
CHAPTER 15: BROWN BEAR MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014

LOCATION

GAME MANAGEMENT UNIT: 16 (12,255 mi²)

GEOGRAPHIC DESCRIPTION: West side of Cook Inlet

BACKGROUND

Unit 16 is in Southcentral Alaska and is composed of subunits 16A (1,850 mi²) and 16B (10,405 mi²). The brown bear population in Unit 16 was estimated in the 1990s by Griese (1993) at 586–1,156. Line-transect surveys conducted in the northeastern portion of Unit 16 in 2003 and 2004 and a survey conducted in 2007 arrived at similar conclusions (Peltier 2011). Densities vary from low in the northern and eastern portion of the units and become greater in the coastal and foothill areas of Redoubt and Trading Bay. There are no brown bears on Kalgin Island. Due to infrequent surveys, the department has used harvest data to estimate population trends and also has relied on reports by long-time residents to refine estimated trends (Griese 1998). The bear population estimate was also refined by applying information from surveys conducted in Lake Clark National Park and in Unit 13A to areas of similar habitat in Unit 16B.

Brown bear management has adapted to reflect our evolving understanding of harvest sustainability. Brown bears were managed conservatively in Unit 16 from the 1960s into the 1980s with a 1 bear every 4 years bag limit and a fall-only season. Harvests ranged from 17 to 46 bears annually between regulatory year (RY) 1961 (regulatory year begins 1 July and ends 30 June, e.g., RY61 = 1 July 1961–30 June 1962) and RY83. In RY84, harvests increased to 66 bears when the hunting season was lengthened to allow hunting during den emergence in March and April. The bag limit in Unit 16B was liberalized from 1 bear every 4 years to 1 bear every year in RY01 and increased again to 2 bears every year in RY05. The bag limit in Unit 16A was also liberalized from 1 bear every 4 years to 1 bear per year in RY05, but the change did not apply to hunting in Denali State Park. By RY07 the bag limit in Denali State Park had also been increased to 1 bear per year. In addition to season and bag limit changes, the resident brown bear tag fee was dropped in Unit 16B in RY03 and in Unit 16A in RY07. These changes created more interest in brown bear hunting in Unit 16 and a record harvest of 162 bears in RY10. During the last 5 years (RY09–RY13) the combined Units 16A and 16B take averaged 130 bears annually.

An annual sustainable harvest of 55 bears was first estimated by Griese (1993) which included no more than 18 females older than 2 years. Harvests exceeded this level during RY84–RY92. Brown bear numbers, particularly females and young, appeared to increase during the 1990s. Additionally, Griese (1999) reported long-time residents seeing more bears than over the

previous 10–20 years. During 1994 the Alaska Board of Game directed the department to allow the brown bear population in Unit 16 to decline. The board determined moose was the priority species in Unit 16 and a high population of brown bears conflicted with moose population productivity. Griese (1995) modified the brown bear population objective to reflect that priority. It was modified again in 1998, producing management goals and objectives intended to reduce the bear population. Because harvest levels were not reaching objectives and the ratio of bears to moose was greater than desired, the Board of Game adopted a 10 August opening date in RY99 in Unit 16B. The board lengthened the season in Unit 16A by moving the opening date from 1 September to 10 August beginning in RY09.

In 2011 the Board of Game approved changes to increase the take of brown bears in Unit 16 and specifically to reduce the brown bear population in Unit 16B by 60%. First, seasons in Units 16A and 16B were extended to no closed season except within 1 mile of the mouth of Wolverine Creek where the season remained 15 September–31 May. Bag limits in Unit 16A remained at 1 bear every regulatory year while bag limits in Unit 16B (including the Wolverine Creek area) were increased to 2 bears every regulatory year. Second, a brown bear control program was initiated in a 960 mi² portion of southern Unit 16B between the Beluga River and the McArthur Rivers. Under this program, permittees in the Brown Bear Control Area may take any brown bear except cubs of the year or females accompanied by cubs of the year. Participants may establish bait stations, use snares, and take a bear at a bait station the same day they have flown provided they are at least 300 feet from the airplane. These regulations were expedited by the Department of Law and went into effect during the RY10 spring season.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

- Reduce the brown bear population (by 60% in Unit 16B) to minimize the impact of brown bear predation on moose calves while maintaining a sustainable population for consumptive and nonconsumptive uses.

