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CHAPTER 24: BROWN BEAR MANAGEMENT REPORT

From: 1 July 2012
To: 30 June 2014

LOCATION

GAME MANAGEMENT UNIT: 23 (43,000 mi^2)

GEOGRAPHIC DESCRIPTION: Kotzebue Sound and western Brooks Range

BACKGROUND

The Alaska Department of Fish and Game established hunting regulations and sealing requirements for brown bears in Unit 23 in 1961. From that time until the early 1990s, regulations assumed the primary use of brown bears was for trophy hunting. However, Inupiat hunters of inland communities traditionally harvested brown bears for meat, fat, and hides for countless generations (Loon and Georgette 1989). In response to frustration expressed by local residents over hunting regulations for brown bear and other species, department staff began an extensive regulation review in Unit 23 during 1988. This review provided the basis for establishing the Northwest Alaska Brown Bear Management Area subsistence registration hunt in 1992, which was later modified into a unit-based subsistence hunt (RB700). Between 1992 and 2013, three types of brown bear hunts have existed in Unit 23: 1) nonresident drawing permit hunts, 2) resident general season hunts, and 3) a subsistence registration permit hunt for resident hunters (RB700). Since the early 1990s, brown bear hunting regulations have been incrementally liberalized in Unit 23 to increase hunting opportunity and reduce predation on moose.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

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

MANAGEMENT OBJECTIVES

- Conduct a brown bear population estimate for some portion of Unit 23 in cooperation with Department of Interior staff at least once every reporting period.

- Continue community-based assessments to collect brown bear harvest information from residents of Unit 23.

- Seal bear skins and skulls, determine sex, and extract a tooth for aging.

- Monitor harvest data (age, sex, and skull size) for changes related to selective harvest pressure.

- Improve communication between the public and the department to improve harvest reporting and prevent defense of life or property (DLP) situations from occurring.

METHODS

Harvest information was obtained from sealing certificates, community harvest assessments, and harvest reports. For local resident harvest, we believe community-based harvest assessments and harvest reports from the registration subsistence hunt provide more accurate results than sealing data. In contrast, most nonlocal hunters comply with sealing requirements, so sealing data for nonlocal residents and nonresidents are considered reasonably accurate. Many brown bears taken under DLP circumstances are not reported. As information from previous and ongoing DLPs is added to the harvest database, summaries in future reports will likely differ from results reported here due to retroactive edits to the harvest database.

In this report the term "nonlocal hunter" refers to resident Alaskans who live outside of Unit 23 as well as nonresident hunters. "Local hunter" refers to anyone residing in Unit 23.

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).

Previously, abundance estimates using capture–mark–recapture methods were completed in the "proposed" Red Dog Mine census area in 1987 (Dau 2007). This census effort provided a benchmark for bear abundance in the northwest portion of Unit 23 and has not been repeated. Instead, our understanding of bear populations has been based on qualitative information from local residents, long-term commercial operators, and opportunistic observations by agency staff. Paired sampling techniques to estimate abundance have been used by National Park Service (NPS) in the upper Noatak river drainage (June 2005), in the southwest portion of Unit 23 (June 2006), and the lower Noatak River including the Red Dog Mine area (June 2008).

To examine changes and trends in harvest, the proportion of males harvested, mean skull size, and mean age of harvested bears was plotted through time.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

There were no abundance estimate or census activities in Unit 23 during the reporting period. The previous capture–mark–recapture census in the Red Dog Mine area in 1987 estimated a density of 1 adult bear (3+ years) per 25.7 mi^2 (Ballard et al. 1991). Preliminary results and discussion of sightability indices for the 2008 NPS lower Noatak population estimate are summarized by Westing (2013). Using minimum count data, the density of the Red Dog Mine area ranges from 1.9–2.2 adult bears (2+ years; or 1.5–1.6 "independent bears") per 25.7 mi^2 with no corrections for sightability. Further comparisons of data from 1987 and 2008 are needed to evaluate appropriate census techniques for bears in Unit 23.

According to residents of Unit 23, brown bear numbers have increased substantially over the past 60–70 years. Several factors, including increased ungulate prey, reduced subsistence harvest, limitation of the commercial salmon fishery, and changes in hunting practices and regulations have

likely contributed to the increasing trend in bear abundance. Until recently, ungulate prey (moose, caribou, and muskox) increased in numbers, providing a stable prey base for bears, and thus allowing bear populations to increase. The increase in ungulates as a human food resource reduced the need for people to catch brown bears as a subsistence food, so overall bear harvest was likely reduced (Raymond Stoney, Kiana, personal communication). Reductions in the commercial salmon fishery in Kotzebue Sound have likely allowed more salmon to reach inland spawning areas, making increased food available to bears. State hunting regulations protecting sows with cubs have also likely contributed to the increase in brown bear abundance. The traditional practice of "denning" bears and killing all occupants, including sows with cubs, has declined by local hunters because bears no longer provide the only reliable source of terrestrial hides, meat, and fat to local users (Raymond Stoney, personal communication). Finally, the strong selection by general season hunters to take large male bears that typically kill cubs and young bears may have increased survival of cubs, causing bear populations to increase.

