bears included the opportunity to use bait, vulnerability of bears, hide quality, and seasonal activity of hunters.

Transport Methods. From RY07 through RY09, the most common methods of transportation used (in descending order) by successful black bear hunters were 4-wheelers, boats, highway vehicles, and airplanes (Table 7).

Defense of Life or Property. During RY07 through RY09, 8 black bears were recorded as taken under DLP provisions. Only 3 of these bears were taken in Unit 20B. With a year-round season and a bag limit of 3 black bears, some black bears that might have otherwise been taken under the DLP regulations were taken under the general hunting regulations.

Other Mortality

Causes of natural mortality of black bears include predation, food shortages that result in undernourished cubs and yearlings (Rogers 1977), and flooding of natal dens (Alt 1984). Hechtel (1991) reported several instances of natural mortality. During the spring 1996 recollaring effort, a bear died after being immobilized, but necropsy results revealed the presence of extensive cancerous tissue in several internal organs.

Bear baiting has become an important issue for anti-hunting groups in the United States. Their efforts have succeeded in eliminating this black bear hunting method in some western states, especially during the spring. Such campaigns have sometimes been predicated on the likelihood of cubs being orphaned when their mothers are killed at bait stations or during spring hunts. Our records show little evidence of this, despite the fact that most harvest takes place during May and June (Table 6). It is also likely that the elevated harvest of spring black bears around Fairbanks has decreased nuisance/problem bears in and around the urban areas. A ballot initiative in November 2004 failed to outlaw bear baiting in Alaska. The practice in Alaska will probably continue to receive close scrutiny.

CONCLUSIONS AND RECOMMENDATIONS

We met our management objective for sex ratio of the black bear harvests. The average percentage of males in the harvest during RY07–RY09 was 66%, which was above the minimum objective of 55%.

Based on the population estimates for individual units, the average annual harvest rates for RY07–RY09 were below the maximum sustainable exploitation rate of 12% in Units 20A (5–7%), 20C (4–6%), and 20F (6–10%). In Unit 20B the average annual harvest rate was 11–20% of the estimated population during RY07–RY09. The harvest rate in Unit 20B has been sustained at the estimated maximum harvest rate of 12% or higher for 16 of the 21 years during RY89–RY09. This sustained high harvest rate suggests that estimates of maximum harvest rate were inaccurate, immigration from adjacent units was high, or our population estimate was lower than the true population. The extrapolated density estimate from Unit 20A to Unit 20B may be a

source of inaccuracy. It is also possible that black bear populations can sustain higher than 12% harvest in some areas when distribution of harvest is considered. For instance, Unit 20B harvest is concentrated along roads, and bears may be harvested above the level at which they can reproduce in these areas, making these areas "sink" populations that are replenished by immigration of bears from populations farther from roads. When the surrounding inaccessible and essentially unhunted areas are considered as "source" populations, immigration into the roaded areas may allow a higher sustainable harvest than previously predicted. We investigated the theoretical overharvest of Unit 20B black bears through age and skull size analysis, and success rates at bait stations. Average skull size remained consistent, average age has not decreased, and baiting success was consistent. Considering these factors, it is highly unlikely that black bears have been overharvested in Unit 20B during the last 21 years.

We met our objective of maintaining a DLP take of less than 10% of the total bear take in Unit 20B. Only 3 DLP bears were harvested in Unit 20B during RY07–RY09, representing 0.7% of the total harvest. Relatively high black bear harvest in this area may be a factor in the reduction of potential problems. We also provided the public with information to reduce garbage availability to bears and worked to reduce the need for DLP kills. We should continue to closely monitor public interest in black bear hunting and subsequent harvest.

With the new regulations adopted by the Board of Game, some of the statistics for the next report period will be different. Sealing will not be required in Units 20A, 20C, and 20F, therefore we will not have age data on these bears. Harvest tickets will be used to obtain harvest data. With the highest proportion of the harvest in Unit 20B, age data from this segment of the harvest will be sufficient. We should also have a better understanding of hunter effort in all 4 game units.

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Table 1. Units 20A, 20B, 20C, and 20F black bear harvest[a], regulatory years 2000–2001 through 2009–2010.

Regulatory		Fall				Spring				Annual total			
year	Area	Male	Female	Unk	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
2000–2001	20A	11	10	0	21	23	14	0	37	34	24	0	58
	20B	20	12	0	32	76	66	0	142	96	78	0	174
	20C	8	0	0	8	19	19	0	38	27	19	0	46
	20F	4	2	0	6	17	10	0	27	21	12	0	33
	Total	43	24	0	67	135	109	0	244	178	133	0	311
		(64%)				(55%)				(57%)			
2001–2002	20A	10	10	0	20	19	9	0	28	29	19	0	48
	20B	12	13	0	25	51	48	0	99	63	61	0	124
	20C	3	2	0	5	8	8	0	16	11	10	0	21
	20F	1	1	0	2	19	5	0	24	20	6	0	26
	Total	26	26	0	52	97	70	0	167	123	96	0	219
		(50%)				(58%)				(56%)			
2002–2003	20A	5	8	0	13	16	17	0	33	21	25	0	46
	20B	19	15	1	35	90	65	0	155	109	80	1	190
	20C	3	5	0	8	20	11	0	31	23	16	0	39
	20F	1	1	0	2	24	5	0	29	25	6	0	31
	Total	28	29	1	58	150	98	0	248	178	127	1	306
		(49%)				(60%)				(58%)			
2003–2004	20A	8	6	0	14	18	3	0	21	26	9	0	35
	20B	13	4	0	17	83	61	0	144	96	65	0	161
	20C	0	1	0	1	9	8	0	17	9	9	0	18
	20F	2	1	0	3	24	9	0	33	26	10	0	36
	Total	23	12	0	35	134	81	0	215	157	93	0	250
		(66%)				(62%)				(63%)			
2004–2005	20A	3	7	0	10	9	11	0	20	12	18	0	30
	20B	19	9	0	28	54	60	0	114	73	69	0	142
	20C	3	2	0	5	16	20	0	36	19	22	0	41
	20F	2	0	0	2	10	4	0	14	12	4	0	16
	Total	27	18	0	45	89	95	0	184	116	113	0	229
		(60%)				(48%)				(51%)			

Regulatory year	Area	Fall				Spring				Annual total			
		Male	Female	Unk	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
2005–2006	20A	0	3	0	3	15	6	0	21	15	9	0	24
	20B	7	6	0	13	68	39	0	107	75	45	0	120
	20C	0	0	0	0	17	7	0	24	17	7	0	24
	20F	0	4	0	4	12	5	0	17	12	9	0	21
	Total	7	13	0	20	112	57	0	169	119	70	0	189
		(35%)				(66%)				(63%)			
2006–2007	20A	2	2	0	4	18	12	0	30	20	14	0	34
	20B	13	4	0	17	76	47	1	124	89	51	1	141
	20C	0	1	0	1	16	14	0	30	16	15	0	31
	20F	1	1	0	2	28	10	0	38	29	11	0	40
	Total	16	8	0	24	138	83	1	222	154	91	1	246
		(67%)				(62%)				(63%)			
2007–2008	20A	3	2	0	5	21	7	0	28	24	9	0	33
	20B	8	2	0	10	72	44	0	116	80	46	0	126
	20C	3	3	0	6	26	19	0	45	29	22	0	51
	20F	0	1	0	1	19	8	1	28	19	9	1	29
	Total	14	8	0	22	138	78	1	217	152	86	1	239
		(64%)				(64%)				(64%)			
2008–2009	20A	8	11	0	19	21	4	0	25	29	15	0	44
	20B	24	9	0	33	74	44	0	118	98	53	0	151
	20C	2	2	0	4	24	12	0	36	26	14	0	40
	20F	3	1	0	4	29	7	1	37	32	8	1	41
	Total	37	23	0	60	148	67	1	216	185	90	1	276
		(62%)				(69%)				(67%)			
2009–2010	20A	3	2	0	5	14	6	0	20	17	8	0	25
	20B	15	7	0	22	72	35	0	107	87	42	0	129
	20C	7	1	1	9	9	11	1	21	16	12	2	30
	20F	3	1	0	4	33	12	0	45	36	13	0	49
	Total	28	11	1	40	128	64	1	193	156	75	2	233
		(70%)				(67%)				(68%)			

[a] Includes DLP kills. Parentheses indicate percentage of bears of known sex that were male. Data for 1989–1992 from counts of sealing certificates.

