
CHAPTER 20: BROWN BEAR MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014¹

LOCATION

GAME MANAGEMENT UNIT: 20D (5,637 mi²)

GEOGRAPHIC DESCRIPTION: Central Tanana Valley near Delta Junction

BACKGROUND

Brown bears, also referred to as grizzly bears in Interior Alaska, are distributed throughout Unit 20D; however, the Tanana River separates brown bear habitat into 2 distinct types within the unit. Unit 20D south of the Tanana River is adjacent and similar to habitat described by Reynolds (1990) for the foothills and mountains of the northcentral Alaska Range. Brown bear habitat in Unit 20D north of the Tanana River is adjacent and similar to habitat described in Unit 20E by Gasaway et al. (1990) for the hills north of the Tanana River. Hunter access to southern Unit 20D is excellent, while hunter access is more difficult in northern Unit 20D.

Until regulatory year (RY) 1991 (RY = 1 July through 30 June; e.g., RY91 = 1 July 1991–30 June 1992), Unit 20D brown bear hunting regulations consisted of a bag limit of 1 bear every 4 regulatory years, a \$25 resident tag fee, and a hunting season from 1 September to 31 May. During RY92–RY94 the regulations were liberalized in northern Unit 20D to 1 bear per year, and the season was lengthened to 10 August–30 June to provide greater opportunity for hunters in this area of low bear harvest.

In RY95 regulations were further liberalized to meet intensive management objectives, and a Unit 20D harvest objective of 5–15 bears per year was established. The portions of Unit 20D north of the Tanana River and south of the Tanana River but east of the Gerstle River were liberalized to a bag limit of 1 bear per year with no resident tag fee and a hunting season of 10 August–30 June. In RY03, hunting regulations were further liberalized when the portion of Unit 20D west of the Gerstle River was increased to a bag limit of 1 bear per year, the resident tag fee was eliminated and the hunting season was expanded to 10 August–30 June, coinciding with the rest of the unit.

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

MANAGEMENT DIRECTION

MANAGEMENT GOAL

- As directed by the Alaska Board of Game, manage brown bears to reduce the effects of predation on ungulate species in portions of Unit 20D.

MANAGEMENT OBJECTIVES

- Manage for an annual human-caused mortality of 5–15 bears/year.
- Manage for a 3-year mean, annual, human-caused mortality composed of at least 55% males.

METHODS

Successful hunters were required to have brown bears sealed at Alaska Department of Fish and Game (ADF&G) offices or by other approved sealing officers. Data collected from each brown bear during the sealing process included sex, skull length and width, transportation used by the hunter, number of days hunted, date and location of kill, and hunter name and address. A vestigial premolar tooth was extracted from each bear skull for use in age determination. Bears that died from nonhunting mortality sources, such as those killed in defense of life or property, were also sealed. Data were summarized by regulatory year.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

DuBois (1995) calculated brown bear population estimates for Unit 20D. The 1993 Unit 20D estimate was 185–220 total bears, with 143–167 bears ≥ 2 -years old. For the total unit population estimate, DuBois calculated separate estimates for Unit 20D north and south of the Tanana River as described below. These estimates were used during RY12–RY13 even though harvest rates have increased since 1993, and evidence suggests that brown bears largely vacate recent large burns (C. Gardner, ADF&G Fairbanks, unpublished data, 2007) such as occurred in 2003–2004. Anecdotal observations and harvest trend data suggest that brown bears remain common to abundant in the unit, and we do not have better data on which to base an estimate at this time.

Southern Unit 20D. The population estimate for southern Unit 20D was 51–58 brown bears ≥ 2 -years old and a total of 76–86 bears. This estimate was based on density estimates of 25.4–29.0 bears ≥ 2 -years old/1,000 mi², plus an additional 14% for cubs and yearlings, developed by Reynolds (1993) for similar habitat in the Alaska Range in Unit 20A.

Anecdotal information for southern Unit 20D from local residents, hunters, trappers, and pilots indicates that bears are common in most of the area. Residents commonly report bears near the town of Delta Junction and in the Delta Agricultural Project. Dall sheep, moose, and caribou hunters, and trappers commonly report seeing bears in the foothills of the Alaska Range.

