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CHAPTER 8: BROWN BEAR MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014

GAME MANAGEMENT UNIT: 9 (33,638 mi^2)

GEOGRAPHIC DESCRIPTION: Alaska Peninsula

BACKGROUND

The land and waters of the Alaska Peninsula support high densities of large brown bears. The Alaska Board of Game (BOG) and the Alaska Department of Fish and Game (department or ADF&G) have placed a high priority on maintaining a quality hunting experience. Because of reasonably easy aircraft access and the high quality of bear trophies in the unit, an active guiding industry developed during the 1960s and harvest began to increase significantly.

High harvest rates and illegal hunting activities in the 1960s and early 1970s were suspected to have caused a unitwide decline in the brown bear population by the mid-1970s. Poor salmon escapements in most drainages during regulatory years (RY) 1972 (regulatory year begins 1 July and ends 30 June, e.g., RY72 = 1 July 1972 through 30 June 1973) and RY73 coincided with the high harvests and exacerbated the situation. Harvest statistics and the high percentage of marked bears killed in the Black Lake area supported the conclusion that a harvest reduction was needed. Emergency hunting closures were declared for all of Unit 9 in spring 1974 and for the central portion of the Alaska Peninsula in spring 1975. Law enforcement presence was also increased to curtail illegal activities. At the spring 1975 BOG meeting, the present system of alternating seasons (open in the fall of odd-numbered years and the spring of even-numbered years) was adopted to keep harvests within the quota of 150 bears per year for the area south of the Naknek River.

The more conservative management system reduced harvests substantially from RY76 to RY81 and allowed the bear population to recover. As a result, BOG abandoned the harvest quota in 1984 but retained alternating seasons. The department and BOG established more flexible objectives to manage the increasing population of brown bears (Sellers and McNay 1984): 1) maintain maximum opportunity to hunt bears by avoiding a drawing permit system; 2) continue both spring and fall hunts, managing them to maintain a desirable sex ratio in the bear population and allow hunters to select either season; 3) maintain hunting seasons long enough so that severe weather would be unlikely to eliminate the entire season; and 4) handle chronic bear threats to villages through better sanitation, public education, and through special permit hunts when other measures prove ineffective. A near-village registration brown bear hunt was implemented in RY11 to provide increased opportunity for local residents of communities in Units 9 and 10 to manage bears within 3–5 miles of their communities, without the requirement to cede the hide and skull to the state. The hunt has no closed season and a bag limit of 1 bear

every regulatory year. There were 204 total permits issued in this first year of the hunt with 20 bears harvested near or in villages in Unit 9.

Aerial surveys were used periodically to obtain information about the brown bear population. Stream surveys were used to detect major changes in population composition of bears concentrated along salmon streams and assess the effects of harvest rates on the bear population. Erickson and Siniff (1963) identified limitations of these surveys, recommending procedures to standardize the technique. ADF&G incorporated these recommendations into stream surveys conducted near Black Lake and in the Katmai National Preserve, and the U.S. Fish and Wildlife Service conducted similar surveys in the Izembek and Unimak areas. Line transect surveys (Quang and Becker 1997) have also been used to estimate brown and black bear densities in Subunits 9A, 9B, 9C, and 9D. Brown bear densities vary within Unit 9; densities are lower in western Subunit 9B and the Bristol Bay coastal plain. The most recent density estimates from line transect surveys flown between 1999 and 2005 in Subunits 9A, northern 9B, 9C, and 9D suggest that the overall bear density in Unit 9 is approximately 1 bear/3.5 mi^2 (110 bears/1,000 km^2) with an extrapolated population size of 6,000–6,800 bears occupying lands open to bear hunting (Riley 2011). However, the estimate is biased low by a lack of current information for Subunit 9E and the southern portion of Subunit 9B (1991 densities assumed). The McNeil River State Game Sanctuary and national parks within Unit 9 are thought to contain 2,000–2,500 additional brown bears. No recent work has been conducted as biologists focused on declining caribou herds in Units 9 and 10.