Table 2. Unit 20B harvested black bear mean skull size[a] regulatory years 2000–2001 through 2009–2010.

Regulatory year	Males	*n*	Females	*n*
2000–2001	16.3	97	15.8	78
2001–2002	16.7	63	15.8	61
2002–2003	16.4	109	15.7	80
2003–2004	16.6	96	15.8	66
2004–2005	16.4	73	15.7	69
2005–2006	16.4	75	15.5	45
2006–2007	16.7	89	15.6	51
2007–2008	15.9	80	15.8	45
2008–2009	16.4	96	15.9	55
2009–2010	15.8	88	15.0	41

[a] Skull size equals total length plus zygomatic width in inches.

Table 3. Units 20B harvested black bear mean ages, regulatory years 2000–2001 through 2009–2010.

Regulatory year	Mean age	*n*[a]
2000–2001	6.5	28
2001–2002	5.9	73
2002–2003	5.6	157
2003–2004	5.7	131
2004–2005	6.2	112
2005–2006	5.3	108
2006–2007	5.2	32
2007–2008	5.0	39
2008–2009	5.0	200
2009–2010	5.0	30

[a] Age data not available for some bears.

Table 4. Units 20A, 20B, 20C, and 20F black bear bait station registration and harvest, regulatory years 2000–2001 through 2009–2010.

	Baiting		Harvest			Success
Regulatory year	Hunters registering bait stations	Bait stations	Taken over bait (%)	Not taken[a] over bait (%)	Total harvest[b]	Taken over bait divided by hunters registering bait stations (%)
2000–2001	550	1083	227 (73)	84 (27)	311	(41)
2001–2002	521	819	156 (71)	63 (29)	219	(30)
2002–2003	558	837	235 (77)	71 (23)	306	(42)
2003–2004	512	768	194 (78)	56 (22)	250	(38)
2004–2005	439	681	170 (76)	54 (24)	224	(39)
2005–2006	399	623	159 (85)	27 (15)	186	(40)
2006–2007	463	687	201 (82)	43 (18)	244	(43)
2007–2008	468	676	196 (82)	42 (18)	238	(42)
2008–2009	463	668	184 (68)	87 (32)	271	(40)
2009–2010	556	788	165 (71)	68 (29)	233	(30)

[a] Not taken over bait harvest includes bears taken outside of the baiting season.
[b] Total harvest does not include harvest for which it was not known if baits were used.

Table 5. Units 20A, 20B, 20C, and 20F successful hunter residency, regulatory years 2000–2001 through 2009–2010.

Regulatory	Residents					Total successful
Year	Local[a] (%)	Nonlocal (%)	Total (%)	Nonresident	Unk	hunters[b]
2000–2001	235 (76)	11 (4)	246 (79)	65 (21)	0	311
2001–2002	166 (76)	14 (6)	180 (82)	39 (18)	0	219
2002–2003	253 (83)	10 (3)	263 (86)	41 (13)	2	306
2003–2004	199 (80)	18 (7)	217 (87)	32 (13)	1	250
2004–2005	152 (68)	10 (4)	162 (72)	63 (28)	0	225
2005–2006	144 (76)	7 (4)	151 (80)	38 (20)	0	189
2006–2007	176 (72)	8 (3)	184 (76)	59 (24)	0	243
2007–2008	174 (73)	11 (5)	185 (77)	54 (23)	0	239
2008–2009	208 (77)	11 (4)	219 (81)	53 (20)	0	272
2009–2010	184 (81)	14 (6)	198 (87)	28 (12)	0	226

[a] Resident of Unit 20.

[b] Excludes data from DLPs that were not taken as a legal harvest.

Table 6. Units 20A, 20B, 20C, and 20F black bear harvest chronology by month, regulatory years 2002–2003 through 2009–2010.

Unit	Regulatory year	Harvest chronology by month (%)											
		Jul		Aug		Sep		Oct–Apr		May		Jun	
20A	2002–2003	2	(4)	1	(2)	10	(22)	0	(0)	24	(52)	9	(20)
	2003–2004	3	(9)	5	(14)	6	(17)	0	(0)	10	(29)	11	(31)
	2004–2005	0	(0)	3	(10)	6	(21)	0	(0)	13	(45)	7	(24)
	2005–2006	0	(0)	0	(0)	3	(13)	0	(0)	12	(50)	9	(38)
	2006–2007	1	(3)	0	(0)	3	(9)	0	(0)	15	(45)	14	(42)
	2007–2008	1	(3)	1	(3)	4	(12)	0	(0)	9	(26)	19	(56)
	2008–2009	1	(2)	6	(14)	11	(26)	0	(0)	14	(33)	11	(26)
	2009–2010	0	(0)	1	(4)	4	(16)	0	(0)	10	(40)	10	(40)
20B	2002–2003	6	(3)	4	(2)	25	(13)	0	(0)	56	(29)	99	(52)
	2003–2004	0	(0)	6	(4)	11	(7)	0	(0)	49	(30)	95	(59)
	2004–2005	3	(2)	6	(4)	19	(13)	0	(0)	47	(33)	67	(47)
	2005–2006	3	(3)	1	(1)	9	(8)	0	(0)	35	(29)	72	(60)
	2006–2007	4	(3)	2	(1)	11	(8)	0	(0)	43	(31)	81	(57)
	2007–2008	2	(2)	3	(2)	5	(4)	0	(0)	30	(24)	86	(68)
	2008–2009	3	(2)	6	(4)	22	(15)	0	(0)	33	(22)	85	(57)
	2009–2010	1	(1)	1	(1)	19	(15)	1	(1)	53	(41)	54	(42)
20C	2002–2003	0	(0)	5	(13)	3	(8)	1	(3)	10	(26)	20	(51)
	2003–2004	0	(0)	0	(0)	1	(6)	0	(0)	8	(44)	9	(50)
	2004–2005	0	(0)	0	(0)	5	(12)	0	(0)	11	(27)	25	(61)
	2005–2006	0	(0)	0	(0)	0	(0)	0	(0)	6	(25)	18	(75)
	2006–2007	0	(0)	0	(0)	1	(3)	0	(0)	4	(13)	26	(84)
	2007–2008	3	(6)	0	(0)	3	(6)	0	(0)	11	(22)	33	(66)
	2008–2009	0	(0)	1	(3)	2	(5)	1	(3)	11	(28)	25	(63)
	2009–2010	1	(3)	1	(3)	5	(17)	0	(0)	13	(43)	10	(33)
20F	2002–2003	1	(3)	0	(0)	1	(3)	0	(0)	7	(23)	22	(71)
	2003–2004	1	(3)	1	(3)	1	(3)	0	(0)	7	(19)	26	(72)
	2004–2005	2	(13)	0	(0)	0	(0)	0	(0)	6	(38)	8	(50)
	2005–2006	2	(10)	0	(0)	2	(10)	0	(0)	3	(14)	14	(67)
	2006–2007	0	(0)	1	(3)	1	(3)	0	(0)	12	(30)	26	(65)
	2007–2008	1	(3)	0	(0)	0	(0)	0	(0)	6	(21)	22	(76)
	2008–2009	1	(2)	1	(2)	2	(5)	0	(0)	19	(46)	18	(44)
	2009–2010	0	(0)	1	(2)	3	(6)	0	(0)	25	(52)	19	(40)
	Total (%)	42	(2)	56	(3)	198	(10)	3	(0)	612	(31)	1050	(54)

Table 7. Units 20A, 20B, 20C, and 20F black bear harvest by transport method, regulatory years 2002–2003 through 2009–2010.

