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**CHAPTER 23: BROWN BEAR MANAGEMENT REPORT**

From: 1 July 2012

To: 30 June 2014

**LOCATION**

**GAME MANAGEMENT UNIT:** 22 (25,200 mi<sup>2</sup>)

**GEOGRAPHIC DESCRIPTION:** Seward Peninsula and that portion of the Nulato Hills draining west into Norton Sound

**BACKGROUND**

It is believed brown bear numbers in Unit 22 declined during the early 1900s after the introduction of gold mining and reindeer herding industries (Georgette 2001). The population did not begin to recover until these activities diminished substantially during the 1940s, and federal predator control efforts ended at statehood in 1959 (Grauvogel 1986). The growth of the Unit 22 brown bear population has had many effects and consequences. Residents, particularly from the Nome area, have considerable interest in hunting, as do nonresidents with hunting allowed through general season, subsistence registration, and drawing permit hunts. Brown bear predation on calf and adult moose is believed to be a significant factor in depressing moose populations in many parts of the unit (Gorn 2010). Observations from staff and the public suggest brown bears are a significant factor in spring muskox calf mortality (W. Dunker, 2014, ADF&G unpublished data, Nome). The public has serious concerns about human-bear encounters in the Nome area, as well as in Unit 22 villages and summer camps. Local residents believe bear densities in Unit 22 are too high and, since 1997, in response to public demand, brown bear hunting regulations have been incrementally liberalized to increase annual harvest in an effort to reduce bear numbers in Unit 22 (Persons 2001).

**MANAGEMENT DIRECTION**

**MANAGEMENT GOAL**

- Maintain a population that sustains a 3-year mean annual reported harvest of at least 50% males.

**MANAGEMENT OBJECTIVES**

- Assess population trends through field observations and analyses of harvest data.
- Seal bear hides and skulls, determine sex and extract a tooth for aging from sealed brown bears (hunting harvest, nonhunting take, and unknown mortality).
- Monitor the brown bear harvest through field observations, brown bear sealing reports, community-based harvest surveys, subsistence harvest questionnaires, interviews with successful hunters, and analyze data.

- Improve communication with the public to reduce illegal and unreported harvest, and improve understanding of defense of life or property situations.
- Provide opportunity for subsistence hunting of brown bears.
- Assist the public in dealing with nuisance bear problems.
- Educate the public about bear behavior and safety to minimize conflicts between bears and the public.
- Provide information to the Alaska Board of Game on brown bear management.

## **METHODS**

Bear hides and skulls were sealed by department staff or authorized sealing agents in several Unit 22 villages. Harvest data were summarized from sealing certificates, nonresident drawing permits, subsistence registration permits, community-based big game harvest surveys, and defense of life or property (DLP) reports. We addressed human-bear conflicts through public outreach and DLP regulations, and by working with Alaska Wildlife Troopers and Village Public Safety Officers to deter or dispatch problem bears. Staff worked with local youth organizations to explain and demonstrate proper bear safety procedures to help minimize human-bear conflict while hiking or camping. The department has made an electric fence package available for seasonal loan to deter bears from homes or summer camps.

Harvest data are summarized by regulatory year (RY), which begins 1 July and ends 30 June (e.g., RY12 = 1 July 2012–30 June 2013). Harvest during RY12 and RY13 was monitored through sealing and permit reporting.

## **RESULTS AND DISCUSSION**

### **POPULATION STATUS AND TREND**

#### *Population Size*

There is no current population estimate for brown bears in Unit 22. A census, completed during the early 1990s, estimated the brown bear population in western Unit 22B and Units 22C, 22D, and 22E at 458 bears >2 years old (density: 1 bear/27 mi<sup>2</sup>). The density estimate varied almost 2-fold within the study area with the highest densities (1 bear/20 mi<sup>2</sup>) in the western portion of Unit 22B, and the lowest densities (1 bear/39 mi<sup>2</sup>) in the southern portion of Unit 22E (Miller and Nelson 1993). Observations by staff, guides, and residents of Unit 22, suggest bear numbers increased unitwide during the 1990s and early 2000s. Based on an abundance of brown bears in Unit 22, and declining moose populations in Unit 22B Remainder, the Board of Game began incrementally liberalizing bear hunting regulations in 1997. However, the department continues to receive public comments that bear numbers have increased. Bear sightings at summer camps have increased over the recent years, and the unit continues to support a productive bear population with sows often caring for 3–4 cubs. We also hear opposing reports from the public indicating that bear numbers have declined and bag limits should be reduced, not liberalized.