Northern Unit 20D. The population estimate for northern Unit 20D was 92–109 brown bears ≥ 2 -years old and 109–134 total bears. This estimate was based on Boertje et al.'s (1987) radiotelemetry study of brown bear predation in Unit 20E, adjacent to northern Unit 20D. Boertje

et al. subtracted fractions of home ranges outside a 4,000 km² study area to calculate minimum and probable maximum brown bear density estimates for Unit 20E in early May. Densities varied from 26 to 32 bears \geq 2-years old/1,000 mi² in unburned habitat in May, plus 23% for cubs and yearlings. C. Gardner (ADF&G Fairbanks, unpublished data, 2007) used a contemporary DNA-based hair mark–recapture design to confirm a similar density in unburned areas of Unit 20E but strikingly lower densities in burned habitat.

Population Composition

Brown bear population composition is unknown for Unit 20D. Because cubs or females accompanied by cubs are illegal to harvest, the sex ratio of the harvest was not used to estimate population composition.

Distribution and Movements

Brown bears are distributed throughout Unit 20D; however, no specific information on patterns of brown bear distribution or movements is available.

MORTALITY

Season and Bag Limit. During RY12–RY13 the Unit 20D brown bear bag limit was 1 bear/year, with no resident tag fee required, and the hunting season was 10 August–30 June. Cubs (<2-years of age) and females accompanied by cubs were illegal to harvest.

Alaska Board of Game Actions and Emergency Orders. The Board of Game reauthorized brown bear tag fee exemptions for resident hunters in all Interior and eastern North Slope units, including Unit 20D, during each year of this reporting period.

Harvest by Hunters and Other Mortality.

RY12 — Hunters killed 12 bears (Table 1), which met the harvest objective. Seven bears were killed in Unit 20D south of the Tanana River, and 5 bears were killed north of the Tanana River (Table 1). The total reported mortality of 12 bears was an estimated 6% of the unitwide brown bear population and 8% of bears \geq 2-years old. We estimated that 1 bear was killed each year and not reported. Adding this estimated mortality to known mortality results in total estimated mortality of 13 bears (Table 2) or <10% of the estimated total population for the unit. The 3-year (RY10–RY12) average mortality was 68% males which met the management objective of at least 55%.

RY13 — Hunters killed 8 bears (Table 1), which met the harvest objective. Hunters killed 7 bears in southern Unit 20D, and 1 bear was killed north of the Tanana River. The total reported mortality of 8 bears was an estimated 4% of the unitwide brown bear population and 5% of the estimated bears \geq 2-years old. We estimated that 1 bear was killed each year and not reported. Adding this estimated mortality to reported mortality results in estimated total mortality of 9 bears (Table 2). The 3-year (RY11–RY13) average mortality was 38% males, which is below the management objective.

Hunter Residency and Success. Most brown bears harvested in Unit 20D continued to be killed by Alaska residents. During RY12–RY13 local residents killed 50% of bears, nonlocal residents killed 35%, and nonresidents killed 15% (Table 3).

Harvest Chronology. During RY12–RY13 most of the brown bears taken in Unit 20D were killed in the fall (Table 4).

Transport Methods. During RY12–RY13 most successful hunters used airplanes, horses, boats, highway vehicles, off-road vehicles, and 3- or 4-wheelers to access hunting areas (Table 5).

CONCLUSIONS AND RECOMMENDATIONS

The Unit 20D brown bear population, particularly west of the Gerstle River, should be monitored closely to assess long-term effects of liberal hunting regulations, road-accessibility, and human habitation. I again recommend a DNA-based hair mark-recapture study to estimate the current population. During the reporting period, the Delta Fish and Game Advisory Committee (Delta AC) made informal and formal inquiries to the department about harvestable surplus of brown bear populations. The Delta AC stated they support brown bear harvest but wanted to ensure the department has science-based information about brown bear population dynamics to provide for use by the Delta AC in determining their stance on Board of Game proposals that would liberalize brown harvest. I recommend we work to provide the Delta AC with the information they seek.