Unit	Regulatory year	Harvest by transport method (%)									*n*
		Airplane	Dog/ Horse	Boat	4-wheeler	Snow-machine	Other ORV	Highway vehicle	Walk	Other/ Unk	
20A	2002–2003	13 (28)	0 (0)	20 (43)	6 (13)	0 (0)	0 (0)	5 (11)	1 (2)	1 (2)	46
	2003–2004	7 (20)	0 (0)	13 (37)	9 (26)	0 (0)	1 (3)	3 (9)	2 (6)	0 (0)	35
	2004–2005	5 (17)	0 (0)	13 (45)	6 (21)	0 (0)	0 (0)	2 (7)	2 (7)	1 (3)	29
	2005–2006	5 (21)	0 (0)	11 (46)	7 (29)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	24
	2006–2007	10 (29)	0 (0)	16 (47)	4 (12)	0 (0)	0 (0)	3 (9)	0 (0)	1 (3)	34
	2007–2008	11 (33)	1 (3)	14 (42)	4 (12)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)	33
	2008–2009	12 (30)	1 (3)	14 (35)	9 (23)	0 (0)	0 (0)	0 (0)	3 (8)	1 (3)	40
	2009–2010	6 (29)	0 (0)	8 (38)	6 (29)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	21
20B	2002–2003	17 (9)	0 (0)	31 (16)	102 (54)	0 (0)	0 (0)	23 (12)	17 (9)	0 (0)	190
	2003–2004	4 (2)	2 (1)	35 (22)	83 (52)	0 (0)	3 (2)	17 (11)	16 (10)	1 (1)	161
	2004–2005	9 (6)	0 (0)	42 (30)	58 (41)	0 (0)	1 (1)	19 (13)	11 (8)	2 (1)	142
	2005–2006	8 (7)	0 (0)	18 (15)	65 (54)	0 (0)	0 (0)	16 (13)	13 (11)	0 (0)	120
	2006–2007	11 (8)	0 (0)	29 (21)	77 (55)	0 (0)	0 (0)	17 (12)	7 (5)	0 (0)	141
	2007–2008	8 (6)	0 (0)	20 (16)	59 (47)	1 (1)	2 (1)	28 (22)	8 (6)	0 (0)	126
	2008–2009	6 (4)	1 (1)	26 (17)	84 (56)	0 (0)	2 (2)	24 (16)	7 (5)	0 (0)	151
	2009–2010	16 (13)	0 (0)	23 (18)	53 (42)	0 (0)	2 (2)	17 (14)	14 (11)	0 (0)	125
20C	2002–2003	13 (33)	0 (0)	17 (44)	4 (10)	0 (0)	0 (0)	2 (5)	3 (8)	0 (0)	39
	2003–2004	5 (28)	0 (0)	9 (50)	2 (11)	0 (0)	0 (0)	0 (0)	2 (11)	0 (0)	18
	2004–2005	9 (22)	0 (0)	22 (54)	5 (12)	0 (0)	1 (2)	2 (5)	1 (2)	1 (2)	41
	2005–2006	4 (17)	0 (0)	19 (79)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	24
	2006–2007	1 (3)	0 (0)	26 (84)	3 (10)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	31
	2007–2008	8 (16)	0 (0)	37 (73)	3 (6)	0 (0)	0 (0)	1 (2)	2 (4)	0 (0)	51
	2008–2009	6 (15)	0 (0)	28 (70)	0 (0)	0 (0)	0 (0)	2 (5)	4 (10)	0 (0)	40
	2009–2010	6 (21)	0 (0)	12 (43)	5 (18)	0 (0)	2 (7)	0 (0)	3 (11)	0 (0)	28
20F	2002–2003	1 (3)	0 (0)	4 (13)	13 (42)	0 (0)	0 (0)	10 (32)	3 (10)	0 (0)	31
	2003–2004	0 (0)	0 (0)	4 (11)	14 (39)	0 (0)	0 (0)	8 (22)	10 (28)	0 (0)	36
	2004–2005	0 (0)	0 (0)	3 (19)	5 (31)	0 (0)	0 (0)	7 (44)	1 (6)	0 (0)	16
	2005–2006	1 (5)	0 (0)	5 (24)	1 (5)	0 (0)	0 (0)	14 (67)	0 (0)	0 (0)	21
	2006–2007	0 (0)	0 (0)	4 (10)	20 (50)	0 (0)	1 (3)	9 (23)	4 (10)	2 (5)	40
	2007–2008	0 (0)	0 (0)	6 (21)	10 (34)	0 (0)	0 (0)	11 (38)	2 (7)	0 (0)	29
	2008–2009	0 (0)	0 (0)	7 (17)	14 (34)	0 (0)	0 (0)	16 (39)	4 (10)	0 (0)	41
	2009–2010	1 (2)	0 (0)	8 (16)	17 (35)	0 (0)	0 (0)	20 (41)	3 (6)	0 (0)	49

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. Box 115526
Juneau, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2004
To: 30 June 2007[1]

LOCATION

GAME MANAGEMENT UNIT: 20D (5,637 mi^2)

GEOGRAPHIC DESCRIPTION: Central Tanana Valley near Delta Junction

BACKGROUND

Black bears are widely distributed in Unit 20D. Most black bear harvest in Unit 20D occurs near the road system south of the Tanana River, in the northwestern portion of the unit along the Richardson Highway, and along major river systems.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance the black bear population and its habitat in concert with other components of the ecosystem.

- Provide the greatest sustained opportunity to participate in hunting black bears.

MANAGEMENT OBJECTIVE

- Manage for a sustained yield of black bears with harvest not to exceed 15 black bears south of the Tanana River and 35 black bears north of the Tanana River.

METHODS

We collected harvest data through mandatory sealing of bears killed by hunters, in defense of life or property, or for other reasons, such as road kill. Data collected from each black bear killed included color phase, sex, skull length and width, transportation used by the hunter, date of kill, number of days hunted, location of kill, hunter name and address, and whether the meat was salvaged. Data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY07 = 1 July 2007–30 June 2008).

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

An accurate estimate of black bear population size and trend was not available for Unit 20D. However, based on Hechtel's (1991) estimate of 17.5 adult black bears/100 mi^2 in adjacent Unit 20A, DuBois (1993) estimated a population of approximately 750 adult black bears in Unit 20D. DuBois also estimated that approximately 525 bears were present north of the Tanana River and 225 bears lived south of the Tanana River. Anecdotal information from residents and hunters in Unit 20D during RY07–RY09 indicated that black bears were numerous throughout the area.