#### *Population Composition*

No activities were completed to determine population composition in Unit 22 during the reporting period.

*Distribution and Movements*

No activities were completed to determine distribution and movements in Unit 22 during the reporting period.

**MORTALITY**

*Harvest*

Season and Bag Limit. Changes were made to the Unit 22C brown bear season and bag limit during this reporting period (RY12 and RY13).

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
<i>Unit 22A, that portion south of and including the Golsovia River drainage</i>		
RESIDENT HUNTERS:		
Two bears every regulatory year by registration permit (RB699).	1 Aug–31 May (Subsistence hunt only)	
Two bears every regulatory year.	1 Aug–31 May	
NONRESIDENT HUNTERS:		
One bear every regulatory year.		1 Aug–31 May
<i>Unit 22A remainder</i>		
RESIDENT HUNTERS:		
Two bears every regulatory year by registration permit (RB699).	1 Aug–15 Jun (Subsistence hunt only)	
Two bears every regulatory year.	1 Aug–15 Jun	
NONRESIDENT HUNTERS:		
One bear every regulatory year.		1 Aug–15 Jun
<i>Unit 22B</i>		
RESIDENT HUNTERS:		
One bear every regulatory year by registration permit (RB699).	1 Aug–31 May (Subsistence hunt only)	
One bear every regulatory year.	1 Aug–31 May	
NONRESIDENT HUNTERS:		
One bear every regulatory year by drawing permit only;		1 Aug–31 May

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
up to 27 permits may be issued in combination with Unit 22C (DB685).		
<i>Unit 22C</i>		
RESIDENT HUNTERS:		
One bear every regulatory year by registration permit (RB699).	1 Aug–31 Oct 1 May–31 May (Subsistence hunt only)	
One bear every 4 regulatory years.	1 Aug–31 Oct 1 May–31 May	
NONRESIDENT HUNTERS:		
One bear every 4 regulatory years by drawing permit only; up to 27 permits may be issued in combination with Unit 22B (DB685).		1 Aug–31 Oct 1 May–31 May
<i>Unit 22D</i>		
RESIDENT HUNTERS:		
One bear every regulatory year by registration permit (RB699).	1 Aug–31 May (Subsistence hunt only)	
One bear every regulatory year.	1 Aug–31 May	
NONRESIDENT HUNTERS:		
One bear every regulatory year by drawing permit only; up to 12 permits may be issued in combination with Unit 22E (DB690).		1 Aug–31 May
<i>Unit 22E</i>		
RESIDENT HUNTERS:		
One bear every regulatory year by registration permit (RB699).	1 Aug–31 May (Subsistence hunt only)	
One bear every regulatory years.	1 Aug–31 May	

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
NONRESIDENT HUNTERS: One bear every regulatory year by drawing permit only; up to 12 permits may be issued in combination with Unit 22D (DB690).		1 Aug–31 May

Alaska Board of Game Actions and Emergency Orders. The Board of Game reauthorized the brown bear resident tag fee exemption in Unit 22 for RY12 and RY13. In November 2011, the Board of Game adopted regulations to extend the Unit 22C spring brown bear season for residents and nonresidents. Effective in RY12, the spring season is 1 May through 31 May with a general hunt bag limit of 1 bear every 4 regulatory years. In January 2014 the board adopted regulations to change the Unit 22C bag limit from 1 bear every 4 regulatory years to 1 bear every regulatory year for residents and nonresidents, effective in RY14 (next reporting period). There were no emergency orders for Unit 22 brown bears during the reporting period.

Human-Induced Harvest. The management goal to maintain a population that sustains a 3-year mean annual reported harvest of at least 50% males was met during the reporting period. Annual reported harvest of male bears has exceeded the female harvest; data from RY90 to RY13 show 64% of the reported harvest was males. During this reporting period 65% ( $n = 124$ ) of the bears harvested were males and the remaining 35% ( $n = 67$ ) were females.

Data show 101 bears were taken each year through hunting and nonhunting kills in RY12 and RY13 (Table 1). The liberalized regulations that started in 1997 produced a 74% increase in Unit 22 brown bear harvest. During RY90–RY97 the average annual harvest was 54 bears, and during RY98–RY13 the average annual harvest was 94 bears. The liberal bear regulations and a high desire by some local residents to reduce bear predation on ungulates have been the major contributing factors to the high harvests. Unit 22 brown bear harvest is predominately by local hunters (Table 2), except in Units 22A and 22E where few local residents express a desire to hunt brown bears.