The composition of bears observed during surveys from 1999 to 2007 suggests a productive population exposed to low to moderate harvest rates (Riley 2011). The mean annual harvest of mature males, i.e., ≥8 years old, during RY75–RY81 a period of population recovery, was 51 (range = 41–58). This number increased to 121 bears (range = 71–135) during RY83–RY91 and to 149 bears during RY93–RY01 (range = 113–180). The average harvest of mature males dropped slightly to 139 bears (range = 65–165) during RY03–RY11. The proportion of the harvest comprised of mature males also increased from 14% during RY75–RY81 to 20% during RY83–RY91, and to 25% during RY93–RY01. It dropped slightly to 22% during RY03–RY11.

The Alaska Peninsula is a premier destination for brown bear viewing and hunting, attracting visitors from around the world. However public sentiment with regard to the bear population is diverse and management goals are frequently challenged. While some people advocate for more protection of the bear population, others want to reduce the bear population to enhance ungulate populations and reduce bear-human conflicts.

BOG has been asked frequently to increase the brown bear harvest, especially in Subunits 9C and 9E, to benefit moose and caribou survival. This is not a new sentiment among local residents, but it has taken on added weight with the decline of the Northern Alaska Peninsula caribou herd. Caribou calf mortality studies on the Northern Alaska Peninsula identified brown bears as one of the major predators of calves during their first 2 weeks of life; however, a more significant portion of the annual mortality of calves occurred when the calves were older and should have been less vulnerable to bear predation. Caribou calf mortality studies on the Southern Alaska Peninsula caribou herd in Subunit 9D found that brown bear predation played a minor role in the herd's overall calf survival. Thus, an indiscriminant reduction of the brown bear population would realize little reduction in caribou mortality. Throughout Unit 9, brown

bear predation on moose calves is likely high. However, the brown bear population would have to be significantly reduced to achieve higher rates of moose calf survival. This level of reduction is not possible with simple liberalizations of seasons and bag limits, and the required actions would not be supported by much of the public. Similarly targeting brown bears in any portion of Unit 9 for reduction to benefit caribou or moose populations is not practical due to the large number of bears that would need to be removed from this high density area.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

- Maintain a high bear density with a sex and age structure that will sustain a harvest composed of 60% males, with 50 males 8 years or older taken during the combined fall and spring seasons.

METHODS

Unit 9 brown bear management relies heavily on interpretation of harvest statistics (i.e., total harvest, sex ratio, age composition, skull size measurements, etc.) to monitor bear populations.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Density of bears frequently varies with seasonal distribution of food resources across their range. Under the current management strategy any variation in the brown bear population is expected to be caused by changes in density-dependent limitations to population growth.

Population Size

Density estimates from line transect surveys flown a decade ago suggest that the overall bear density in Unit 9 is approximately 1 bear/3.5 mi^2 (110 bears/1,000 km^2). The brown bear population is probably stable and at high density throughout Subunit 9A, and most of Subunits 9B and 9D. Harvest by hunters (Table 1) and observations by guides, local residents, and biologists indicated a decline in bear density in Subunits 9C, 9E, and southern 9B during the reporting period, which may be related to the severe winter and spring of 2011–2012, low berry production the next summer, and possibly poor denning conditions during the next winter. We do not believe that human-induced harvest is significant enough to cause a reduction in population. Salmon escapement was normal to high in the area of decline (Steve Morstad, Fishery Biologist, ADF&G, King Salmon, personal communication). By June 2014, cub production appeared to be normal. Bear density appeared to be at a normal high level in northern and southern portions of the Alaska Peninsula.

MORTALITY

Harvest

Season and Bag Limit. During RY12, hunts remained closed except for hunts open to residents only, including RB525 (near village, open year-round) and RB502 (subsistence, 1 September–31 May in Subunit 9B, 1 November–31 December in a portion of Subunit 9E) with a bag limit of 1 bear per regulatory year. During RY13 all hunts were open. The fall hunt in Subunits 9A, 9C, 9D, and 9E was RB368, with a season of 1–21 October. The spring hunt (RB370) season in these

subunits was 10–31 May. In Subunit 9B, the fall hunt RB369 season was 20 September–21 October and the spring RB370 season was 10–31 May. The bag limit for each of these hunts was 1 bear every 4 regulatory years.