Distribution and Movements

Black bears are distributed throughout Unit 20D except in the most heavily populated areas and in treeless alpine habitat. No information was available concerning movements.

MORTALITY

Harvest

Season and Bag Limit. There was no closed season on black bears in Unit 20D during RY07–RY09. The bag limit was 3 per year. Cubs or females accompanied by cubs were not legal to harvest. Black bear baiting was allowed from 15 April through 30 June; however, hunters using bait could not establish more than 2 bait stations at a time and were required to first obtain a permit issued by the Alaska Department of Fish and Game.

Alaska Board of Game Actions and Emergency Orders. No emergency orders were issued during RY07–RY09. The Board of Game (board) passed a regulation that went into effect in RY09 that required black bear hunters in many units, including Unit 20D, to possess a black bear harvest ticket when hunting black bears.

Beginning in RY10, the board classified black bears as furbearers as well as big game. Although the board did not open black bear trapping seasons, this furbearer classification and other regulatory changes allowed hunters to legally sell black bear hides and parts, except gall bladders. The board subsequently amended these regulations so that sale of black bear meat remained illegal in RY10. Further RY10 regulatory changes in many units, including Unit 20D, eliminated sealing requirements and changed salvage requirement for black bears harvested during June 1– December 31 to allow hunters in to salvage either the hide or meat with no requirement to salvage the skull. The board also increased the maximum number of bait stations allowed to be registered by guides from 2 to 10 beginning in spring 2011.

Harvest by Hunters. Reported black bear harvest by hunters during RY07–RY09 ranged from a low of 14 in RY07 to a high of 21 in RY08 (Table 1) and did not exceed the Unit 20D combined harvest objective of 50 bears/year. Mean 3-year annual harvest by hunters was 18 bears/year. Fifty-one percent of the bears taken were males.

Thirty percent of black bears killed by hunters during RY07–RY09 were taken at bait stations, ranging from 4 bears in RY09 to 6 in RY07 and RY08. A 3-year mean of 5 bears/year were taken with bait (Table 1).

Nonhunting Mortality. There were no defense of life or property nonhunting mortalities reported during RY07–RY09 (Table 1).

Harvest Locations. The Unit 20D harvest objective not to exceed 15 bears/year south of the Tanana River was met during RY07–RY09 (Table 2). The southern Unit 20D harvest ranged from 5 to 14 bears/year. The 3-year mean harvest south of the Tanana River was 10 bears/year. This represented an estimated annual harvest of 4% of the estimated adult population south of the Tanana River.

The Unit 20D harvest objective not to exceed 35 bears/year north of the Tanana River was met during RY07–RY09 (Table 2). The reported harvest north of the Tanana River ranged from 5 to 9 bears/year. The 3-year mean harvest north of the Tanana River was 7 bears/year. This harvest represented an annual estimated take of 1% of the estimated adult population north of the Tanana River.

Hunter Residency. Most black bears killed in Unit 20D were taken by Alaska residents (Table 3).

Harvest Chronology. Most bears continued to be harvested in May–June and August–September (Table 4).

Transportation Methods. The most popular modes of transportation for black bear hunters in Unit 20D continued to be 3- or 4-wheelers, followed by boats, walking, and highway vehicles (Table 5). Airplane use was also common.

CONCLUSIONS AND RECOMMENDATIONS

We monitored harvest of black bears to assure that hunting did not have negative effects on the population. Liberal seasons and bag limits provided hunters with maximum opportunity to hunt black bears in Unit 20D. Harvest levels met management objectives. No changes in regulations are recommended at this time.

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Table 1. Unit 20D black bear harvest, regulatory years 1994–1995 through 2009–2010.

Regulatory year	Reported											Total reported and estimated kill			
	Hunter kill					Nonhunting kill[a]			Estimated kill						
	M (%)	F (%)	Unk	Total	Baited	M	F	Unk	Unreported	Illegal	M (%)	F (%)	Unk	Total
1994–1995														
Fall 1994	3 (100)	0 (0)	0	3	0	0	0	0	0	0	3 (100)	0 (0)	0	3
Spring 1995	6 (55)	5 (46)	0	11	6	0	0	0	0	0	6 (55)	5 (46)	0	11
Total	9 (64)	5 (36)	0	14	6	0	0	0	0	0	9 (64)	5 (36)	0	14
1995–1996														
Fall 1995	3 (75)	1 (25)	0	4	0	0	0	0	0	0	3 (75)	1 (25)	0	4
Spring 1996	10 (67)	5 (33)	0	15	7	1	0	0	0	0	11 (69)	5 (31)	0	16
Total	13 (68)	6 (32)	0	19	7	1	0	0	0	0	14 (70)	6 (30)	0	20
1996–1997														
Fall 1996	9 (82)	2 (18)	0	11	0	0	0	0	0	0	9 (82)	2 (18)	0	11
Spring 1997	6 (50)	6 (50)	0	12	8	0	0	0	0	0	6 (50)	6 (50)	0	12
Total	15 (65)	8 (35)	0	23	8	0	0	0	0	0	15 (65)	8 (35)	0	23
1997–1998														
Fall 1997	8 (73)	3 (27)	0	11	0	1	0	0	0	0	9 (75)	3 (25)	0	12
Spring 1998	17 (94)	1 (6)	1	19	15	1	0	0	0	0	18 (95)	1 (5)	1	20
Total	25 (86)	4 (14)	1	30	15	2	0	0	0	0	27 (87)	4 (13)	1	32
1998–1999														
Fall 1998	7 (70)	3 (30)	0	10	0	0	0	0	0	0	7 (70)	3 (30)	0	10
Spring 1999	6 (50)	6 (50)	0	12	7	0	0	0	0	0	6 (50)	6 (50)	0	12
Total	13 (59)	9 (41)	0	22	7	0	0	0	0	0	13 (59)	9 (41)	0	22
1999–2000														
Fall 1999	6 (60)	4 (40)	1	11	0	0	0	1	0	0	6 (60)	4 (40)	2	12
Spring 2000	4 (57)	3 (43)	0	7	4	0	0	0	0	0	4 (57)	3 (43)	0	7
Total	10 (59)	7 (41)	1	18	4	0	0	1	0	0	10 (59)	7 (41)	2	19
2000–2001														
Fall 2000	14 (64)	8 (36)	0	22	0	1	1	0	0	0	15 (63)	9 (38)	0	24
Spring 2001	8 (53)	7 (47)	0	15	11	0	0	0	0	0	8 (53)	7 (47)	0	15
Total	22 (59)	15 (41)	0	37	11	1	1	0	0	0	23 (59)	16 (41)	0	39
2001–2002														
Fall 2001	5 (63)	3 (38)	0	8	0	0	0	0	0	0	5 (63)	3 (38)	0	8
Spring 2002	8 (57)	6 (43)	0	14	14	0	0	0	0	0	8 (57)	6 (43)	0	14
Total	13 (59)	9 (41)	0	22	14	0	0	0	0	0	13 (59)	9 (41)	0	22