METHODS

Brown bear harvests were monitored by collecting data gathered during the mandatory sealing of skulls and hides of harvested animals. Department personnel or designated sealers measured skulls, determined sex of bears, extracted a premolar tooth for age determination, and recorded date and location of kill, hunter effort, and transportation method. The staff at the Palmer office also collected hair and tissue samples for subsequent analyses. All harvest information was entered into the statewide harvest database in addition to age data provided at a later date. Similar data were collected from sealed bears taken in defense of life or property, taken illegally, or from other nonhunting mortality.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Increased opportunities to harvest brown bears in Unit 16 through predation control and sport hunting has not reduced the population. Reports by staff and the public as well as the results of calf mortality studies in southern Unit 16B indicate a robust bear population. Results of line transect surveys conducted in Unit 16B in 2007 suggested that the density of brown bears in the

northern portion of the unit was in the range of 26.7 bears per 1,000 km² (Peltier 2011). Earl Becker (Biometrician, ADF&G, Anchorage) provided an update to his earlier model and developed a point estimate of brown bear density of 26.3 bears per 1,000 km² for both Unit 16A and the northern and middle portions of Unit 16B, and an estimate of 100 bears per 1,000 km² for Unit 16B south. These densities result in point estimates of 120 brown bears for Unit 16A and 798 bears for Unit 16B which we believe to be current. Further refinements of these estimates are anticipated in the future.

Population Size

The population is currently estimated at between 625 and 1,250 brown bears in Unit 16B and 100–150 brown bears in Unit 16A.

MORTALITY

Harvest

Season and Bag Limit. Brown bear hunting in Units 16A and 16B was open throughout the year; however within 1 mile of Wolverine Creek, in southern Unit 16B, the season was 15 September–31 May. The bag limit in Unit 16A was 1 bear per year, and in Unit 16B it was 2 bears per year. Permittees in the brown bear control program had no bag limit and were restricted only from taking females with cubs of the year or cubs of the year. Snaring of brown bears by permittees was allowed within the Brown Bear Control Area. Residents were not required to have a brown bear tag except in Denali State Park.

Alaska Board of Game Actions and Emergency Orders. During the Board of Game meeting in spring 2013, the board removed the resident tag fee requirement from Denali State Park in Unit 16A, and retained the “no closed season” except within 1 mile of Wolverine Creek. In addition, in all of Unit 16, brown bears were allowed to be taken at black bear bait stations during the open black bear baiting seasons with a bear baiting permit. The same restrictions that apply to black bear baiting applied to brown bear baiting and the edible meat of brown bears taken over bait had to be salvaged.

Harvest by Hunters. The harvest by hunters has been highly variable over the past 10 years (Tables 1 and 2). The 10-year average for both subunits combined was 120 bears and the range varied from 83 to 162. The inclusion of a brown bear control area and the regulation change that allows for taking brown bears over bait has not had a sustained increase in the brown bear harvest in the area. Twenty-nine bears were taken in spring RY10 under predation control permits, followed by 8 bears in RY11, 3 in RY12, and 8 in RY13. Over the past 20 years the total number of females harvested has increased, however the percent of females in the harvest has stayed relatively constant at 35.6%.

Hunter Residency and Success. Nonresident harvest decreased from the previous reporting period. Nonresidents claimed 42% and 49% of the harvest in RY12 and RY13 respectively (Table 3). The percentage of bears taken by local residents remains very small and has been 5% or less over the past decade.

Harvest Chronology. Brown bear seasons were expanded in spring RY10 to no closed season except for a 1 mile buffer around the mouth of Wolverine Creek in Unit 16B. These changes led

to slight shifts in the chronology of the harvest (Table 4). The proportion of bears taken in the spring varies with the spring snowpack and break-up. A spring season characterized by a persistent snowpack that provides overland travel will result in a greater number of bears taken in April and May. This effect also can be observed in the relative percentage of successful hunters using snowmachines (Table 5).

Transport Methods. The majority of successful brown bear hunters reported using airplanes for transportation (Table 5). Often there is a slight increase in snowmobile use which coincides with years with good snow conditions in the spring.

Other Mortality

During the report period there were 2 reports of nonhunting mortality (Tables 1 and 2). We estimated an unreported take of brown bears in Unit 16 that may account for an additional 9% of the total annual take.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

The potential for resource exploration in Unit 16B has resulted in an increase in the number of work crews in remote areas and thus the potential for conflict with brown bears in the area. Attacks have occurred (Peltier 2011) and other incidents of potential conflicts have been reported.