Alaska Board of Game Action and Emergency Orders. Based on recommendations from the Unit 9 Moose Working Group, in RY12 BOG converted all Unit 9 general season hunts to registration permit hunts, established a new near-village resident registration hunt (RB525) within a specific distance of communities on the Alaska Peninsula, and eliminated the tag and tag fee requirements in these hunts. The spring season RB370 was lengthened from 10–25 May to 10–31 May beginning in RY13. Improved reporting by hunters was the most important reason that BOG and the department established registration hunts in Unit 9.

Harvest by Hunters. During RY12—with most hunts closed—hunters took 16 brown bears (Table 1). During RY13 all hunts were open, and the reported harvest was 501 bears. This was an abrupt decline of over 100 bears compared to the previous fully-open seasons in RY09 and RY11 (Table 1). This was the lowest harvest for a reporting period in 20 years and suggests a decline in adult bears.

Male bears were 73% of the harvest during the fully-open season of RY13 and 20% during the mostly-closed season of RY12. This was a typical pattern of harvest which exceeded the management objective of 60% males in the harvest. Age and skull size of males and females were also typical (Table 2). Mean skull size of boars taken in Subunits 9D and 9E were similar to those taken on Kodiak Island (Van Daele and Crye 2013). There were 178 male bears harvested over age 8, which was over 3 times the management objective of 50. These data indicate that management for trophy-size brown bears has been effective in Unit 9.

During RY12 and RY13, 23 bears were killed by people who were not hunting (Table 1). Because illegal and nonhunting kills, including defense of life or property kills, are often not reported, nonhunting mortality is estimated at more than 50 bears.

Permit Hunts. Registration permit hunts RB368 (fall season except Subunit 9B) and RB370 (spring season) were the most popular hunts in Unit 9 based on the number of permits issued (Table 3). Permits issued in RB525 (near-village hunt) declined each year but harvest may have stabilized at 17. Registration hunts provided a means to monitor hunter success, which was 56% overall in Unit 9 (Table 3). There was some discrepancy between bear sealing data and permit harvest information, possibly because of failure to seal bears by a few hunters, delays in processing bear sealing certificates, or following an investigation, the moving of a harvested bear from the legal to illegal category.

Hunter Residency. During the RY12 mostly-closed season, nonresidents harvested 6% and residents harvested 94% (Table 4), whereas in RY13 nonresidents took 82% and residents harvested 17%. This harvest pattern was typical the Unit 9 odd-regulatory year hunt schedule.

Harvest Chronology. The predominant time period for bear harvest occurred during the first week of each hunting season. This pattern of harvest has been consistent through time despite regulatory changes that adjusted season opening dates. Since RB252 is open year-round, some harvest occurred in July and August (Table 5) during the reporting period.

Transportation Methods. During the reporting period, 72.3% of the successful hunters in the general hunts used aircraft, and boats were the next most common method of transportation (Table 6).

Other Mortality

Nonhunting and illegal kills, including defense of life or property, are rarely reported. Unsubstantiated reports from villages, remote lodges, canneries, and commercial fishermen suggest that many other unreported bears are killed or wounded. The total unreported kill is estimated at 50–100 bears per year.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Bear-human conflicts continue to be the most serious and intractable problem in Unit 9, as in many other parts of the state. In particular, while smaller villages such as Egegik and Cold Bay incinerate their trash and have relatively few dump-related bear problems, the Bristol Bay Borough landfill servicing Naknek and King Salmon continues to attract and feed numerous bears contrary to state Department of Environmental Conservation permit conditions and ADF&G regulations. Given the pervasive nature of this problem, it will take a concerted effort to make headway. Another continuing issue involves perceived conflicts between bear viewing and hunting. This issue may become more important as the bear viewing industry grows.