MORTALITY

Harvest

Season and Bag Limit. The following regulations were in effect during RY12 and RY13:

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
Unit 23		
RESIDENT HUNTERS:		
1 bear per regulatory year; no tag required.	1 Aug–31 May (General hunt)	
1 bear per regulatory year by registration permit.	1 Aug–31 May (Subsistence hunt)	
NONRESIDENT HUNTERS:		
1 bear every regulatory year by drawing permit DB761–DB767 (40 permits fall); DB771–DB777 (28 permits spring).		1 Sep–31 Oct 15 Apr–31 May

Hunters taking a brown bear under the general season hunt must seal the hide and skull; however, salvage of meat is optional under this type of hunt. To participate in the subsistence registration hunt, salvage of meat is required and use of airplanes for accessing hunting areas is not allowed except between state-maintained airports. Under the subsistence registration hunt, salvage of the hide is optional; however, if the hide is removed from Unit 23, it must be sealed and the trophy value destroyed by removing the skin of the head and front claws, which are retained by the department.

Alaska Board of Game Actions and Emergency Orders. During the November 2011 meeting, the Board of Game (BOG) reauthorized the resident brown bear tag fee exemption for general season hunts and subsistence hunts (registration permit RB700). This exemption was effective in RY12. During the March 2013 BOG meeting the same exemption was authorized for RY13. There were no emergency orders issued for brown bears during the reporting period.

In January 2014, BOG adopted a registration permit hunt for residents and nonresident general season hunters. The regulation attempts to make it easier for hunters to combination hunt with other big game species while actively hunting in Unit 23. This regulation becomes effective in RY14 (after the reporting period).

Harvest by Hunters. Sixty-eight bears were reported harvested in RY12. Sources of harvest include 50 bears in general season hunts; 12 bears taken in drawing permit hunts (DB761–DB767; DB771–DB777); 3 bears taken in subsistence registration hunt (RB700); and 3 bears taken through DLP situations (Table 1).

Forty-six bears were reported harvested in RY13. Sources of harvest include 38 bears taken in general season hunts; 7 bears taken in drawing permit hunts (DB761–DB767; DB771–DB777); and 1 bear taken through DLP (Table 1).

Total reported harvest for the last 6 years (RY08–RY13) has been above the 20-year trend of 48 bears annually (RY92–RY11; Westing 2013). This pattern of increased harvest coincides with reports of increasing bear abundance in Unit 23 over the last several decades. Annual variation in harvest is likely an effect of weather and snow conditions, especially during spring, which strongly affects timing of emergence from dens, and hunter access and success rates. Community-based harvest surveys estimate that an additional 15–27 bears account for unreported harvest annually (Table 2). Combining reported harvest and estimated unreported harvest, the maximum harvest likely ranges from 65–95 brown bears annually.

Some human-caused mortality of bears through DLP situations continues to be unreported in Unit 23. Many residents feel that DLP reporting requirements are onerous or fear they have broken the law and will be cited for shooting a bear out of season or without a hunting license. As a result, many DLP bears are not reported to the department. Therefore, our harvest data provide a conservative index of total human-induced brown bear mortality.

Reported harvest by drainage is summarized in Table 3 and Figure 1. In each year, approximately half of the harvest occurs within the Noatak River drainage. This is partly because guides and residents of Kotzebue have historically focused their efforts on the Noatak River drainage, where brown bears are easier to hunt, rather than in the more densely forested Kobuk and Selawik River

drainages. Harvest in all other drainage areas in Unit 23 (n = 4) are more equally proportioned and account for about 5–10% of the annual harvest.

Skull Size and Age. For bears harvested during RY12, the mean skull size for males was 22.0 inches (n = 45) and 19.9 inches for females (n = 19); the mean age was 8.9 years for males (n = 37) and 5.5 years for females (n = 17). During RY13 the mean skull size for males was 22.1 inches (n = 28) and 19.8 inches for females (n = 17); the mean age for males was 8.0 years (n = 26) and 9.9 years for females (n = 14; Table 4).

The proportion of males in the total Unit 23 harvest shows a stable or very slightly decreasing (R^2 = 0.0527) trend, with harvest composed of approximately 72% males on average over the last 20 years (Fig. 2). Likewise, there was a stable trend in mean skull size for all bears over the last 20 years when analyzed by sex (Table 4). There was a stable or slightly increasing trend in the mean age of bears taken throughout the unit, when considered by sex, for the last 20 years. These data, however, are volatile from year to year (Table 4).

