

SPECIES
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
907-465-4190 PO Box 115526
Juneau, AK 99811-5526

CHAPTER 4: BROWN BEAR MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014

LOCATION

GAME MANAGEMENT UNIT: 5 (5,800 mi²)
GEOGRAPHIC DESCRIPTION: Cape Fairweather to Icy Bay, Eastern Gulf Coast

BACKGROUND

Brown bears probably first occurred on the Yakutat and Malaspina Forelands following glacial retreat 300 to 500 years ago. Like many other wildlife species, brown bears gained access to the Pacific Ocean's eastern gulf coast by moving from the Alaska/Canada Interior via the Alsek/Tatshenshini corridor.

Unit 5 is composed of 2 game management subunits, 5A and 5B, that are separated by Yakutat Bay. Although they are geographically similar and adjacent to one another, they face vastly different pressure from bear hunters. Unit 5A is fairly accessible with 40–50 miles of gravel roads plus many all-terrain-vehicle (ATV) trails. There are numerous airstrips that provide access for small aircraft, and many of these have rental cabins associated with them that hunters use as base camps. There are also several navigable rivers that can be accessed via the road system that provide hunters with additional access. Unit 5B has just a few miles of gravel logging roads near Icy Bay, and has a limited ATV trail system in this same area. There are only a couple of airstrips and a single rental cabin for hunters to use as a base. Most of the lands in 5A are within the Tongass National Forest or Glacier Bay National Preserve and are open to hunting. In contrast, much of Unit 5B is off limits to hunting because it is designated national park land. Also, areas of the subunit are owned by Native corporations and are open to hunting only with a permit from the corporation.

Since 1961, when brown bears were first sealed in Alaska, approximately 1,400 sport-killed bears have been sealed from Unit 5. During that period, non-hunter harvest mortality (vehicle collisions, the dispatching of nuisance animals, defense of life and property (DLP) situations, and bears found dead from unknown causes) have accounted for 130 bears. Approximately 83% of the hunter harvested bears were from Unit 5A, and 17% from Unit 5B. Although hunters from around Alaska hunt bears in Unit 5, the majority of the harvest is by guided nonresident hunters. Nonresident hunters took 64% of brown bears harvested during the period 1961–2013. Under federal subsistence regulations, bears do not have to be sealed if they are not removed from Unit 5.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

- Maintain a male-to-female harvest ratio of at least 3:2 and an average age of harvested males of at least 6.5 years.

METHODS

Alaska Department and Fish and Game (ADF&G) and Alaska Wildlife Trooper staff gathered data about harvested bears during sealing. State game regulations require brown bear harvests to be reported within 10 days of the kill, and hides and skulls to be sealed within 30 days of harvest. Skulls are measured and a premolar tooth is extracted for age determination. Additional information is collected from hunters, such as harvest date and location, transportation method, guide information, and number of days of hunting effort. Hunters also provide anecdotal information from their observations in the field.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population information is not yet available for Unit 5 brown bears. However, beginning in the summer of 2008, biologists began radio collaring brown bears in both units 5A and 5B to begin efforts to understand the ecology of bears in this area, as well as lay the groundwork for conducting population estimates. At present, management biologists estimate the brown bear populations for units 5A and 5B are 522 bears and 108 bears respectively. These numbers were calculated using density estimates of .5 bears/mi.² and .2 bears/mi.² for units 5A and 5B respectively (Miller 1993). Managers derived these density estimates by comparing the habitat quality available to brown bears in Unit 5 to what is available to bears on Admiralty and Chichagof islands where mark-recapture studies were used to estimate brown bear density.

Data gathered from sealing certificates, incidental observations, and hunter interviews indicate no notable changes in the Unit 5 brown bear populations in recent years. The highest annual mortality on record occurred in 2003 when 45 brown bears were killed. Eleven of these bears were killed under defense of life and property (DLP) regulations. We were concerned that this high mortality might develop into a pattern as we saw a high brown bear mortality again in RY08 (total brown bear mortality of 41). However, total mortality has decreased to 25 bears in RY12 and 17 in RY13 which is more consistent with harvest levels in the 1960s. For purposes of this report, a regulatory year runs from 1 July through 30 June; e.g. RY 2010 = 1 July 2010–30 June 2011.

MORTALITY

Harvest

Season and Bag Limit

1 bear every 4
regulatory years

Resident and Nonresident Hunters

1 September–31 May

Board of Game Actions and Emergency Orders. The Board of Game took no actions and we issued no emergency orders associated with Unit 5 brown bears during this report period.