CONCLUSIONS AND RECOMMENDATIONS

Overall bear density in Unit 9 is approximately 1 bear/3.5 mi^2 (110 bears/1,000 km^2) with an extrapolated population size of 6,000–6,800 bears occupying lands open to bear hunting. The McNeil River Sanctuary and national parks within Unit 9 are thought to contain 2,000–2,500 additional brown bears. No recent population work has been conducted in Unit 9.

Unit 9 bear harvest during the reporting period was the lowest in 20 years. We suspect that a decline in adult bears occurred in Subunits 9B, 9C, and 9E. However, we cannot evaluate the extent of the decline. We therefore recommend operational planning for bears and resuming aerial surveys along traditional survey streams. These were last conducted a decade ago. One year of reduced harvest does not warrant any regulatory changes to seasons or bag limits.

The management objective for proportion and age of male bears in the harvest was exceeded, and high mean age and skull size of males indicated effective management for high trophy value.

We will pursue working with the Bristol Bay Borough and the Alaska Department of Environmental Conservation to resolve or mitigate the Naknek landfill situation.

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Table 1. Unit 9 brown bear harvest, Southwest Alaska, regulatory years[a] 2009–2013.

Regulatory	Hunter kill						Nonhunting kill[b]			Total reported kill					
year	M	(%)	F	(%)	Unk	Total	M	F	Unk	M	(%)	F	(%)	Unk	Total
2009															
Fall 2009	223	(62)	138	(38)	0	361	12	6	4	235	(62)	144	(38)	4	383
Spring 2010	190	(82)	42	(18)	1	233	0	1	0	190	(82)	43	(18)	1	234
Total[c]	413	(70)	180	(30)	1	594	12	7	4	425	(69)	187	(31)	5	617
2010															
Fall 2010	3	(33)	6	(67)	0	9	6	6	1	9	(43)	12	(57)	1	22
Spring 2011	0	(0)	0	(0)	0	0	0	1	1	0	(0)	1	(100)	1	2
Total[c]	3	(33)	6	(67)	0	9	6	7	2	9	(41)	13	(59)	2	24
2011															
Fall 2011	250	(68)	116	(32)	10	376	6	5	7	256	(68)	121	(32)	17	394
Spring 2012	192	(80)	47	(19)	2	241	1	0	0	193	(80)	47	(20)	2	242
Total[c]	442	(73)	163	(27)	12	617	7	5	7	449	(73)	168	(27)	19	636
2012															
Fall 2012	3	(20)	12	(80)	1	16	10	0	0	13	(52)	12	(48)	1	26
Spring 2013	0		0		0	0	1	0	0	1	(100)	0	(0)	0	1
Total[c]	3	(20)	12	(80)	1	16	11	0	0	14	(54)	12	(46)	1	27
2013															
Fall 2013	165	(64)	93	(36)	1	259	8	2	1	173	(65)	95	(35)	2	270
Spring 2014	189	(83)	39	(17)	0	228	1	0	0	190	(83)	39	(17)	0	229
Total[c]	364	(73)	136	(27)	1	501	9	2	1	373	(73)	138	(27)	2	513

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.
[b] Includes defense of life or property kills, research mortalities, and other known human-caused, accidental mortality.
[c] Includes sport harvest of known sex but unknown season.

Table 2. Unit 9 brown bear mean skull size (inches) and age, Southwest Alaska, regulatory years[a] 2009–2013.