The harvest objective of 5–15 bears per year was met during RY12–RY13. The objective to harvest predominantly male bears was met in RY12, with a 3-year (RY10–RY12) mean, annual human-caused mortality of 68% male bears. Male bear harvest was below objective in RY13, with a 3-year (RY11–RY13) mean, annual human-caused mortality of 38%.

Human-caused mortality for female brown bears during RY13 was 100%, and the 5-year average is 45%. The 5-year average equals the management objective of no more than 45% human-caused mortality in female bears, and the 3-year average (62%) significantly exceeds the female mortality objective. Harvest should be monitored closely during the next reporting period. However, anecdotal observations and harvest trend data suggest the brown bear population is stable in Unit 20D, and no changes to the hunting season dates and bag limits are recommended at this time.

I recommend we continue to provide information to the public about bear behavior and safety. Agency educational materials and productions will be made available to the public at the Delta Area Office. Outreach and education can contribute to minimizing human-bear conflicts.

REFERENCES CITED

Boertje, R. D., W. C. Gasaway, D. V. Grangaard, D. G. Kelleyhouse, and R. O. Stephenson. 1987. Factors limiting moose population growth in Subunit 20E. Alaska Department of Fish and Game, Division of Game, Research Progress Report 1 July 1985–30 June 1986, Federal Aid in Wildlife Restoration Study 1.37, Juneau.

DuBois, S. D. 1995. Unit 20D brown bear. Pages 213–220 [In] M. V. Hicks, editor. Brown bear management report of survey and inventory activities 1 July 1992–30 June 1994. Alaska Department of Fish and Game, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Study 4.0, Juneau.

Gasaway, W. C., R. D. Boertje, D. V. Grangaard, D. G. Kelleyhouse, R. O. Stephenson, and D. G. Larsen. 1990. Factors limiting moose population growth in Subunit 20E. Alaska Department of Fish and Game, Division of Wildlife Conservation, Research Final Report 1 July 1983–30 June 1989, Federal Aid in Wildlife Restoration Study 1.37, Juneau.

Reynolds III, H. V. 1990. Population dynamics of a hunted grizzly bear population in the northcentral Alaska Range. Alaska Department of Fish and Game, Division of Wildlife Conservation, Research Progress Report 1 July 1988–30 June 1989, Federal Aid in Wildlife Restoration Study 4.19, Juneau.

Reynolds III, H. V. 1993. Effects of harvest on grizzly bear population dynamics in the northcentral Alaska Range. Alaska Department of Fish and Game, Division of Wildlife Conservation, Research Progress Report 1 July 1992–30 June 1993, Federal Aid in Wildlife Restoration Study 4.25, Juneau.

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

Bruning, D. L. 2015. Unit 20D brown bear. Chapter 20, Pages 20-1 through 20-9 [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.

Table 1. Unit 20D brown bear harvest/kill location, average kill per year, and percent male mortality^a, regulatory years^b 2007–2013.

Regulatory year	Southern Unit 20D								Northern Unit 20D		Total Unit 20D		Total bears M+F
	West of Gerstle River		East of Gerstle River		Unk location		Total						
	M	F	M	F	M	F	M	F	M	F	M	F	
2007	1	1	1	1	0	0	2	2	1	1	3	3	6
2008	5	4	4	1	1	1	10	6	1	1	11	7	18
2009	0	0	1	1	0	0	1	1	1	0	2	1	3
2010	4	0	4	0	0	0	8	0	2	0	10	0	10
2011	1	0	1	3	0	0	2	3	2	2	4	5	9
2012	0	0	3	4	0	0	3	4	4	1	7	5	12
2013	0	2	0	5	0	0	0	7	0	1	0	8	8
Total kill	11	7	14	15	1	1	26	23	11	6	37	29	66
Kill/Year	Avg 3		Avg 4		Avg <1		Avg 7		Avg 2		Avg 9		
% Male	61		48		50		53		65		56		

^a Includes nonhunting mortality.

^b Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2007 = 1 July 2007–30 June 2008).

Table 2. Unit 20D brown bear mortality^a, regulatory years^b 2007–2013.