Hunter Harvest. During RY12, 12 male and 7 female bears were reported taken (Table 1). Males accounted for 63% of the harvest, which barely achieves our management objective of at least 60% male bears. The mean male skull size of 22.7 inches is down approximately an inch from the previous 8-years' (RY04–RY11) average of 23.5 inches. The average male age (6.5 years) is younger than the mean age of bears in the previous report period (7.9 years) and 1.2 years younger than the previous 8-years' mean age of 7.7 years. The number of days required to take a brown bear in RY12 increased by 1 day from the previous 8-years' average of 4.5 days/bear.

In RY13, Unit 5 hunters killed 9 male and 5 female brown bears (Table 1). Males represented 64% of the total harvest, which is the same as the previous regulatory year and again slightly higher than our management objective. Mean male skull size was 24.1 inches, and the mean age was 4.5 years. The average male skull size was higher than the previous 8-years' (RY04–RY11) mean skull size of 23.6 (Table 1); but the mean male age is substantially lower than the previous 8-years' (RY04–RY11) mean age of 7.7 years (Table 1) and is 2 years below our management objective. In RY13, hunters took 4.3 days to harvest a bear, down slightly from the previous 8-years' (RY04–RY011) mean number of days to harvest a brown bear.

Harvest Chronology. Since 2004, the majority of Unit 5 brown bears have been taken during the fall (61%). During the report period 25 bears (76%) were harvested during the fall season, and 8 bears (24%) were taken in spring (Table 2). The months of September and May produce the highest harvest for their respective seasons; between RY04 and RY13, 96 bears were taken in September and 76 were taken in May.

Hunter Residency and Success. Nonresident hunters took 53% and 86% of the browns bears in RY12 and RY13, respectively (Table 3). Nonresident hunters have historically taken the majority of bears in Unit 5; however, the percentage of Alaska residents from outside Unit 5 taking bears increased substantially during RY07–RY09 but appears to have tapered off during the previous and current reporting period. Alaska residents from outside Unit 5 took 24% of the brown bears during the report period; the same group took 25% of the bears in the previous report period. Unit 5 residents have taken 0-5 bears annually over the last 10 years, and took 3 and no brown bears, respectively, during RY12 and RY13.

Transport Methods. Transportation types used in successful brown bear hunts during this report period included airplanes, off road vehicles, boats, and highway vehicles in descending order (Table 4).

Other Mortality

This category includes DLP kills, illegal kills, road kills, and nuisance bear kills. During RY12, 4 bears were killed under DLP regulations, and 1 bear was taken illegally (Table 5). Two of the DLP bears were killed in urban settings; and 2 were killed on the Situk River of Unit 5A. In RY13, 2 bears were killed under DLP regulations. One bear was killed in an urban setting, and 1 was on the Situk River. One additional bear mortality was discovered but cause of death was not established. One of these bears was a marked bear from the ADF&G research project near town and cause of death was unknown.

The Yakutat landfill has been the focus of concern for non-hunting mortalities for decades. The landfill attracts several brown bears during the course of a year, and once food conditioned and near the community, many of these animals are eventually killed in non-hunting situations.

Douglas Area ADF&G staff continues to work with the community of Yakutat and the Alaska Department of Environmental Conservation (DEC) to remedy landfill problems and curtail brown bear attractants. Fish waste is no longer being deposited at the landfill, and for a time, garbage was buried under soil at the end of the day. Additional insight into the behavior of bears utilizing the landfill has been gathered through a radio-collaring project initiated in RY09 at the Yakutat landfill. A total of 19 bears (11 males and 8 females) have been collared at the landfill (ADFG, unpublished data). Preliminary data suggest bears are not dependent on the landfill and move extensively on the Yakutat forelands in search of food. In addition, bears collared at the landfill have a high mortality rate; at least 63% of the bears collared at the landfill have died. Ongoing research should continue to provide insight into local bear population dynamics and may be valuable in education and outreach efforts to reduce unnecessary bear mortality.

HABITAT

Assessment and Enhancement

We did not conduct any habitat assessment studies or enhancement projects during this report period. The department continues to collect preliminary habitat selection data from GPS equipped radio-collared bears, and anecdotal information gathered during capture operations and telemetry surveys in both Unit 5A and 5B. These data suggest bears in Unit 5A are well distributed across the Yakutat forelands throughout the year. Bears show preference for specific habitats (stream, rivers, beaches, etc.) seasonally, and appear to be active through most of the year. Completion of brown bear habitat research on the 5B side determined through a resource selection function (RSF) model that bears selected habitats at low elevations, near herbaceous habitats that included both coniferous and deciduous forests, shrub and unvegetated habitats and water (Crupi et al. 2014).