Permit Hunts. The subsistence registration permit hunt, RB700, has low success rates in Unit 23, probably the result of bears being harvested through increasingly liberal general season hunting regulations. Residents were still interested in obtaining subsistence permits as 41 permits were issued in RY12 and 39 permits issued in RY13; however, reporting remained low with 21 unreported permits in RY12 and 25 unreported permits in RY13. Reported subsistence harvest remained low with 3 bears reported taken in RY12 and 1 bear taken in RY13 (Table 1). Despite low reporting rates, this hunt should be retained to minimize the effects of reduced hunting opportunity without impacting subsistence activities if bear populations declined, and to allow a mechanism for registering and reporting by federally qualified subsistence hunters hunting brown bears on National Park or Monument lands. Retaining the RB700 hunt allows for the continued collection of harvest data that would otherwise go undocumented.

Nonresident brown bear hunts were administered through 7 fall drawing permit hunts, DB761–DB767 and 7 spring drawing hunts, DB771–DB777 (Tables 1 and 5). Hunters took 11 bears in the RY12 fall hunt, and 1 bear in the spring hunt. Hunters took 7 bears in the RY13 fall hunt and no bears in the spring hunt. Many nonresidents awarded drawing permits do not hunt. Low participation in hunting is likely due to the weak economy and the relative expense of a nonresident bear hunt.

Hunter Residency and Success. Of the bears reported harvested in Unit 23 during RY12, 12 were taken by nonresidents, 35 by nonlocal Alaska residents, and 18 by local residents. During RY13, 9 bears were reported harvested by nonresidents, 28 by nonlocal Alaska residents, and 9 by local residents (Table 6, Fig. 3).

Harvest Chronology. Since 1970, most brown bear harvest has been taken in the fall. During RY12, the percentage of bears harvested by month was 6% in August, 66% in September, 4% in October, 9% in April, 10% in May, and 1% unknown time of harvest. During RY13, the percentages were 4% in August, 76% in September, and 20% in April (Table 7, Fig. 4).

Transport Methods. The majority of bear hunters in Unit 23 used aircraft as transportation. In RY12, 49% of hunters used aircraft, 25% used boats, 18% used snowmachines, 3% used ORVs,

1% used other means of transportation, and 4% did not specify means of transportation. In RY13, 54% of hunters used aircraft, 22% used boats, 20% used snowmachines, 2% used ORVs, and 2% used unknown means of transportation. (Table 8).

Other Mortality

There were no estimates of other mortality for brown bears in Unit 23 during the reporting period.

HABITAT

Assessment

There were no habitat assessment activities in Unit 23 during the reporting period.

Enhancement

There were no habitat enhancement activities in Unit 23 during the reporting period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

During this reporting period, brown bears continued to be viewed as a nuisance or threat to many residents of Unit 23, who encounter them during subsistence activities (e.g., drying fish or picking berries).

CONCLUSIONS AND RECOMMENDATIONS

Brown bear regulations in Unit 23 have been incrementally liberalized since the early 1990s. During this time, brown bear harvest levels have increased; this trend began well before recent regulatory changes. Increases in bear harvests have probably been caused more by increasing numbers of commercial operators and nonlocal hunters throughout Unit 23 than through increased hunting opportunity. Although brown bear harvests have clearly increased in Unit 23 over the last 40 years, harvest data do not suggest this has affected the sex or age structure of the population or the size of bears available to hunters. Heavily hunted portions of the unit may be acting as "population sinks" where bears, especially boars, are continually replaced by bears from lightly hunted areas (e.g., the upper Noatak drainage and Brooks Range). Harvest data alone may be insensitive to changes in brown bear populations (Harris and Metzgar 1987). Without bear census data, harvest could skew population sex and age structures without being reflected in harvest data. Therefore, the following activities are recommended:

- Survey a large portion of Unit 23 to determine bear density and compare to 1987 Red Dog Mine census data.

- Continue community-based assessments to monitor harvests of brown bears by residents of Unit 23.

REFERENCES CITED

Ballard, W. B., L. A. Ayres, K. E. Roney, D. J. Reed, and S. G. Fancy. 1991. Demography of Noatak grizzly bears in relation to human exploitation and mining development. Alaska Department Fish and Game, Division of Wildlife Conservation, Research Final Report 1 January 1986–31 December 1990, Federal Aid in Wildlife Restoration Study 4.20, Juneau.

Dau, J. 2007. Unit 23 brown bear. Pages 277–299 [*In*] P. Harper, editor. Brown bear management report of survey and inventory activities 1 July 2004–30 June 2006. Alaska Department Fish and Game, Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Project 4.0, Juneau.