Regulatory year	Reported							Estimated kill		Total reported and estimated kill			
	Hunter kill			Total	Nonhunting kill ^a			Unreported	Illegal	M	F	Unk	Total
	M	F	Unk		M	F	Unk						
<i>2007</i>													
Fall 2007	2	2	0	4	0	0	0	1	0	2	2	1	5
Spring 2008	1	1	0	2	0	0	0	0	0	1	1	0	2
Total	3	3	0	6	0	0	0	1	0	3	3	1	7
<i>2008</i>													
Fall 2008	10	3	0	13	0	0	0	1	0	10	3	1	14
Spring 2009	1	4	0	5	0	0	0	0	0	1	4	0	5
Total	11	7	0	18	0	0	0	1	0	11	7	1	19
<i>2009</i>													
Fall 2009	2	1	0	3	0	0	0	1	0	2	1	1	4
Spring 2010	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	1	0	3	0	0	0	1	0	2	1	1	4
<i>2010</i>													
Fall 2010	5	0	0	5	0	0	0	1	0	5	0	1	6
Spring 2011	5	0	0	5	0	0	0	0	0	5	0	0	5
Total	10	0	0	10	0	0	0	1	0	10	0	1	11
<i>2011</i>													
Fall 2011	2	3	0	5	0	0	0	1	0	2	3	1	6
Spring 2012	2	2	0	4	0	0	0	0	0	2	2	0	4
Total	4	5	0	9	0	0	0	1	0	4	5	1	10
<i>2012</i>													
Fall 2012	6	4	0	10	0	0	0	1	0	6	4	1	11
Spring 2013	1	1	0	2	0	0	0	0	0	1	1	0	2
Total	7	5	0	12	0	0	0	1	0	7	5	1	13
<i>2013</i>													
Fall 2013	0	6	0	6	0	0	0	1	0	0	6	1	7
Spring 2014	0	2	0	2	0	0	0	0	0	0	2	0	2
Total	0	8	0	8	0	0	0	1	0	0	8	1	9

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

^b Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2007 = 1 July 2007–30 June 2008).

Table 3. Residency of successful Unit 20D brown bear hunters (includes legal and illegal harvest; excludes defense of life or property kills), regulatory years^a 2007–2013.

Regulatory year	Local ^b Resident	Nonlocal resident	Nonresident	Unk	Total successful hunters
2007	3	3	0	0	6
2008	8	10	0	0	18
2009	1	1	1	0	3
2010	3	7	0	0	10
2011	1	7	1	0	9
2012	5	5	2	0	12
2013	5	2	1	0	8

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2007 = 1 July 2007–30 June 2008).

^b Residents of Unit 20D.

Table 4. Chronology of Unit 20D brown bear harvest and nonhunting mortality by month, regulatory years^a 2007–2013.

Regulatory year	Chronology of harvest and nonhunting mortality by month								
	Aug	Sep	Oct	Nov	Apr	May	Jun	Other	<i>n</i>
2007	1	3	0	0	0	0	2	0	6
2008	5	7	1	0	0	3	2	0	18
2009	0	3	0	0	0	0	0	0	3
2010	2	3	0	0	0	3	2	0	10
2011	1	4	0	0	0	1	3	0	9
2012	4	6	0	0	0	0	2	0	12
2013	2	4	0	0	0	1	1	0	8

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2007 = 1 July 2007–30 June 2008).

Table 5. Unit 20D percent of brown bear harvest (includes legal and illegal harvest; excludes defense of life or property) by transport method, regulatory years^a 2007–2013.

Regulatory year	Percent brown bear harvest by transport method										<i>n</i>
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Foot	Other	Unk	
2007	0	17	0	67	0	0	0	17	0	0	6
2008	6	6	17	22	0	0	0	50	0	0	18
2009	33	33	0	0	0	0	0	33	0	0	3
2010	0	0	10	50	0	0	10	30	0	0	10
2011	0	0	45	0	0	0	33	22	0	0	9
2012	25	33	25	8	0	0	9	0	0	0	12
2013	25	25	0	37	0	13	0	0	0	0	8

^a Regulatory year begins 1 July and ends 30 June (e.g., regulatory year 2007 = 1 July 2007–30 June 2008).