Regulatory year	Reported																	
	Hunter kill							Nonhunting kill[a]			Estimated kill		Total reported and estimated kill					
	M (%)		F (%)		Unk	Total	Baited	M	F	Unk	Unreported	Illegal	M (%)		F (%)		Unk	Total
2002–2003																		
Fall 2002	5	(71)	2	(29)	0	7	0	0	0	0	0	0	5	(71)	2	(29)	0	7
Spring 2003	9	(53)	8	(47)	0	17	14	0	0	0	0	0	9	(53)	8	(47)	0	17
Total	14	(58)	10	(42)	0	24	14	0	0	0	0	0	14	(58)	10	(42)	0	24
2003–2004																		
Fall 2003	3	(75)	1	(25)	0	4	0	0	0	0	0	0	3	(75)	1	(25)	0	4
Spring 2004	6	(50)	6	(50)	0	12	11	0	0	0	0	0	6	(50)	6	(50)	0	12
Total	9	(56)	7	(44)	0	16	11	0	0	0	0	0	9	(56)	7	(44)	0	16
2004–2005																		
Fall 2004	12	(86)	2	(14)	0	14	0	1	0	1	0	0	13	(87)	2	(13)	1	16
Spring 2005	10	(69)	5	(31)	0	15	12	0	0	0	0	0	10	(69)	5	(31)	0	15
Total	22	(76)	7	(24)	0	29	12	1	0	1	0	0	23	(80)	7	(20)	1	31
2005–2006																		
Fall 2005	1	(50)	1	(50)	0	2	0	0	0	0	0	0	1	(50)	1	(50)	0	2
Spring 2006	15	(71)	6	(29)	0	21	17	0	0	0	0	0	15	(71)	6	(29)	0	21
Total	16	(70)	7	(30)	0	23	17	0	0	0	0	0	16	(70)	7	(30)	0	23
2006–2007																		
Fall 2006	3	(43)	4	(57)	0	7	0	0	0	0	0	0	3	(43)	4	(57)	0	7
Spring 2007	9	(75)	3	(25)	0	12	11	0	0	0	0	0	9	(75)	3	(25)	0	12
	12	(63)	7	(37)	0	19	11	0	0	0	0	0	12	(63)	7	(37)	0	19
2007–2008																		
Fall 2007	1		3		0	4	0	0	0	0	0	0	1	(25)	3	(75)	0	4
Spring 2008	7		3		0	10	6	0	0	0	0	0	7	(70)	3	(30)	0	10
Total	8		6		0	14	6	0	0	0	0	0	8	(57)	6	(43)	0	14
2008–2009																		
Fall 2008	6		3		0	9	0	0	0	0	0	0	6	(67)	3	(33)	0	9
Spring 2009	5		7		0	12	6	0	0	0	0	0	5	(42)	7	(58)	0	12
Total	11		10		0	21	6	0	0	0	0	0	11	(52)	10	(48)	0	21
2009–2010																		
Fall 2009	4		7		0	11	0	0	0	0	0	0	4	(36)	7	(64)	0	11
Spring 2010	4		3		4	7	0	0	0	0	0	0	4	(57)	3	(43)	0	7
Total	8		10		4	18	0	0	0	0	0	0	8	(44)	10	(65)	0	18

[a] Includes defense of life or property kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Unit 20D black bear harvest location, regulatory years 1994–1995 through 2009–2010.

Regulatory year	South of Tanana River		North of Tanana River		Unk	*n*
	n	(%)	*n*	(%)		
1994–1995	10	(71)	4	(29)		14
1995–1996	13	(68)	6	(32)		19
1996–1997	12	(52)	11	(48)		23
1997–1998	22	(73)	8	(27)		30
1998–1999	16	(73)	6	(27)		22
1999–2000	11	(61)	7	(39)	1	19
2000–2001	15	(48)	16	(58)	1	32
2001–2002	11	(52)	10	(48)	1	22
2002–2003	9	(38)	15	(63)	0	24
2003–2004	9	(56)	7	(44)	0	16
2004–2005	11	(38)	18	(62)	0	29
2005–2006	9	(39)	14	(61)	0	23
2006–2007	11	(58)	8	(42)	0	19
2007–2008	5	(36)	9	(64)	0	14
2008–2009	14	(67)	7	(33)	0	21
2009–2010	12	(71)	5	(29)	1	18

Table 3. Unit 20D black bear successful hunter residency, regulatory years 1994–1995 through 2009–2010.

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Unk	Total successful hunters
1994–1995	7	(50)	7	(50)	0	(0)		14
1995–1996	9	(47)	10	(53)	0	(0)		19
1996–1997	12	(52)	10	(44)	1	(4)		23
1997–1998	18	(60)	12	(40)	0	(0)		30
1998–1999	19	(86)	3	(14)	0	(0)		22
1999–2000	12	(67)	5	(28)	1	(5)	1	19
2000–2001	26	(81)	3	(9)	3	(9)		32
2001–2002	19	(86)	1	(5)	2	(9)		22
2002–2003	22	(92)	1	(4)	1	(4)		24
2003–2004	15	(94)	1	(6)	0	(0)		16
2004–2005	15	(52)	12	(41)	2	(7)		29
2005–2006	7	(30)	16	(70)	0	(0)		23
2006–2007	11	(58)	8	(42)	0	(0)		19
2007–2008	9	(64)	4	(29)	1	(7)		14
2008–2009	12	(57)	7	(33)	2	(10)		21
2009–2010	7	(39)	10	(56)	1	(6)		18

[a] Local residents are residents of Unit 20D.

Table 4. Unit 20D black bear harvest chronology percent by month, regulatory years 1994–1995 through 2009–2010.

Regulatory year	Harvest chronology percent by month								
	Jul	Aug	Sep	Oct	Nov	Apr	May	Jun	*n*
1994–1995	7	14	0	0	0	0	43	36	14
1995–1996	11	11	11	0	0	0	32	37	19
1996–1997	17	17	13	0	0	0	30	22	23
1997–1998	3	17	17	0	0	0	43	20	30
1998–1999	5	14	27	0	0	0	27	27	22
1999–2000	11	22	22	6	0	0	11	28	18
2000–2001	3	9	41	0	0	0	9	38	32
2001–2002	0	14	23	0	0	0	18	46	22
2002–2003	0	8	21	0	0	0	21	50	24
2003–2004	13	0	13	0	0	0	19	56	16
2004–2005	0	17	31	0	0	0	24	28	29
2005–2006	0	0	9	0	0	0	48	43	23
2006–2007	11	5	21	0	0	0	26	37	19
2007–2008	0	14	14	0	0	0	29	43	14
2008–2009	10	14	19	0	0	0	14	43	21
2009–2010	6	17	39	0	0	0	11	28	18

Table 5. Unit 20D black bear harvest percent by transport method, regulatory years 1994–1995 through 2009–2010.

Regulatory year	Harvest percent by transport method										
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Walk	Other	Unk	*n*
1994–1995	0	0	14	29	0	0	29	29	0	0	14
1995–1996	16	0	5	47	0	0	16	11	5	0	19
1996–1997	9	0	26	30	0	4	17	13	0	0	23
1997–1998	10	0	10	30	0	0	47	3	0	0	30
1998–1999	14	0	9	36	0	5	23	10	5	0	22
1999–2000	16	0	21	32	0	0	16	5	11	0	19
2000–2001	6	3	31	25	0	3	16	16	0	0	32
2001–2002	5	0	23	41	0	0	14	18	0	0	22
2002–2003	8	0	29	42	0	0	4	13	0	4	24
2003–2004	0	0	38	44	0	0	13	0	0	6	16
2004–2005	10	0	24	31	0	0	24	0	0	10	29
2005–2006	4	4	13	53	0	0	22	4	0	0	23
2006–2007	11	0	21	31	0	0	16	21	0	0	19
2007–2008	7	7	29	36	0	0	7	7	7	0	14
2008–2009	5	0	14	24	0	0	24	33	0	0	21
2009–2010	17	6	22	28	0	0	11	17	0	0	18