The department received fewer complaints about problem bears from 1998 through 2008 in the most heavily hunted and accessible areas (Units 22B Remainder, 22C, and 22D). In recent years brown bears have been a topic of conversation at public meetings and identified as a nuisance issue with camps and people. In Unit 22C around Safety Sound there has been elevated concern from land shareholders that more bears are being observed around camps. The new 1 bear/year bag limit and extended spring season dates in Unit 22C may provide additional harvest opportunity of nuisance bears.

The age of harvested bears during RY97–RY13 has annually averaged 6.5 years ( $n = 1,100$ ). Data for the reporting period show the annual average age of bears was 6.8 years ( $n = 175$ ), ranging from 2-years old to 31-years old.

The average skull size during the reporting period was 21.26 inches ( $n = 180$ ), and a skull size ranged from 15.4 inches to 26.5 inches. Females averaged 21.2 inches ( $n = 58$ ) and males averaged 21.3 inches ( $n = 121$ ). Data from the reporting period show 13% ( $n = 23$ ) of harvested bears in Unit 22 had a skull size 24 inches or larger. The average annual harvest of bears with a skull size of 24 inches or larger during RY97–RY13 was 12 bears ( $n = 211$ ).

Twenty-six bears were recorded as either verified or unreported DLP kills during the 2-year reporting period compared to 2 DLP kills during the previous reporting period. The increase is likely the result of local staff and Alaska Wildlife Troopers being diligent with Unit 22 communities to report DLP bears and by investigating or documenting unverified reports of DLP bears. From RY00 through RY13 there has been an annual average of 6 DLP bears taken from Unit 22. Of the reported DLP kills from RY00 through RY13, 37% ( $n = 31$ ) of the bears came from Unit 22A; 27% ( $n = 22$ ) from Unit 22B; 19% ( $n = 16$ ) from Unit 22C; and 17% ( $n = 14$ ) from Units 22D and 22E combined. However, reported DLP kills do not represent the actual number of nonhunting kills in Unit 22 for the reporting period. Each year we receive unverified reports of bears being shot and left unattended, or not being sealed. The accuracy of these reports and the amount of illegal harvest are unknown.

Permit Hunts. The department administers 2 nonresident drawing permit hunts in Unit 22 each year (DB685 in Units 22B and 22C, and DB690 in Units 22D and 22E). Annually, 27 draw permits are available to nonresident hunters in hunt DB685 and 12 draw permits are available to nonresidents in hunt DB690. A continuous season 1 August–31 May (excluding Unit 22C), allows draw permit holders to hunt in either the spring or fall. Over-the-counter surplus permits are available first-come, first-served when there are undersubscribed drawing permits available from the draw period. The number of available surplus drawing permits since 2000 has varied from 0 to 24 permits, annually.

Unit 22 offers a brown bear subsistence registration permit hunt (RB699) that began in 1998, when the Northwest Alaska Brown Bear Management Area was expanded to the Seward Peninsula so that bear regulations were consistent with customary and traditional practices of harvesting bears (Georgette 2001). Later, the Northwest Alaska Brown Bear Management Area permit hunt in Unit 22 was redefined as registration permit hunt RB699 and managed as a unit-based subsistence permit hunt with hunt conditions for meat salvage, aircraft restrictions, and exemptions from sealing requirements. Hunt reports during the reporting period show 5 Unit 22 residents registered for the RB699 subsistence hunt; however, there was no reported harvest of bears.

Hunter Residency and Success. Hunter effort and success cannot be easily be evaluated for Alaska resident hunters under the present harvest reporting system because unsuccessful hunters are not required to report.

Only nonresident draw permit hunts in Unit 22 (excluding Unit 22A) can be used to estimate hunter success. The nonresident success rates for hunters that were in the field hunting in RY12 for permit hunts DB685 and DB690 were 75% and 30%, respectively. The RY13 success rates for DB685 and DB690 were 50% and 25%, respectively. From RY00 through RY13, the average rate of successful harvest by nonresidents in hunt DB685 was 61% and 57% in hunt DB690. It is difficult to evaluate nonresident hunter success in Unit 22A because a draw permit is not

required. In 2002 the Board of Game lengthened the season and changed the bag limit for nonresidents. As a result, nonresident bear harvest in Unit 22A has increased 79% since 2002. During RY90–RY02 the average annual harvest was 14 bears compared to an average of 25 bears annually during RY03–RY13. Records from the reporting period show 55 bears from Unit 22A were harvested by nonresidents which is a 17% increase in nonresident harvest from the RY10 and RY11 reporting period.