CONCLUSIONS AND RECOMMENDATIONS

We met male to female harvest ratio management objectives in both RY12 and RY13. The average age for hunter-harvested male bears was 6.5 years in RY12, and 4.5 years in RY13; the male bear age management objective of 6.5 years was not met in RY13. Even with a slight decrease in male ages, long term monitoring of these metrics suggests the productivity of this population is not being compromised by the present level of mortality. The mean age of male bears decreased substantially in RY13 and managers will monitor the age data very closely to look for patterns or trends that might give insight into the age structure of the population. No changes to current Unit 5 brown bear hunting seasons or bag limits are recommended at this time.

Current hunter harvest in Unit 5 appears to be sustainable based on skull size and age indices. These indices help us anticipate the harvest year to year, as does the limit the USFS places on nonresident hunts in the Tongass National Forest. We remain concerned about non-hunter harvest, specifically about DLP kills associated with human food and refuse which is substantial some years. Bears using the Yakutat landfill and feeding on trash in residential areas are killed each year. Convincing Yakutat residents that brown bears are a valuable wildlife resource, rather

than pests remains a challenge. Current brown bear research efforts in the Yakutat area include radio-collaring bears in the Yakutat landfill. Some of those bears likely spend time in and around Yakutat neighborhoods. Data from GPS equipped radio collars shows that bears frequenting the landfill and residential garbage cans also spend much of their time and foraging activity in areas outside of town. This information suggests that by eliminating human food attractants through community education, bears will likely spend less time in town, and some may stop their urban forays entirely. In addition to using radio collar data for community education, department biologists will attempt to encourage the City of Yakutat to construct an electric fence around the landfill. Plans to install a fence in the past were stalled due to equipment malfunctions and future plans have not been implemented. We will continue to emphasize to local residents the importance of properly managing bear attractants.

Mainland brown bear research is currently underway in both Units 5A (Flynn et. al. 2012) and wrapping up in 5B (Crupi et al. 2014). Data from GPS equipped radio-collars will provide habitat selection and movement pattern data. A DNA based brown bear population estimate is not planned, but GPS equipped radio-collar data can be used to formulate a plan to collect brown bear population data utilizing DNA mark-recapture techniques. Brown bear hunting is an important economic resource in the Yakutat area. The department has been asked to consider increasing guideline harvest levels (GHL), and increasing the Unit 5A bag limit to 2 bears every 4 years. Based on brown bear density estimates by Miller (1993), the mortality rates between RY04 and RY13 have ranged between 3% and 7% of all bears. Factors contributing to brown bear mortality are cyclic and whereas 3% mortality maybe conservative, 7% may be above sustainable levels. Without additional population information managers are unable to support any increase in harvest as suggested above. Miller (1993) estimated brown bear density at 0.5 bears/mi² in Unit 5A, and at 0.2 bears/mi² in Unit 5B and managers believed the population was stable or decreasing at the time. The Unit 5A density estimate is the highest on mainland Southeast Alaska. The current population is unknown but appears to be stable.

LITERATURE CITED

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PREPARED BY:

Stephanie Sell
Wildlife Biologist III

APPROVED BY:

Tom Schumacher
Management Coordinator

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Table 1. Unit 5 brown bear harvest, age, skull sizes, and effort, RY04 through RY13.

Regulatory Year	Harvest				Mean age		Mean skull size		Avg days/kill	
	M	F	Unk	Total	M	F	M	F	M	F
2004	24	9	0	33	6.1	8.9	22.8	22.0	5.3	5.3
2005	25	8	0	33	8.6	5.3	24.0	21.9	5.0	4.0
2006	20	8	0	28	7.7	7.4	24.0	21.0	5.6	3.6
2007	18	8	0	26	6.5	4.3	22.9	20.7	3.5	4.5
2008	24	14	0	38	7.8	6.8	23.7	20.8	4.5	4.7
2009	19	8	0	27	10.2	7.1	23.7	20.1	4.1	4.6
2010	12	2	0	14	9.0	3.0	23.9	20.9	4.2	3.5
2011	14	11	0	25	6.0	7.0	23.0	21.3	3.5	5.5
2012	12	7	0	19	6.5	8.9	22.7	21.0	5.8	5.0
2013	9	5	0	14	4.5	4.0	24.1	20.9	4.3	4.2
Mean 2004-2013	17.7	8.0	0	25.7	7.6	6.8	23.5	21.0	4.6	4.7

Table 2. Unit 5 brown bear harvest chronology, RY04 through RY13.