Harris, R. B., and L. H. Metzgar. 1987. Harvest age structures as indicators of decline in small populations of grizzly bears. Pages 109–116 [*In*] Bears: Their biology and management. International Association for Bear Research and Management 7. doi:10.2307/3872616

Loon, H., and S. Georgette. 1989. Contemporary brown bear use in northwest Alaska. Alaska Department Fish and Game, Division of Subsistence, Technical Paper No. 163, Kotzebue.

Westing, C. 2013. Unit 23 brown bear. Pages 279–296 [*In*] P. Harper and L. A. McCarthy, editors. Brown bear management report of survey and inventory activities 1 July 2010–30 June 2012. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2013-4, Juneau.

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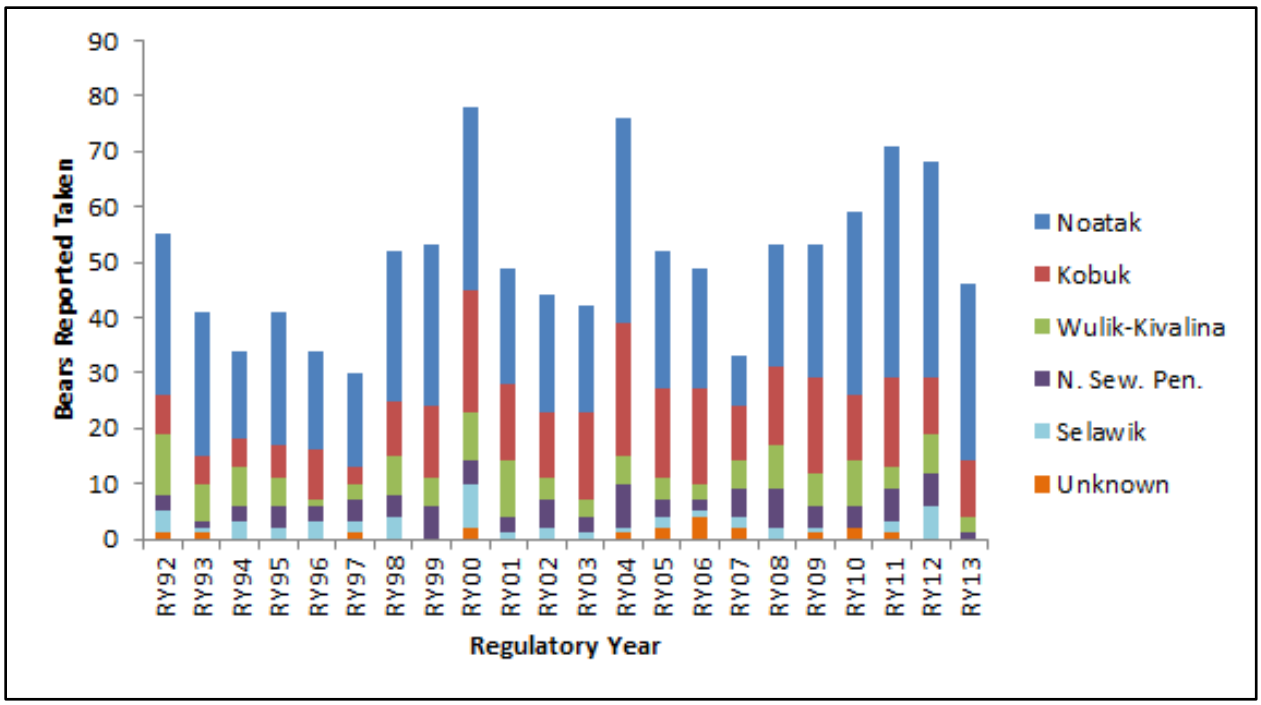

Figure 1. Unit 23 brown bear harvest by drainage, northwest Alaska, regulatory years 1992–2013 (sealing and registration permit data). Regulatory year (RY) begins 1 July and ends 30 June, e.g., regulatory year 1997 = 1 July 1997–30 June 1998; N. Sew. Pen. = Northern Seward Peninsula.