There is also a potential increase for conflict by bear viewing activities, which are on the rise, especially in lower Unit 16B. Griese (1998) noted dangerous interactions between humans and bears caused by sport fishing at Wolverine Creek and currently that activity continues. ADF&G has worked to educate users, and commercial operators specifically, and to develop a multidivisional management strategy to promote safer conditions for anglers and bear viewers (Griese 1999).

CONCLUSIONS AND RECOMMENDATIONS

The emphasis on reducing the number of brown bears in the unit in order to increase moose calf survival does not appear to have had a significant effect on the size of the bear population. The harvest in this decade has been almost twice as high as Griese estimated was sustainable in 1993 with no evidence that harvest strategies have had a significant impact on the brown bear population. Given the high abundance of brown bears and the low calf recruitment, additional steps may be warranted to monitor the population for any decrease in density or a corresponding increase in calf recruitment. The department will continue to closely monitor harvest, particularly age and sex of bears, to avoid reducing the population below objectives.

REFERENCES CITED

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Please cite any information taken from this section, and reference as:

Peltier, T. C. 2015. Unit 16 brown bear. Chapter 15, Pages 15-1 through 15-12 [*In*] P. Harper and L. A. McCarthy, editors. Brown bear management report of survey and inventory activities 1 July 2012–30 June 2014. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2015-1, Juneau.

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Table 1. Unit 16A human-caused brown bear mortality, Southcentral Alaska, regulatory years^a 2004–2013.

Regulatory year	Reported						Total reported kill								
	Hunter kill			Nonhunting kill ^b			Hunter kill			Nonhunting kill ^b					
	M	(%)	F	(%)	Unk	Total	M	F	Unk	M	(%)	F	(%)	Unk	Total
<i>2004</i>															
Fall 2004	3	(75)	1	(25)	0	4	0	0	0	3	(75)	1	(25)	0	4
Spring 2005	6	(86)	1	(14)	0	7	0	0	0	6	(86)	1	(14)	0	7
Total	9	(82)	2	(18)	0	11	0	0	0	9	(82)	2	(18)	0	11
<i>2005</i>															
Fall 2005	4	(40)	6	(60)	0	10	0	0	0	4	(40)	6	(60)	0	10
Spring 2006	1	(50)	1	(50)	0	2	0	0	0	1	(50)	1	(50)	0	2
Total	5	(42)	7	(58)	0	12	0	0	0	5	(42)	7	(58)	0	12
<i>2006</i>															
Fall 2006	5	(56)	4	(44)	0	9	0	0	0	5	(56)	4	(44)	0	9
Spring 2007	4	(40)	6	(60)	0	10	0	0	0	4	(40)	6	(60)	0	10
Total	9	(47)	10	(53)	0	19	0	0	0	9	(47)	10	(53)	0	19
<i>2007</i>															
Fall 2007	5	(71)	2	(29)	0	7	0	0	0	5	(71)	2	(29)	0	7
Spring 2008	4	(67)	2	(33)	0	6	0	0	0	4	(67)	2	(33)	0	6
Total	9	(69)	4	(31)	0	13	0	0	0	9	(69)	4	(31)	0	13
<i>2008</i>															
Fall 2008	1	(33)	2	(67)	0	3	0	0	0	1	(33)	2	(67)	0	3
Spring 2009	13	(76)	4	(24)	0	17	0	0	0	13	(76)	4	(24)	0	17
Total	14	(70)	6	(30)	0	20	0	0	0	14	(70)	6	(30)	0	20
<i>2009</i>															
Fall 2009	3	(43)	4	(57)	0	7	1	0	0	4	(50)	4	(50)	0	8
Spring 2010	8	(80)	2	(20)	0	10	0	0	0	8	(80)	2	(20)	0	10
Total	11	(65)	6	(35)	0	17	1	0	0	12	(67)	6	(33)	0	18