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. Box 115526
Juneau, AK 99811-5526

BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010[1]

LOCATION

GAME MANAGEMENT UNIT: 20E (10,681 mi^2)

GEOGRAPHIC DESCRIPTION: Fortymile, Charley, and Ladue River drainages, including the Tanana Uplands and all drainages into the south bank of the Yukon River upstream from and including the Charley River drainage

BACKGROUND

Black bears live throughout forested habitat in Unit 20E. Observations by long-term area residents indicate that black bear numbers have fluctuated since at least 1960 in relation to grizzly bear population trends (Kelleyhouse 1990). Black bear numbers were thought to be highest following federal predator control poisoning efforts during the 1950s that caused grizzly bear numbers to decline and remain depressed during the 1960s and early 1970s. As grizzly bear numbers recovered during the 1970s through the mid 1980s, black bear numbers appeared to decline. Grizzly bears have been known to kill black bears, but how important that mortality is to black bear population trend in Unit 20E is not known. Black bear abundance may also have declined due to poor habitat quality. Until the 1990s, fire suppression activities in Unit 20E allowed extensive areas of black spruce forest to reach maturity, a stage that does not produce high quality black bear food.

During the 1990s and early 2000s, the black bear population in Unit 20E appeared stable. The highest densities are believed to occur in the hardwood habitats near the community of Chicken and along the Yukon River. Extensive fires in 2004 and 2005 have resulted in improved black bear habitat in large portions of Unit 20E. Historically, interest in black bear hunting in the unit has been low.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance the black bear population and its habitat in concert with other components of the ecosystem.

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

- Provide the greatest sustained opportunity to participate in hunting black bears.

MANAGEMENT OBJECTIVE

- Maintain at least 55% males in the harvest during the report period.

METHODS

A bear population survey was conducted during 2006 by the Alaska Department of Fish and Game (ADF&G) within a 2002-mi^2 portion of southern Unit 20E. This study used DNA-based mark–recapture population estimation techniques with scent lures surrounded by barbed wire bear hair traps (C. Gardner, ADF&G unpublished data, Fairbanks, 2007). Annual harvest data were collected from hunters during the mandatory process of sealing hunter-killed bears and bears killed in defense of life or property. Information collected included harvest date and location, sex of the bear, skull size, transportation mode, number of days hunted, salvage of meat, and bait use. Harvest data were summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY09 = 1 Jul 2009–30 Jun 2010). Starting in RY09 a harvest ticket was also required to hunt black bears in much of Interior Alaska, including Unit 20E. This will allow managers to assess hunter participation and success rates in the area, while continuing to collect data on harvest date and location, sex of the bear, transportation mode, number of days hunted, salvage of meat, and bait use, but not skull size.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size and Composition

During RY07–RY09, no surveys were conducted to determine black bear population size or trend. The Unit 20E black bear population was estimated to be 1,000–1,500 bears based on population data collected in adjacent Unit 12 (Kelleyhouse 1990) during the early 1980s and in Unit 20A (Hechtel 1991).

In the Upper Yukon–Tanana grizzly bear control area of Unit 20E, grizzly and black bear populations were assessed in summer 2006. Preliminary data from the 2006 DNA-based mark–recapture population estimate suggest black bear densities in Unit 20E may be significantly below previous estimates.

The composition of the Unit 20E black bear population is unknown. In 2004 and 2005, approximately 1,875 mi^2 (4,856 km^2) of black bear habitat burned within, or adjacent to, Unit 20E. The effect of wildfires on black bear population trend in Unit 20E is unknown.

Distribution and Movements

Black bears inhabit all of the forested habitats within Unit 20E. Their movement patterns within the subunit are unknown.

MORTALITY

Harvest

Season and Bag Limit. There was no closed season for black bears in Unit 20E, and the bag limit was 3 bears. Harvest of cubs in the first year of life and females accompanied by cubs was prohibited.

Alaska Board of Game Actions and Emergency Orders. During the spring 2006 meeting, the Alaska Board of Game (board) adopted regulations to allow the sale of black bear hides and skulls, and same-day-airborne hunting of black bears over bait in active predator control areas, including the Upper Yukon–Tanana Predator Control Area in Unit 20E. Also during the spring 2006 meeting, the board expanded the Upper Yukon–Tanana Predator Control Area to include all of Unit 20E. Starting in RY09 the board required hunters to possess harvest tickets for black bears in all units where black bear sealing was required, including Unit 20E. The sealing requirement in Unit 20E was eliminated in RY10 in favor of harvest tickets. No emergency orders were issued during RY07–RY09.

Harvest by Hunters. During RY07–RY09 the annual reported harvest range was 10–18 black bears ($\bar{x}$ = 14) in Unit 20E (Table 1). A total of 43 black bears, including 33 males were killed during this 3-year period. Males made up 70–80% of the harvest ($\bar{x}$ = 77%) during RY07–RY09, meeting the harvest objective of >55% males for all 3 years. The average harvest during RY02–RY06 was 14 bears ranging 50–86% males ($\bar{x}$ = 73%). During RY07–RY09 the average skull size of males (16.7 in, n = 33) was comparable to the RY95–RY00 average (16.4 in). Similar skull sizes and the high percentage of males in the harvest suggest that human induced mortality had minimal effects on this population.

Hunter Residency and Success. During RY07–RY09, Alaska residents harvested an average of 91% of the black bears taken in Unit 20E and 83% of Alaska resident hunters reported salvaging at least some meat (Table 2). Unit 20E residents took an average of 21% of the harvest. The previous 5-year average for unit resident harvest was 31%. During RY07–RY09, 4 black bears were killed by nonresidents; 9% of the total harvest. This was similar to the previous 5-year average of 1 black bear killed annually by a nonresident hunter.

RY09 was the first year harvest tickets were issued for black bears in Unit 20E. Based on information from the RY09 harvest tickets, a total of 77 hunters reported hunting black bears. The overall success rate was 23%. Success rates among Alaska residents (22%) were much lower than among nonresidents (50%).

Harvest Chronology. During RY07–RY09, 50–73% ($\bar{x}$ = 60%) of the black bear harvest occurred during August and September, primarily in August (Table 3). During RY02–RY06, 47–78% ($\bar{x}$ = 64%) of the harvest took place in fall (Table 3).

Transport Methods. During RY07–RY09, 4-wheelers (37%) and highway vehicles (30%) were the most common modes of transportation used by successful black bear hunters (Table 4). Use of 4-wheelers will likely continue to be prevalent among Unit 20E black bear hunters because of the abundance of ATV trails in the area.

HABITAT

Assessment

Black bear habitat is extensive in Unit 20E. Only treeless habitat, generally above elevations of 4000 feet, is not black bear habitat. Blueberries, crowberries, and cranberries are widely available, and bearberries are available in a few areas. Human-caused changes in the quantity and quality of black bear habitat are not expected because little development has occurred or is planned within black bear habitat in Unit 20E.

Enhancement

The implementation of the *Alaska Interagency Wildland Fire Management Plan* (Alaska Wildland Fire Coordinating Group 1998) allowed wildfires to burn in more areas than before 1984. Also, 3 prescribed burns were ignited during 1997–1999, affecting 148 mi^2 (383 km^2) of black bear habitat. Revegetation of preferred plant species in burned areas provides better forage for black bears than is available in mature forests of black or white spruce. Similarly, in 2004 and 2005 approximately 1875 mi^2 (4,856 km^2) of Unit 20E burned which has improved usable habitat for black bears in the area.