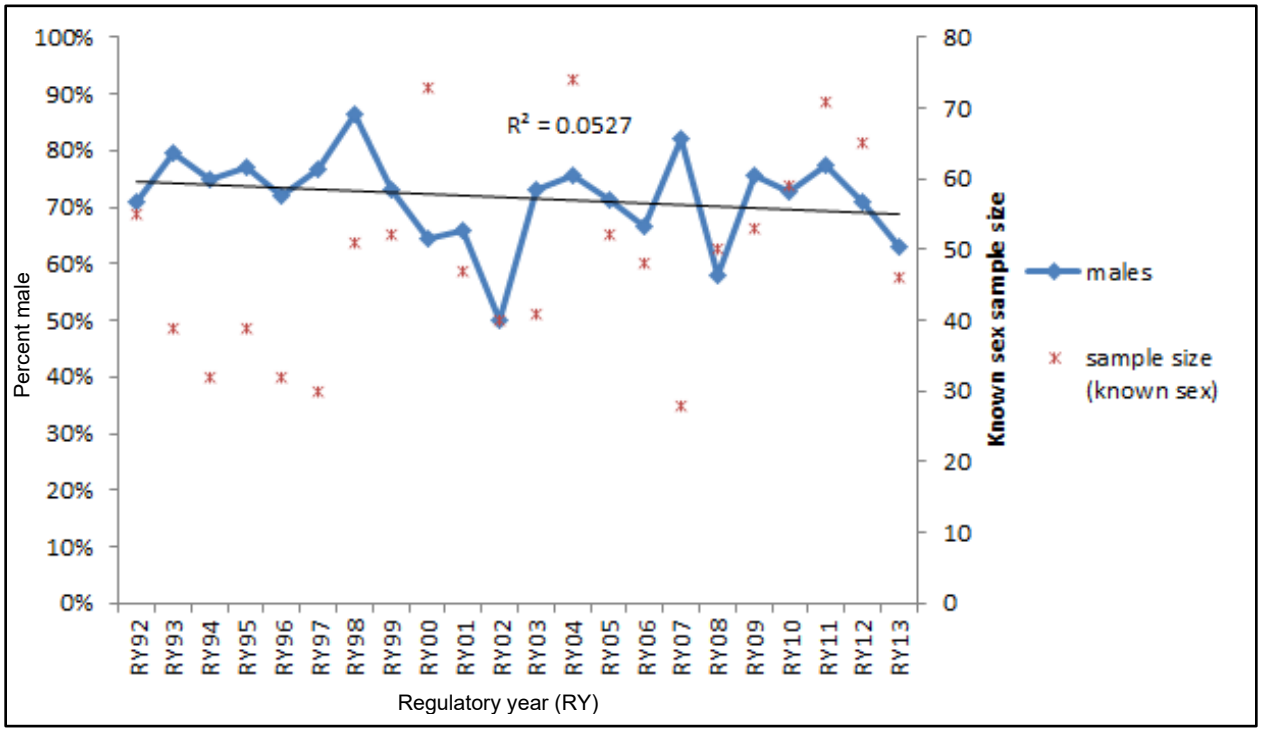

Figure 2. Percent males in Unit 23 brown bear harvest, northwest Alaska, regulatory years 1992–2013 (sealing and registration permit data; regulatory year (RY) begins 1 July and ends 30 June, e.g., regulatory year 1997 = 1 July 1997–30 June 1998).