Harvest Chronology. Records during RY90–RY13 indicate 52% ( $n = 999$ ) of the bear harvest takes place in spring and 48% ( $n = 924$ ) of the harvest occurs in the fall. Spring bears are easily observed and tracked; and bears tend to be more accessible to hunters using snowmachines as transportation. The success of spring harvest can also be based on snow travel conditions. During this reporting period 45% of the harvest occurred in the spring and 55% of the harvest occurred in the fall (Table 3).

Transport Methods. Methods of transport used by hunters are summarized in Table 4. The approximately 300-mile road system from Nome in Unit 22 allows bear hunters to use roads as access points to utilize snowmachines, off-road vehicles, and boats. During RY90–RY13, snowmachines have served as the primary transport for bear hunters in Unit 22, off-road vehicles being second, and boats third. Surprisingly, snowmachine use as transport ( $n = 6$ ) for RY13 was the lowest reported in 23 years. This was likely influenced by minimal snowfall across the Seward Peninsula resulting in poor spring travel conditions that prevented the use of snowmachines for hunting. Aircraft use in the unit is low and generally used by registered guides and transporters for nonresident bear hunters entering their base camp.

## **HABITAT**

### *Assessment Enhancement*

No brown bear habitat enhancement activities were completed during the reporting period.

## **NONREGULATORY MANAGEMENT PROBLEMS/NEEDS**

Moose research in Unit 22B during 1996–1998 suggest brown bear predation on moose calves reduces calf survival in the western portion of Unit 22B (Persons 1998), and research in other parts of Alaska has shown that brown bear predation can be the primary factor in limiting moose population growth. During the 1990s and early 2000s, moose recruitment rates declined to less than 10% in much of Unit 22, while bear numbers are believed to have increased above the density estimated in the 1989–1991 bear census and research study (Miller and Nelson 1993).

A 2014 spring muskox calving survey by the department suggests brown bears are a cause of calf mortality (W. Dunker, unpublished data). In 2013, necropsies were performed on 4 1-week-old calves by the ADF&G wildlife veterinarian and the results suggested injuries were consistent with bear predation (necropsy number 2013-104, 2013-105, 2013-106, 2013-107). Residents of Nome and spring bear hunters have observed brown bears feeding on muskox calves, although direct predation versus scavenging by bears have not been determined.

## **CONCLUSIONS AND RECOMMENDATIONS**

Throughout the 1990s, staff, guides, and residents observed an increase in human-bear encounters and complaints. The number of nuisance bears strongly suggested bear numbers had

increased unitwide. Beginning in 1997 the Board of Game began incremental liberalization of bear hunting regulations that went into effect in RY98. The result of those regulations produced a 74% increase in harvest.

Heavily hunted and accessible areas (Units 22B Remainder, 22C, and 22D) where harvest has nearly doubled compared to pre-1997 trends have generally produced fewer complaints about problem bears. However, in Unit 22C there continue to be complaints about nuisance bears. The liberalized spring season (1 May–31 May) effective in RY12 and the bag limit change to 1 bear every regulatory year will likely provide additional hunting opportunity that may reduce nuisance bear situations.

The management goal to maintain a population that sustains a 3-year mean annual reported harvest of at least 50% males was met. High harvest and reductions in the bear population should continue as long as necessary to rebuild moose populations that appear to be limited by predation. If the 3-year average male harvest declines below the management goal of 50% males, bear harvest may be reduced to prevent depleting the bear population to very low levels.

Brown bear harvest will continue to be monitored through field observations, information from sealing certificates, age assessments from tooth extraction, interviews with hunters, and other data analysis. It is important that staff continue to educate the public about brown bear behavior and safety to help minimize human-bear conflicts. Staff will continue to emphasize the importance of clean camps and not leaving food or garbage accessible to bears. Cooperation should continue with Unit 22 Village Public Safety Officers and Native corporations to provide bear safety material to shareholders.

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**PREPARED BY:**

Letty J. Hughes  
Wildlife Biologist II

**APPROVED BY:**

Peter J. Bente  
Management Coordinator

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Table 1. Unit 22 brown bear hunting and nonhunting mortality, Alaska, regulatory years<sup>a</sup> 2012 and 2013.