Regulatory year	Reported										Total reported kill					
	Hunter kill						Nonhunting kill ^b									
	M	(%)	F	(%)	Unk	Total	M	F	Unk							
<i>2010</i>																
Fall 2010	4	(29)	10	(71)	0	14	0	0	1		4	(29)	10	(71)	1	15
Spring 2011	0	(0)	2	(100)	0	2	0	0	0		0	(0)	2	(100)	0	2
Total	4	(25)	12	(75)	0	16	0	0	1		4	(25)	12	(75)	1	17
<i>2011</i>																
Fall 2011	4	(44)	5	(56)	0	9	0	0	0		4	(44)	5	(56)	0	9
Spring 2012	8	(80)	2	(20)	0	10	0	0	0		8	(80)	2	(20)	0	10
Total	12	(63)	7	(37)	0	19	0	0	0		12	(63)	7	(37)	0	19
<i>2012</i>																
Fall 2012	2	(33)	4	(67)	0	6	0	0	0		2	(33)	4	(67)	0	6
Spring 2013	3	(43)	4	(56)	0	7	0	0	0		3	(43)	4	(56)	0	7
Total	5	(38)	8	(62)	0	13	0	0	0		5	(38)	8	(62)	0	13
<i>2013</i>																
Fall 2013	4	(44)	5	(56)	0	9	0	0	0		4	(44)	5	(56)	0	9
Spring 2014	16	(70)	7	(30)	0	23	0	0	0		16	(70)	7	(30)	0	23
Total	20	(63)	12	(37)	0	32	0	0	0		20	(63)	12	(37)	0	32

^a Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2004 = 1 July 2004–30 June 2005.

^b Includes defense of life or property kills, illegal kills, agency kills, other known human-caused accidental mortality.

Table 2. Unit 16B human-caused brown bear mortality, Southcentral Alaska, regulatory years^a 2004–2013.

Regulatory year	Reported										Total reported kill					
	Hunter kill ^b					Nonhunting kill ^c					M	(%)	F	(%)	Unk	Total
M	(%)	F	(%)	Unk	Total	M	F	Unk								
<i>2004</i>																
Fall 2004	32	(73)	12	(27)	0	44	1	1	0	33	(72)	13	(28)	0	46	
Spring 2005	56	(81)	13	(19)	1	70	0	1	0	56	(80)	14	(20)	1	71	
Total	88	(78)	25	(22)	1	114	1	2	0	89	(77)	27	(23)	1	117	
<i>2005</i>																
Fall 2005	37	(60)	25	(40)	1	63	0	0	0	37	(60)	25	(40)	1	63	
Spring 2006	37	(74)	13	(26)	1	51	0	0	0	37	(74)	13	(26)	1	51	
Total	74	(66)	38	(34)	2	114	0	0	0	74	(66)	38	(34)	2	114	
<i>2006</i>																
Fall 2006	35	(62)	21	(38)	0	56	0	0	0	35	(62)	21	(38)	0	56	
Spring 2007	36	(88)	5	(12)	0	41	0	0	0	36	(88)	5	(12)	0	41	
Total	71	(73)	26	(27)	0	97	0	0	0	71	(73)	26	(27)	0	97	
<i>2007</i>																
Fall 2007	38	(59)	26	(41)	0	64	0	0	0	38	(59)	26	(41)	0	64	
Spring 2008	29	(81)	7	(19)	0	36	0	0	0	29	(81)	7	(19)	0	36	
Total	67	(67)	33	(33)	0	100	0	0	0	67	(67)	33	(33)	0	100	
<i>2008</i>																
Fall 2008	39	(47)	44	(53)	0	83	1	0	0	40	(48)	44	(52)	0	84	
Spring 2009	27	(90)	3	(10)	0	30	2	1	0	29	(88)	4	(12)	0	33	
Total	66	(58)	47	(42)	0	113	3	1	0	69	(59)	48	(41)	0	117	
<i>2009</i>																
Fall 2009	17	(53)	15	(47)	0	32	0	1	1	17	(52)	16	(48)	1	34	
Spring 2010	25	(74)	9	(26)	0	34	0	1	0	25	(71)	10	(29)	0	35	
Total	42	(64)	24	(36)	0	66	0	2	1	42	(62)	26	(38)	1	69	