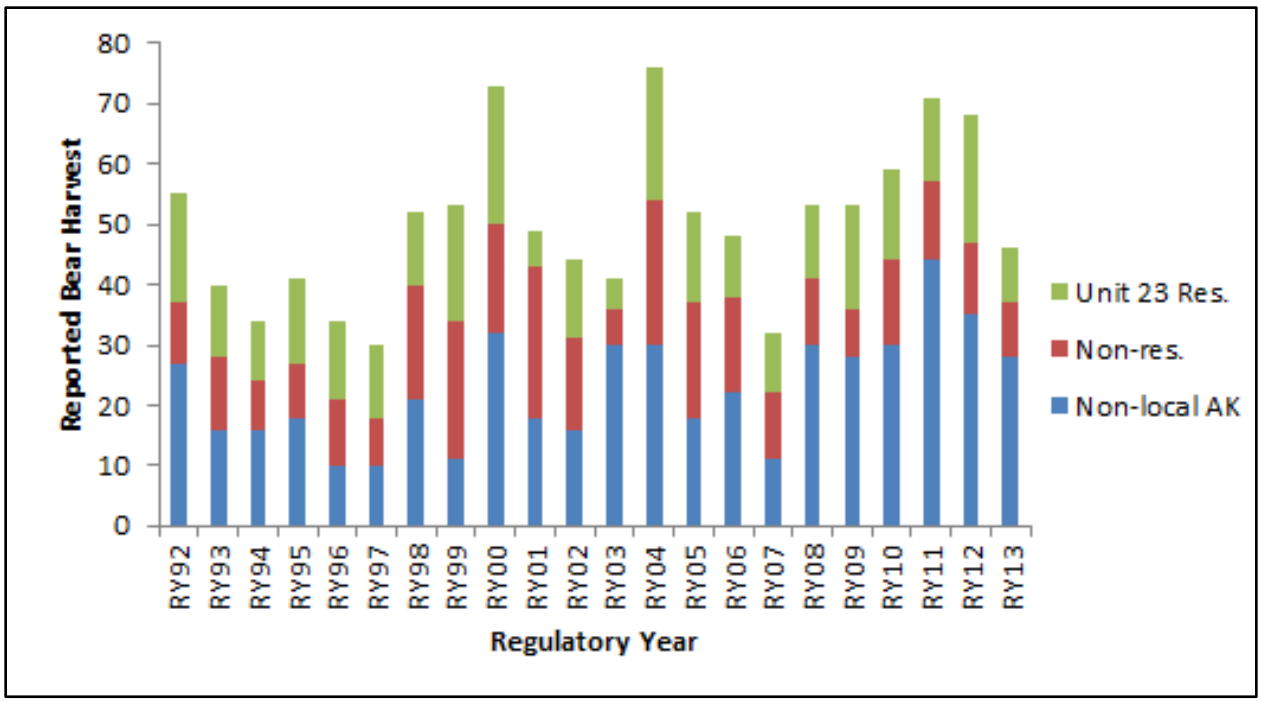

Figure 3. Unit 23 brown bear harvest by hunter residency, northwest Alaska, regulatory years 1992–2013 (sealing and registration permit data; regulatory year (RY) begins 1 July and ends 30 June, e.g., regulatory year 1997 = 1 July 1997–30 June 1998).

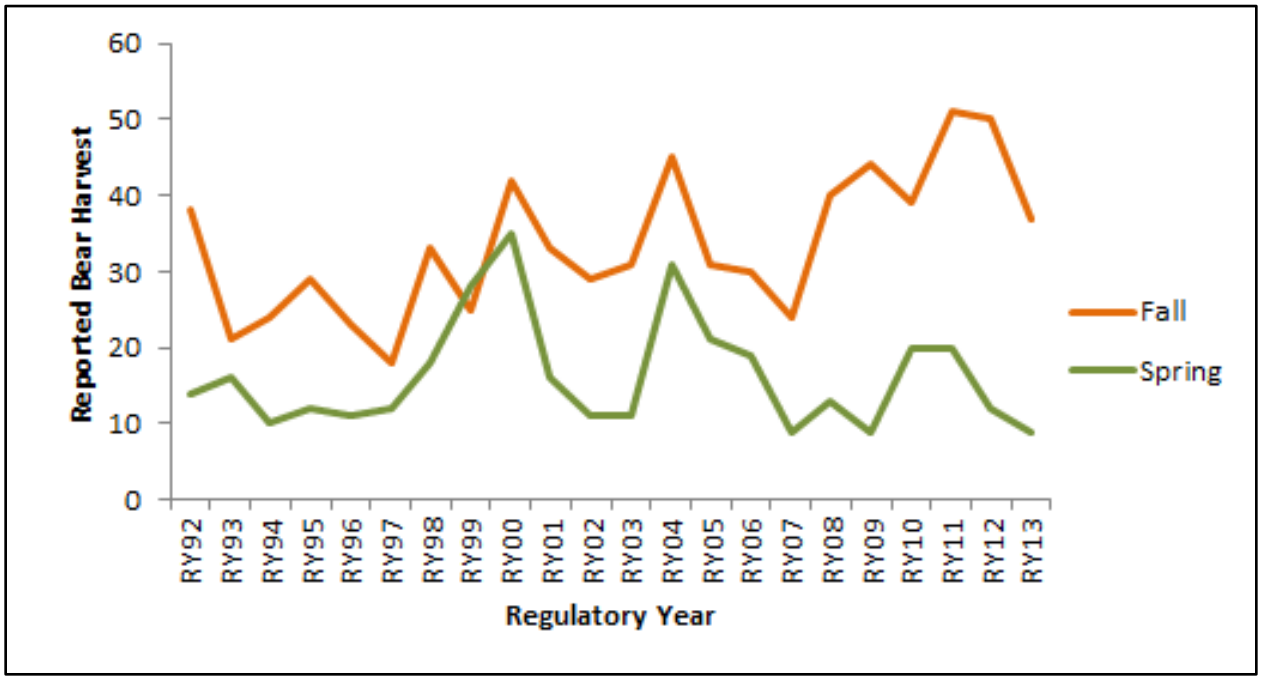

Figure 4. Unit 23 brown bear harvest by season (fall = Aug–Dec; spring = Jan–May), northwest Alaska, regulatory years 1992–2013 (does not include records where season was unknown; regulatory year (RY) begins 1 July and ends 30 June, e.g., regulatory year 1997 = 1 July 1997–30 June 1998.

Table 1. Reported harvest of brown bears in Unit 23 by hunt type (sealing and registration permit data), northwest Alaska, regulatory years 2002–2013.