Regulatory year	Reported harvest											
	Hunter kill				Nonhunting kill				Total <sup>b</sup>			
	M	F	Unk	Total	M	F	Unk	Total	M	F	Unk	Total
<i>2012</i>												
Fall 2012	31	20	1	52	3	4	2	9	34	24	3	61
Spring 2013	30	9	0	39	0	0	1	1	30	9	1	40
Subsistence	0	0	0	0	0	0	0	0	0	0	0	0
Total	61	29	1	91	3	4	3	10	64	33	4	101
<i>2013</i>												
Fall 2013	27	18	0	45	4	0	3	7	31	18	3	52
Spring 2014	28	11	1	40	1	5	3	9	29	16	4	49
Subsistence	0	0	0	0	0	0	0	0	0	0	0	0
Total	55	29	1	85	5	5	6	16	60	34	7	101

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2012 = 1 July 2012–30 June 2013.

<sup>b</sup> Represents the total known harvest including nonresident permit hunt harvest, defense of life or property, and other human-caused accidental mortality.

Table 2. Number and residency of Unit 22 successful brown bear hunters, Alaska, regulatory years<sup>a</sup> 2002–2013.

Regulatory year	Successful hunters <sup>b</sup>								Total <i>n</i>
	Unit 22 Alaska residents <sup>c</sup>		Nonlocal Alaska residents		Nonresidents		Unknown		
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	
2002	36	(43)	13	(15)	32	(38)	3	(4)	84
2003	39	(43)	16	(18)	31	(34)	4	(4)	90
2004	41	(44)	10	(11)	38	(41)	4	(4)	93
2005	39	(45)	9	(10)	35	(40)	4	(5)	87
2006	34	(36)	7	(7)	46	(49)	7	(7)	94
2007	31	(40)	9	(12)	36	(47)	1	(1)	77
2008	42	(42)	11	(11)	43	(43)	5	(5)	101
2009	40	(43)	10	(11)	42	(45)	2	(2)	94
2010	42	(42)	20	(20)	37	(37)	1	(1)	100
2011	50	(53)	13	(14)	32	(33)	0	(0)	95
2012	37	(42)	11	(12)	41	(46)	0	(0)	89
2013	39	(45)	6	(7)	40	(46)	2	(2)	87

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2002 = 1 July 2002–30 June 2003.

<sup>b</sup> Excludes defense of life or property or other nonhunting kills.

Table 3. Unit 22 brown bear hunter harvest<sup>a</sup> by sex and subunit, Alaska, regulatory years<sup>b</sup> 2012 and 2013.

Regulatory year	Game management subunit															Total		
	22A			22B			22C			22D			22E			M	F	Unk
	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk	M	F	Unk
<i>2012</i>																		
Fall 2012	7	6	0	10	6	0	8	3	1	5	5	0	1	0	0	31	20	1
Spring 2013	12	3	0	7	1	0	3	4	0	5	0	0	3	1	0	30	9	0
<i>2013</i>																		
Fall 2013	11	10	0	4	2	0	4	5	0	7	1	0	1	0	0	27	18	0
Spring 2014	15	4	0	4	1	0	0	4	1	7	1	0	2	1	0	28	11	1

<sup>a</sup> Excludes defense of life or property or other nonhunting kills.

<sup>b</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 2012 = 1 July 2012–30 June 2013.

Table 4. Unit 22 brown bear harvest by transport method, Alaska, regulatory years<sup>a</sup> 1997–2013.

Regulatory year	Harvest by transport method							Total <i>n</i>
	Airplane	Boat	Snowmachine	ORV <sup>b</sup>	Highway vehicle	Walk	Unknown	
1997	7	6	28	8	10	0	0	59
1998	4	13	42	13	8	3	0	83
1999	7	8	35	25	12	2	0	89
2000	6	10	56	10	10	2	0	94
2001	1	8	42	21	7	2	0	81
2002	5	14	34	13	9	6	3	84
2003	4	20	10	24	18	11	3	90
2004	0	18	25	27	10	8	5	93
2005	2	16	30	21	9	3	6	87
2006	7	29	27	15	5	2	2	87
2007	10	14	29	20	1	2	0	76
2008	16	23	26	20	8	3	5	101
2009	9	12	25	24	13	3	8	94
2010	11	18	43	18	4	6	2	102
2011	10	14	34	22	11	4	2	97
2012	16	18	21	20	8	6	10	99
2013	14	12	6	31	21	1	10	95

<sup>a</sup> Regulatory year begins 1 July and ends 30 June, e.g., regulatory year 1997 = 1 July 1997–30 June 1998.

<sup>b</sup> ORV = off-road vehicle.