Regulatory year	Reported										Total reported kill					
	Hunter kill ^b						Nonhunting kill ^c									
	M	(%)	F	(%)	Unk	Total	M	F	Unk	M	(%)	F	(%)	Unk	Total	
<i>2010</i>																
Fall 2010	59	(63)	34	(37)	0	93	1	1	0	60	(63)	35	(37)	0	95	
Spring 2011	36	(68)	17	(32)	0	53	0	0	0	36	(68)	17	(32)	0	53	
Total	95	(67)	51	(33)	0	146	1	1	0	96	(65)	52	(35)	0	148	
<i>2011</i>																
Fall 2011	33	(51)	32	(49)	0	65	1	0	0	34	(52)	32	(48)	0	66	
Spring 2012	25	(61)	16	(39)	0	41	3	0	0	28	(70)	16	(30)	0	44	
Total	58	(55)	48	(45)	0	106	4	0	0	62	(56)	48	(44)	0	110	
<i>2012</i>																
Fall 2012	22	(61)	14	(39)	0	36	0	2	0	22	(58)	16	(42)	0	38	
Spring 2013	36	(80)	9	(20)	0	45	0	0	0	36	(80)	9	(20)	0	45	
Total	58	(72)	23	(28)	0	81	0	2	0	58	(70)	25	(30)	0	83	
<i>2013</i>																
Fall 2013	22	(48)	24	(52)	0	46	0	0	0	22	(48)	24	(52)	0	46	
Spring 2014	29	(67)	14	(33)	0	43	0	0	0	29	(67)	14	(33)	0	43	
Total	51	(57)	38	(43)	0	89	0	0	0	51	(57)	38	(43)	0	89	

^a Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2004 = 1 July 2004–30 June 2005.

^b Includes bears taken under the predation control program.

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

Table 3. Residency of successful brown bear hunters in Unit 16, Southcentral Alaska, regulatory years^a 2004–2013.

Regulatory year	Local ^b resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Total ^{c,d} successful hunters
2004	5	(4)	60	(48)	60	(48)	125
2005	3	(2)	78	(62)	45	(36)	126
2006	2	(2)	67	(58)	47	(40)	116
2007	5	(5)	58	(51)	50	(44)	113
2008	3	(2)	67	(51)	62	(47)	132
2009	3	(4)	43	(52)	37	(44)	83
2010	2	(1)	102	(62)	60	(37)	164
2011	1	(1)	64	(54)	54	(45)	119
2012	3	(3)	53	(56)	38	(40)	94
2013	0	(0)	58	(51)	55	(49)	113

^a Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2004 = 1 July 2004–30 June 2005.

^b Unit 16 residents.

^c Includes unknown residency.

^d Does not include predation control.

Table 4. Unit 16 brown bear harvest chronology percent by month, Southcentral Alaska, regulatory years^a 2004–2013^b.

Regulatory year	Harvest chronology percent by month									<i>n</i>
	Aug	Sep	Oct	Nov	Mar	Apr	May	Jun	Jul	
2004	12	23	3	1	1	43	17	0	0	125
2005	14	34	10	0	1	19	22	0	0	126
2006	17	33	5	1	0	22	22	0	0	116
2007	24	32	5	3	0	22	14	0	0	113
2008	32	27	7	0	1	15	18	0	0	131
2009	18	22	6	1	0	26	27	0	0	82
2010	27	31	8	0	0	12	6	16	0	164
2011	19	29	5	0	0	29	4	7	7	119
2012	15	19	2	0	1	33	11	9	10	94
2013	15	28	2	1	0	9	12	30	3	113

^a Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2004 = 1 July 2004–30 June 2005.

^b Does not include predation control.

Table 5. Unit 16 brown bear harvest percent by transport method, Southcentral Alaska, regulatory years^a 2004–2013^b.

Regulatory year	Harvest percent by transport method									<i>n</i>
	Airplane	Horse	Boat	ATV/ORV ^c	Snowmachine	Highway vehicle	Foot	Other/ Unknown		
2004	62	3	8	4	15	0	8	0	128	
2005	63	5	13	6	5	2	6	0	126	
2006	61	3	15	9	6	2	3	1	116	
2007	60	7	11	9	10	3	0	0	113	
2008	66	4	11	8	6	0	5	0	133	
2009	52	5	16	13	9	4	1	0	76	
2010	56	4	13	17	3	2	4	0	156	
2011	53	7	10	6	18	3	2	2	119	
2012	42	9	12	7	21	4	5	0	94	
2013	48	5	16	18	4	4	1	3	113	

^a Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2004 = 1 July 2004–30 June 2005.

^b Does not include predation control.

^c ATV = all-terrain vehicle, ORV = off-road vehicle.