CONCLUSIONS AND RECOMMENDATIONS

We met the objective of 55% or more males in the harvest ($\bar{x}$ = 77% males) during RY07–RY09. Black bears in Unit 20E were lightly harvested and were hunted primarily during the fall by nonlocal Alaska residents. Highway vehicles and 4-wheelers were used by 67% of the successful hunters. The low harvest rate of predominantly male bears likely has little effect on the status and trend of the population, and skull size remained relatively constant. I recommend no changes in seasons or bag limits.

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Table 1. Unit 20E black bear harvest, regulatory years 2003–2004 through 2009–2010.

Regulatory	Reported								Estimated kill		Total reported and estimated kill			
	Hunter kill					Nonhunting kill[a]								
Year	M	F	Unk	Total	Baited	M	F	Unk	Unreported	Illegal	M (%)	F (%)	Unk	Total
2003–2004														
Fall 2003	3	2	0	5	0	0	0	0	0	0	3 (60)	2 (40)	0	5
Spring 2004	2	0	0	2	0	0	0	0	0	0	2 (100)	0 (0)	0	2
Total	5	2	0	7	0	0	0	0	0	0	5 (71)	2 (29)	0	7
2004–2005														
Fall 2004	10	5	0	15	0	0	0	0	0	0	10 (67)	5 (33)	0	15
Spring 2005	12	1	0	13	7	0	0	0	0	0	12 (92)	1 (8)	0	13
Total	22	6	0	28	7	0	0	0	0	0	22 (79)	6 (21)	0	28
2005–2006														
Fall 2005	4	0	1	5	0	0	0	0	0	0	4 (100)	0 (0)	1	5
Spring 2006	3	2	0	5	4	0	0	0	0	0	3 (60)	2 (40)	0	5
Total	7	2	1	10	4	0	0	0	0	0	7 (78)	2 (22)	1	10
2006–2007														
Fall 2006	4	1	0	5	0	0	0	0	0	0	4 (80)	1 (20)	0	5
Spring 2007	2	0	0	2	0	0	0	0	0	0	2 (100)	0 (0)	0	2
Total	6	1	0	7	0	0	0	0	0	0	6 (86)	1 (14)	0	7
2007–2008														
Fall 2007	4	1	0	5	0	0	0	0	0	0	4 (80)	1 (20)	0	5
Spring 2008	3	2	0	5	2	0	0	0	0	0	3 (60)	2 (40)	0	5
Total	7	3	0	10	2	0	0	0	0	0	7 (70)	3 (30)	0	10
2008–2009														
Fall 2008	9	2	0	11	1	0	0	0	0	0	9 (82)	2 (18)	0	11
Spring 2009	3	1	0	4	1	0	0	0	0	0	3 (75)	1 (25)	0	4
Total	12	3	0	15	2	0	0	0	0	0	12 (80)	3 (20)	0	15
2009–2010														
Fall 2008	6	4	0	10	0	0	0	0	0	0	6 (60)	4 (40)	0	10
Spring 2009	8	0	0	8	3	0	0	0	0	0	8 (100)	0 (0)	0	8
Total	14	4	0	18	3	0	0	0	0	0	14 (78)	4 (22)	0	18

[a] Includes defense of life or property kills, research mortalities, and other known human-caused accidental mortality.

Table 2. Unit 20E successful black bear hunter residency, regulatory years 1999–2000 through 2009–2010.

Regulatory year	Unit resident (%)	Other residents (%)	Nonresident (%)	Total successful hunters
1999–2000	5 (45)	6 (55)	0 (0)	11
2000–2001	6 (43)	8 (57)	0 (0)	14
2001–2002	6 (46)	6 (46)	1 (8)	13
2002–2003	6 (33)	11 (61)	1 (6)	18
2003–2004	0 (0)	6 (86)	1 (14)	7
2004–2005	11 (39)	15 (54)	2 (7)	28
2005–2006	3 (30)	6 (60)	1 (10)	10
2006–2007	2 (29)	5 (71)	0 (0)	7
2007–2008	3 (30)	7 (70)	0 (0)	10
2008–2009	1 (7)	12 (80)	2 (13)	15
2009–2010	5 (28)	11 (61)	2 (11)	18

Table 3. Unit 20E black bear harvest chronology percent by month, regulatory years 1999–2000 through 2009–2010.

Regulatory year	Harvest chronology percent by month								
	Jul	Aug	Sep	Oct	Nov	Apr	May	Jun	*n*
1999–2000	0	0	55	0	0	0	18	27	11
2000–2001	14	0	36	0	0	0	43	7	14
2001–2002	8	23	15	0	0	0	38	15	13
2002–2003	6	22	56	0	0	0	17	0	18
2003–2004	0	29	43	0	0	0	29	0	7
2004–2005	7	18	29	0	0	4	21	21	28
2005–2006	0	30	20	0	0	0	10	40	10
2006–2007	0	57	14	0	0	0	14	14	7
2007–2008	0	30	20	0	0	0	30	20	10
2008–2009	0	53	21	0	0	0	13	13	15
2009–2010	0	28	28	0	0	0	44	0	18

Table 4. Unit 20E black bear harvest (% harvest) by transport method, regulatory years 1999–2000 through 2009–2010.

Regulatory year	Transport method (%)									*n*
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Walking	Unknown	
1999–2000	0 (0)	0 (0)	5 (45)	2 (18)	0 (0)	0 (0)	3 (27)	1 (9)	0 (0)	11
2000–2001	0 (0)	0 (0)	3 (21)	6 (43)	0 (0)	0 (0)	4 (29)	1 (7)	0 (0)	14
2001–2002	0 (0)	0 (0)	2 (15)	5 (38)	0 (0)	0 (0)	5 (38)	1 (8)	0 (0)	13
2002–2003	1 (6)	0 (0)	0 (0)	5 (28)	0 (0)	0 (0)	10 (56)	2 (11)	0 (0)	18
2003–2004	0 (0)	0 (0)	1 (14)	5 (71)	0 (0)	0 (0)	1 (14)	0 (0)	0 (0)	7
2004–2005	0 (0)	0 (0)	5 (18)	11 (39)	0 (0)	0 (0)	9 (32)	3 (11)	0 (0)	28
2005–2006	0 (0)	0 (0)	0 (0)	6 (60)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	10
2006–2007	0 (0)	0 (0)	0 (0)	4 (57)	0 (0)	0 (0)	2 (29)	1 (14)	0 (0)	7
2007–2008	0 (0)	0 (0)	2 (20)	4 (40)	0 (0)	0 (0)	3 (30)	1 (10)	0 (0)	10
2008–2009	2 (13)	0 (0)	3 (20)	4 (27)	0 (0)	1 (7)	5 (33)	0 (0)	0 (0)	15
2009–2010	0 (0)	0 (0)	4 (22)	8 (44)	0 (0)	0 0	5 (28)	1 (6)	0 (0)	18

WILDLIFE

MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 P.O. Box 115526
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BLACK BEAR MANAGEMENT REPORT

From: 1 July 2007
To: 30 June 2010[1]

LOCATION

GAME MANAGEMENT UNITS: 25D (17,569 mi^2).

GEOGRAPHIC DESCRIPTION: Upper Yukon River Valley

BACKGROUND

Black bears are abundant and distributed throughout the Yukon Flats and surrounding uplands in Unit 25D. Similar to other areas in Alaska, black bears in Unit 25D have been identified as a significant predator of moose calves (Bertram and Vivion 2002*a*). Early calf mortality from bear predation limits annual recruitment of moose and population growth, particularly when moose densities are low (Gasaway et al. 1992). Increasing the harvest of black bears for the purpose of improving calf moose survival has been an objective of residents of Unit 25D for generations and is an objective of the Yukon Flats Cooperative Moose Management Plan (ADF&G 2002).