Regulatory year	Hunt type					
	General hunt	Fall drawing	Spring drawing	RB700[a]	Unk and DLP[b]	Total
2002	27	9	4	4	0	44
2003	34	5	1	0	2	42
2004	47	12	10	5	2	76
2005	33	12	7	0	0	52
2006	27	9	8	5	0	49
2007	19	8	2	0	4	33
2008	40	9	1	3	0	53
2009	38	8	0	7	0	53
2010	42	10	4	2	1	59
2011	54	9	3	4	1	71
2012	50	11	1	3	3	68
2013	38	7	0	0	1	46

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.
[a] Subsistence registration permit hunt.
[b] DLP = defense of life or property.

Table 2. Brown bear harvests in Unit 23 based on community harvest assessments (CSIS information from ADF&G–Subsistence Division, 2012), northwest Alaska, 1998–2011.

Community	Year	Human population[a]	Brown bears harvested (estimate)[b]	Brown bears taken per capita (estimate)[b]
Ambler	2003, 2009	294, 258	1, 4	0.009
Buckland	2003, 2009	395, 418	2	0.004
Deering	2011	124	0	0.000
Kiana	2006, 2009	385, 356	0, 0	0.000
Kivalina	2010	124	0	0.000
Kobuk	2004, 2009	125, 151	4, 6	0.036
Noatak	2001, 2007, 2010, 2011	438, 489, 514, 547	1, 2, 5, 3	0.005
Noorvik	2002, 2008	674, 631	5, 2	0.005
Selawik	2006, 2010	842, 829	1, 0	0.001
Shungnak	1998, 2008	249, 272	1, 2	0.006

[a] Human population estimates for many villages were adjusted retrospectively with updated 2010 census information.
[b] Reported estimate in communities with 2 or more data points is based on the average.

Table 3. Reported Unit 23 brown bear harvest (sealing and registration permit data) by drainage, northwest Alaska, regulatory years 1992–2013.

Regulatory year	Harvest by drainage					
	Noatak	Kobuk	Selawik	N. Seward Peninsula	Wulik/ Kivalina	Total[a]
1992	29	7	4	3	11	55
1993	26	5	1	1	7	41
1994	16	5	3	3	7	34
1995	24	6	2	4	5	41
1996	18	9	3	3	1	34
1997	17	3	2	4	3	30
1998	27	10	4	4	7	52
1999	29	13	0	6	5	53
2000	33	22	8	4	9	78
2001	21	14	1	3	10	49
2002	21	12	2	5	4	44
2003	19	16	1	3	3	42
2004	37	24	1	8	5	76
2005	25	16	2	3	4	52
2006	22	17	1	2	3	49
2007	9	10	2	5	5	33
2008	22	14	2	7	8	53
2009	24	17	1	4	6	53
2010	33	12		4	8	59
2011	42	16	2	6	4	71
2012	39	10	6	6	7	68
2013	32	10	0	1	3	46

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.
[a] Total may include uncoded harvest.

Table 4. Mean skull size, age, and sex of brown bears sealed from Unit 23, northwest Alaska, regulatory years 1992–2013.

	Males				Females			
Regulatory year	Mean skull size	*n*	Mean age	*n*	Mean skull size	*n*	Mean age	*n*
1992	21.3	29	7.8	29	19.7	10	8.2	11
1993	21.3	28	7.0	26	18.9	7	3.4	7
1994	21.1	21	5.6	21	18.0	7	5.4	7
1995	21.2	22	5.6	26	19.7	9	7.4	9
1996	21.3	18	7.7	19	19.5	7	7.6	7
1997	21.8	20	9.6	17	19.8	7	8.2	6
1998	21.3	37	5.7	33	18.7	7	5.0	7
1999	21.5	33	7.2	34	20.2	12	8.5	12
2000	22.2	40	7.7	39	19.2	20	7.9	20
2001	22.1	29	7.0	28	19.3	16	6.4	16
2002	21.5	19	7.1	19	19.9	20	8.8	16
2003	21.8	29	7.9	28	20.2	11	10.2	11
2004	22.6	51	9.5	51	19.3	18	6.8	17
2005	22.5	36	9.6	36	20.6	13	8.1	13
2006	21.3	25	7.6	25	19.9	16	7.7	15
2007	22.1	20	8.2	19	18.5	5	6.4	5
2008	21.3	25	7.3	22	19.5	21	6.9	17
2009	21.4	34	7.4	30	18.7	12	6.0	12
2010	21.4	39	6.9	37	20.1	13	7.9	14
2011	21.6	51	7.1	49	20.3	16	9.1	12
2012	22.0	45	8.9	37	19.9	19	5.5	17
2013	22.1	28	8.0	26	19.8	17	9.9	14

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.

Table 5. Brown bear nonresident drawing permit data, regulatory years 2012 and 2013.