	Regulatory	Male				Female			
Subunit	year	Skull size	*n*	Age	*n*	Skull size	*n*	Age	*n*
9A	2009	23.6	38	8.4	38	20.8	10	6.9	8
	2010		0		0		0		0
	2011	24.9	31	10.5	30	21.4	13	8.4	10
	2012		0		0		0		0
	2013	25.0	34	10.0	34	21.8	63	8.3	12
9B	2009	23.3	41	9.0	40	20.8	3	6.6	24
	2010	18.1	1	2.0	1	21.7	22	11.7	3
	2011	24.0	48	9.2	46	21.7	1	7.8	23
	2012		0			20.3	13	7.0	1
	2013	23.3	37	8.2	36	21.1	34	5.4	11
9C	2009	23.8	10	10.8	10	22.9	4	10.0	7
	2010	23.6	2	5.0	2	23.2	10	14.3	4
	2011	24.6	21	9.8	20	22.1	4	6.4	7
	2012	26.6	2	17.5	2	22.4	9	10.2	5
	2013	24.4	12	8.5	11	21.5	111	8.1	9
9D	2009	25.0	114	7.7	112	22.2	31	8.2	35
	2010		0		0		0		0
	2011	25.4	99	9.2	93	22.1	5	7.6	26
	2012	20.3	1	2.0	1	22.4	39	8.3	3
	2013	25.5	93	9.5	85	22.6	241	8.6	39
9E	2009	24.8	206	8.4	206	22.2	84	7.5	102
	2010		0		0		0		0
	2011	25.1	232	8.8	224	22.3	1	8.4	80
	2012		0			23.8	56	19.0	1
	2013	25.4	177	10.0	163	22.5	1	8.9	51
Unit 9	2009	24.1	409	8.8	406	21.8	132	7.8	176
total	2010	20.9	3	3.5	3	22.4	32	13.0	7
	2011	24.8	431	9.5	413	21.9	24	7.7	146
	2012	23.4	3	9.8	3	22.2	117	11.1	10
	2013	24.7	353	9.2	329	21.9	450	7.8	122

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

Table 3. Unit 9 brown bear harvest by permit hunt, Southwest Alaska, regulatory years[a] 2009–2013.

Hunt no./ Area[b]	Regulatory year	Permits issued	Percent did not hunt	Percent unsuccessful hunters	Percent successful hunters	Males	(%)	Females	(%)	Total reported harvest
RB361[c]	2009	32	31	86	14	2	(67)	1	(33)	3
	2010	37	35	74	22	2	(40)	3	(60)	5
RB362[c]	2009	16	25	38	63	4	(80)	1	(20)	5
RB368	2011	512	17	28	71	203	(67)	97	(32)	300
	2013	439	15	45	54	126	(63)	75	(37)	201
RB369	2011	114	25	35	65	39	(71)	16	(29)	55
	2013	103	31	35	62	31	(70)	13	(30)	44
RB370	2011	451	14	37	61	190	(81)	45	(19)	235
	2013	445	12	38	61	194	(82)	43	(18)	237
RB371[c]	2009	20	45	91	9	1	(100)	0	(0)	1
	2010	25	44	100	0	0	(0)	0	(0)	0
RB372	2009	10	20	50	50	4	(100)	0	(0)	4
	2011	10	10	100	0	0	(0)	0	(0)	0
RB500[c]	2009	4	25	100	0	0	(0)	0	(0)	0
	2010	5	40	33	67	2	(100)	0	(0)	2
	2013	1	100	0	0	0	(0)	0	(0)	0
RB502	2011	2	50	100	0	0	(0)	0	(0)	0
	2012	4	50	50	50	0	(0)	1	(100)	1
RB525	2011	204	58	69	27	15	(68)	7	(32)	22
	2012	161	66	59	29	7	(41)	10	(59)	17
	2013	144	63	63	27	10	(59)	7	(41)	17
Totals for all permit hunts	2009	82	32	75	25	11	(85)	2	(15)	13
	2010	67	39	78	18	4	(57)	3	(43)	7
	2011	1,179	23	37	63	408	(73)	149	(27)	557
	2012	165	66	58	30	7	(39)	11	(61)	18
	2013	1,132	22	42	56	361	(72)	138	(28)	499

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

[b] RB361 included Subunit 9C (Naknek River drainage fall); RB362 was Subunit 9D (near Cold Bay); RB368 is Subunits 9A, C, D, and E (fall season odd years); RB369 is Subunit 9B (fall odd years); RB370 is Unit 9 (spring even years); RB371 was Subunit 9C (Naknek River drainage spring); RB500 was Subunits 9B and 9E (pacific side); RB502 (residents only) replaced RB500; and RB525 is Unit 9, resident only near village hunt.