Regulatory year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
2004	0	0	12	1	0	0	0	0	0	6	14	0	33
2005	0	0	11	6	1	0	0	0	0	5	10	0	33
2006	0	0	10	6	0	0	0	0	0	1	11	0	28
2007	0	0	10	8	1	0	0	0	0	1	6	0	26
2008	0	0	9	10	7	0	0	0	0	3	9	0	38
2009	0	0	10	7	1	0	0	0	0	2	7	0	27
2010	0	0	5	3	0	0	0	0	0	1	5	0	14
2011	0	0	13	2	0	0	0	0	0	2	8	0	25
2012	0	0	12	4	0	0	0	0	0	0	3	0	19
2013	0	0	4	5	0	0	0	0	0	2	3	0	14

Table 3. Unit 5 successful brown bear hunter residency, RY04 through RY13.

Regulatory year	Unit resident	(%)	Other AK resident	(%)	Nonresident	(%)
2004						
Fall 2004	0	(0)	5	(38)	8	(62)
Spring 2005	0	(0)	0	(0)	20	(100)
Total	0	(0)	5	(15)	28	(85)
2005						
Fall 2005	2	(11)	2	(11)	14	(78)
Spring 2006	0	(0)	1	(7)	14	(93)
Total	2	(6)	3	(9)	28	(85)
2006						
Fall 2006	0	(0)	0	(0)	16	(100)
Spring 2007	0	(0)	1	(8)	11	(92)
Total	0	(0)	1	(4)	27	(96)
2007						
Fall 2007	3	(16)	5	(26)	11	(58)
Spring 2008	2	(28)	2	(29)	3	(43)
Total	5	(19)	7	(27)	14	(54)
2008						
Fall 2008	4	(15)	6	(23)	16	(62)
Spring 2009	0	(0)	3	(25)	9	(75)
Total	4	(10)	9	(24)	25	(66)
2009						
Fall 2009	1	(6)	6	(33)	11	(61)
Spring 2010	1	(12)	4	(44)	4	(44)
Total	2	(7)	10	(37)	15	(56)
2010						
Fall 2010	0	(0)	3	(37)	5	(63)
Spring 2011	1	(17)	2	(33)	3	(50)
Total	1	(7)	5	(36)	8	(57)
2011						
Fall 2011	0	(0)	2	(13)	13	(87)
Spring 2012	2	(20)	3	(30)	5	(50)
Total	2	(8)	5	(20)	18	(72)
2012						
Fall 2012	2	(12)	6	(38)	8	(50)
Spring 2013	1	(33)	0	(0)	2	(67)
Total	3	(16)	6	(31)	10	(53)
2013						
Fall 2013	0	(0)	1	(11)	8	(89)
Spring 2014	0	(0)	1	(20)	4	(80)
Total	0	(0)	2	(14)	12	(86)

Table 4. Unit 5 transport modes used by successful brown bear hunters, RY04 through RY13.

Regulatory year	Plane	(%)	Boat	(%)	ORV/4- wheeler	(%)	Highway vehicle	(%)	Foot	(%)	Other	(%)
2004	4	(12)	12	(37)	15	(45)	2	(6)	0	(0)	0	(0)
2005	7	(21)	12	(37)	13	(39)	0	(0)	1	(3)	0	(0)
2006	5	(18)	12	(43)	10	(36)	1	(3)	0	(0)	0	(0)
2007	10	(38)	6	(24)	10	(38)	0	(0)	0	(0)	0	(0)
2008	11	(29)	9	(24)	14	(37)	4	(10)	0	(0)	0	(0)
2009	19	(70)	7	(26)	0	(0)	1	(4)	0	(0)	0	(0)
2010	4	(29)	5	(36)	3	(21)	2	(14)	0	(0)	0	(0)
2011	12	(48)	3	(12)	9	(36)	1	(4)	0	(0)	0	(0)
2012	8	(42)	3	(16)	4	(21)	4	(21)	0	(0)	0	(0)
2013	3	(21)	3	(21)	6	(43)	2	(15)	0	(0)	0	(0)

Table 5. Unit 5 brown bear mortality by type, RY04 through RY13.

Regulatory year	DLP	Unknown/ Natural	Vehicle collision	Illegal kill	Other	Hunter kill	Total mortality
2004	1	0	0	1	0	33	35
2005	2	0	0	0	0	33	35
2006	9	0	0	0	0	28	37
2007	0	1	0	0	0	26	27
2008	3	0	0	0	0	38	41
2009	1	0	0	0	0	27	28
2010	5	0	0	1	0	14	20
2011	4	2	0	0	0	25	31
2012	4	1	0	1	0	19	25
2013	2	1	0	0	0	14	17
<u>Mean</u>							
2004–2013	3.1	0.5	0	.3	0	25.7	29.6