Harvest has remained low in Unit 25D despite year-round seasons, a 3-bear bag limit, and good access via the Yukon River and its tributaries. The Yukon Flats state Fish and Game Advisory Committee, federal Eastern Interior Regional Advisory Committee, local tribal governments, and other stakeholder groups have continued to develop and support state and federal regulatory changes to the black bear seasons, bag limits, and methods of take to encourage the harvest of black bears in the Unit.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Unit 25D

- Provide for maximum opportunity to harvest black bears.

METHODS

POPULATION STATUS AND TREND

Prior to 2010, black bears were assumed to be abundant in Unit 25D based on observations from hunters and by ADF&G staff. In addition, as part of black bear demographic study in a portion of Unit 25D, The U.S. Fish and Wildlife Service (Bertram and Vivion 2002*b*) documented high capture rates in Aldridge foot snares at baited sites.

[1] At the discretion of the reporting biologist, this unit report may contain data collected outside the report period.

In May 2010, ADF&G, in cooperation with the U.S. Fish and Wildlife Service, conducted an aerial mark–resight survey to estimate black bear abundance (Miller et al. 1987, 1997) in a 530 mi^2 area centered on the village of Beaver. During summer 2009 and spring 2010 (prior to the survey), we captured and radiocollared 48 black bears within the study area for use as a marked sample in the population. During the survey we searched the entire study area for black bears for 5 consecutive days using fixed-wing aircraft. Observations of all bears observed and the proportion of marked bears observed was recorded. Abundance will be determined using an extension of the nonlinear logit-normal mixed effects estimator (McClintock et al. 2009) modified to account for immigration and emigration (White and Brunham 1999).

HARVEST

Black bear harvest data for Unit 25D are limited because the sealing of black bears harvested in Unit 25D was required only for hides and skulls removed from Alaska or sold. Data collected from these bears included harvest date and location, sex of the bear, skull size, transportation mode, number of days hunted, salvage of meat, and bait use. Estimates of black bear harvest by local residents in RY08 were obtained from household surveys conducted by the Division of Subsistence. Locals did not commonly hunt over bait, but bait station registrations by nonlocals indicates interest from those hunters.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size and Composition

Results of the 2010 aerial mark-recapture abundance estimate are incomplete and will be available during the next report period. However, preliminary results indicate that densities were likely greater than 40 independent black bears/100 mi^2 (155 independent black bears/1,000 km^2). Age and sex composition of the black bear population is unknown. However, because this population is lightly hunted the sex ratio of males to females is probably near 1:1.

MORTALITY

Harvest

Season and Bag Limit. The black bear hunting season in Unit 25D was open year-round with a bag limit of 3 bears for resident and nonresident hunters. A spring and fall baiting season occurred during April 15–June 30 and August 1–September 25 by registration permit. The use of artificial light by resident hunters to take bears was permitted during customary and traditional use activities at den sites from October 15–April 30. A community harvest permit was available to accommodate local hunting practices and create group bag limits rather than individual bag limits.

Alaska Board of Game Actions and Emergency Orders. No emergency orders were issued during RY07–RY09 and no Board of Game (board) actions during RY07–RY08 pertained to Unit 25D black bear.

Regulations passed by the board effective in RY09 allow resident hunters to use artificial light during 15 October–30 April to take black bears from dens in many units, including Unit 25D, and require salvage of meat of bears harvested using this method of take. The prohibition on taking sows and cubs was also lifted for this method of take. The Department of Law clarified

that taking bears from dens had not been previously prohibited, just the taking of sows with cubs and cubs, and the use of artificial light.

Board actions effective in RY10 made significant changes to black bear regulations in Unit 25D. In January 2010, the board classified black bears as furbearers as well as big game. Although the board did not open black bear trapping season anywhere in the state, this furbearer classification and other regulatory changes allow hunters to legally sell untanned black bear hides and parts, except gall bladders. The board subsequently amended these regulations so that sale of black bear meat remained illegal. At the March 2010 meeting, the board passed a regulation that allows registered guide-outfitters to register up to 10 bait stations at a time and to either personally or through licensed class-A assistant or assistant guides, establish and maintain up to 10 bait stations simultaneously, provided that a signed guide-client agreement is used for each hunter that uses any of the sites. This change will be effective beginning in the spring 2011 (RY10) baiting season.

The board passed regulations effective in spring 2011 (RY10) at the October 2010 meeting to authorize resident hunters in Unit 25D to harvest black bear cubs and sows accompanied by cubs during March 1–November 30, regardless of the type of legal method of take used. In addition, the dates for the taking of cubs and sows accompanied by cubs under customary and traditional use activities at den sites were changed from October 15–April 30 to December 1–last day in February.

Harvest by Hunters. During RY07–RY09 the number of black bears harvested in Unit 25D was unknown, but harvest was likely less than 70 black bears annually. A household survey of communities in Unit 25D in RY08 by ADF&G Division of Subsistence estimated annual harvest at 26 black bears per year (ADF&G files, Fairbanks). Additional harvest from nonlocal resident hunters and guided nonresident hunters likely ranged 20–40 black bears annually. The number of registered bait stations ranged 4–14 annually, mostly by nonlocal residents. The number of bears harvested from those bait stations is unknown. During RY07–RY09 a total of 22 black bears were sealed by resident hunters (n = 17) who may have wished to export hides to tanneries outside of Alaska or who were nonresidents (n = 5) and wished to take their hides home. Seventy-seven percent of the black bears sealed were male.

Harvest Chronology. Although unknown, most harvest by local residents of Unit 25D likely occurred opportunistically during spring through fall. Harvest by nonlocal resident and nonresident hunters primarily occurred in spring over bait, and to a lesser extent, opportunistically in the fall during the moose hunting season.

Transport Methods. Boats were the primary access method used by local and nonlocal hunters. A small proportion of hunters used aircraft and ATVs.

CONCLUSIONS AND RECOMMENDATIONS

Black bears are abundant throughout Unit 25D and harvest has been low. Increasing moose calf survival by reducing the black bear population through increased harvest continues to be an objective of local residents and is promoted in the Yukon Flats Cooperative Moose Management Plan (ADF&G 2002). We met our goal to provide maximum opportunity to harvest black bears. Seasons remained open year-round and bag limits were liberal. Although numerous regulatory

changes were made to provide additional opportunity to harvest black bears, annual harvest continued to be low. Additional changes to liberalize methods of take and bag limits have been proposed by advisory groups, including black bear trapping and changing the bag limit from 3 bears per year to no limit. However, similar regulations have been implemented in other Interior Alaska units with limited success at increasing black bear harvest (Peirce 2008). As part of an intensive management plan in eastern Unit 19D, same-day-airborne shooting and trapping (bucket-style foot snare methods) by predation control permit resulted in a small increase in harvest. Peirce (2008) attributes limited success of the program to high expense and effort required by trappers, saturation of bear meat in the community and low prices paid for bear hides.

Additional opportunity to harvest black bears in Unit 25D through more liberal methods of take and increased bag limits is biologically supported. However, based on history from Unit 19D and high bear densities in Unit 25D, a significant increase in harvest or a reduction in bear abundance is not likely to occur.

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The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge and attitudes for responsible hunting.