[c] Hunt replaced by other registration hunt.

Table 4. Unit 9 brown bear successful hunter residency including all permit and general season hunts, Southwest Alaska, regulatory years[a] 2009–2013.

Subunit	Regulatory year	Local resident[b]	(%)	Nonlocal resident	(%)	Nonresident	(%)	Unk	Successful hunters
9A	2009	0	(0)	10	(20)	39	(80)	0	49
	2010	0	(0)	0	(0)	0	(0)	0	0
	2011	0	(0)	2	(5)	40	(95)	0	42
	2012	0	(0)	0	(0)	0	(0)	0	0
	2013	0	(0)	3	(6)	44	(94)	0	47
9B	2009	9	(14)	9	(14)	48	(73)	0	66
	2010	4	(100)	0	(0)	0	(0)	0	4
	2011	9	(13)	7	(10)	55	(77)	0	71
	2012	1	(100)	0	(0)	0	(0)	0	1
	2013	6	(11)	4	(8)	43	(81)	0	53
9C	2009	3	(18)	10	(59)	4	(24)	0	17
	2010	4	(57)	1	(14)	2	(29)	0	7
	2011	7	(20)	17	(49)	11	(31)	0	35
	2012	6	(86)	1	(14)	0	(0)	0	7
	2013	3	(13)	9	(39)	11	(48)	0	23
9D	2009	1	(1)	28	(18)	124	(81)	0	153
	2010	0	(0)	0	(0)	0	(0)	0	0
	2011	6	(5)	20	(15)	107	(80)	0	133
	2012	3	(50)	3	(50)	0	(0)	0	6
	2013	3	(2)	34	(24)	105	(74)	0	142
9E	2009	5	(2)	32	(10)	274	(88)	0	311
	2010	0	(0)	0	(0)	0	(0)	0	0
	2011	6	(2)	48	(14)	280	(84)	0	334
	2012	0	(0)	1	(50)	1	(50)	0	2
	2013	0	(0)	27	(11)	215	(88)	2	244
9Z	2009	0	(0)	0	(0)	1	(100)	0	1
	2011	0	(0)	1	(100)	0	(0)	0	1
Unit 9 totals	2009	18	(3)	89	(15)	490	(82)	0	597
	2010	8	(73)	1	(9)	2	(18)	0	11
	2011	28	(5)	95	(15)	493	(80)	0	616
	2012	10	(63)	5	(31)	1	(6)	0	16
	2013	12	(2)	77	(15)	418	(82)	2	509

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.
[b] Residents of Unit 9.

Table 5. Unit 9 brown bear harvest chronology percent by harvest period (includes sport harvest only), Southwest Alaska, regulatory years[a] 2009–2013.

Regulatory year	Harvest periods (%)								Total harvest
	Jul	Aug	Sep	Oct	Nov	May	Jun	Unknown	
2009	0	0	7	54	0	39	0	1	597
2010	0	0	45	45	0	0	0	9	11
2011	0	0	7	53	0	39	0	0	616
2012	6	19	6	19	44	0	0	6	16
2013	0	0	8	43	0	45	0	4	509

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.

Table 6. Unit 9 reported brown bear harvest percent by transport method (includes sport harvest only), Southwest Alaska, regulatory years[a] 2009–2013.

Regulatory year	Percent by transport method										
	Airplane	Horse/ Dog team	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Foot	Airboat	Other	*n*
2009	70	0	14	5	0	0	2	4	0	0	597
2010	18	0	45	18	0	0	9	9	0	0	11
2011	73	0	16	3	0	0	1	4	0	0	616
2012	0	0	6	13	0	0	31	19	8	0	16
2013	73	0	17	2	0	0	3	3	0	0	509

[a] Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2009 = 1 July 2009–30 June 2010.