		RY12 permits			RY13 permits		
Hunt number	Available	Issued	Hunted	Killed	Issued	Hunted	Killed
Fall Drawing							
DB761	8	8	5	3	8	4	3
DB762	8	8	7	4	8	5	1
DB763	1/3	1	1	1	3	2	1
DB764	4	4	0	0	4	1	1
DB765	4	4	1	0	4	0	0
DB766	8	8	6	3	8	3	1
DB767	2	2	1	0	0	0	0
Total	35/37	35	21	11	35	15	7
Spring Drawing							
DB771	1	1	0	0	0	0	0
DB772	2	2	0	0	0	0	0
DB773	0	0	0	0	0	0	0
DB774	0	0	0	0	0	0	0
DB775	0	0	0	0	0	0	0
DB776	1	1	0	0	1	0	0
DB777	1/3	1	1	1	3	0	0
Total	5/7	5	1	1	4	0	0

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.

Table 6. Unit 23 brown bear harvest by hunter residency, northwest Alaska, regulatory years 1992–2013 (sealing and registration permit data; does not include community harvest assessment data or defense of life or property data).

Regulatory year	Unit 23 resident	Nonlocal resident	Nonresident	Unk	Total
1992	18	27	10		55
1993	12	16	12	1	41
1994	10	16	8		34
1995	14	18	9		41
1996	13	10	11		34
1997	12	10	8		30
1998	12	21	19		52
1999	19	11	23		53
2000	23	32	18	5	78
2001	6	18	25		49
2002	13	16	15		44
2003	5	30	6	1	42
2004	22	30	24		76
2005	15	18	19		52
2006	10	22	16		49
2007	10	11	11		33
2008	12	30	11		53
2009	17	28	8		53
2010	15	30	14		59
2011	14	44	13		71
2012	18	35	12		65
2013	9	28	8		45

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.

Table 7. Percent harvest of brown bears by month in Unit 23, northwest Alaska, regulatory years 1992–2013 (sealing and registration permit data).

Regulatory	Percent harvest by month												
year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Unk
1992	0	7	64	5	0	0	0	0	0	18	0	0	5
1993	2	0	51	0	0	0	5	0	0	29	7	0	5
1994	3	0	68	3	0	0	0	0	0	18	9	0	0
1995	0	0	63	5	0	2	0	0	0	20	10	0	0
1996	3	0	65	3	0	0	0	0	0	21	6	3	0
1997	3	0	57	3	0	0	0	0	0	30	7	0	0
1998	0	0	62	2	0	0	0	0	4	10	21	0	2
1999	2	6	47	0	0	0	0	0	0	32	11	2	0
2000	0	1	46	1	0	0	0	0	0	28	14	1	8
2001	0	0	65	0	2	0	0	0	0	12	20	0	0
2002	0	0	61	5	0	0	0	0	2	14	9	0	9
2003	0	21	69	2	0	0	0	0	0	5	0	0	2
2004	0	5	54	3	1	0	0	0	1	25	8	1	1
2005	0	2	58	0	0	0	0	0	0	25	12	0	4
2006	0	6	57	2	0	0	0	0	0	18	12	0	4
2007	0	3	55	6	0	0	0	0	0	15	6	3	12
2008	0	8	75	0	0	0	0	0	0	11	4	0	2
2009	0	8	79	2	0	0	0	0	0	4	6	0	2
2010	0	8	64	2	0	0	0	0	2	20	3	0	0
2011	0	8	69	3	0	0	0	0	0	18	1	0	0
2012	2	4	45	3	0	0	0	0	0	6	7	0	1
2013	0	2	35	0	0	0	0	0	0	9	0	0	0

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.

Table 8. Percent harvest of brown bears by transport method in Unit 23, northwest Alaska, regulatory years 1992–2013 (sealing and registration permit data).

Regulatory year	Percent harvest by transport method					
	Airplane	Boat	Off-road vehicle	Snowmachine	Other	Unknown
1992	58	5	13	2	7	16
1993	59	0	2	24	5	10
1994	50	24	0	21	6	0
1995	49	12	5	17	7	10
1996	53	9	0	12	12	15
1997	50	23	3	13	3	7
1998	48	19	2	13	6	12
1999	47	6	0	26	15	6
2000	53	4	1	18	12	13
2001	53	20	4	18	0	4
2002	52	20	0	16	2	9
2003	67	26	2	2	2	0
2004	45	18	5	28	3	1
2005	56	10	0	35	0	0
2006	57	16	2	22	2	0
2007	52	9	9	21	0	9
2008	58	25	2	13	0	2
2009	62	23	8	6	2	0
2010	53	24	3	17	2	2
2011	56	20	1	20	1	1
2012	49	25	3	18	1	4
2013	54	22	2	20	0	2

Note: Regulatory year (RY) begins 1 July and ends 30 June, e.g., RY12 = 1 July 2012–30 June 2013.