Brown Bear
Management Report
of survey-inventory activities
1 July 1998–30 June 2000

Carole Healy, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation
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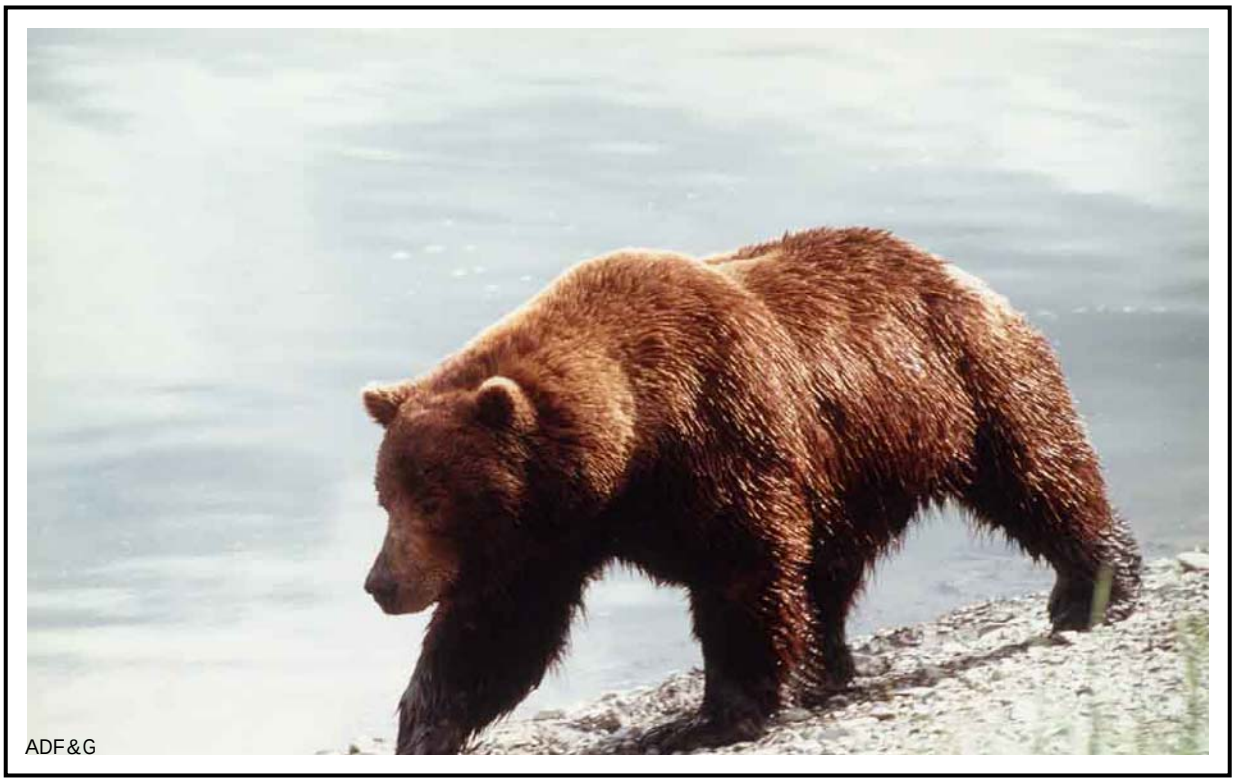

Please note that population and harvest data in this report are estimates and may be refined at a later date.

If this report is used in its entirety, please reference as: Alaska Department of Fish and Game. 2001. Brown bear management report of survey-inventory activities 1 July 1998–30 June 2000. C. Healy, editor. Project 4.0. Juneau, Alaska. 324 p.

If used in part, the reference would include the author's name, unit number, and page numbers. Authors' names can be found at the end of each unit section.

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BROWN BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 18 (42,000 mi^2)

GEOGRAPHIC DESCRIPTION: Yukon-Kuskokwim Delta

BACKGROUND

Brown/grizzly bears exist at moderate density, and the population is stable in Unit 18. Highest densities are in the Kilbuck Mountains southeast of Bethel and in the Andreafsky Mountains/Nulato Hills north of the Yukon River. Typically, few bears are reported harvested.

Traditionally, bears were important as food animals for the Yup'ik Eskimo people of Unit 18 and some of their customs surrounding bear hunting were inconsistent with the general regulations. A working group made up of representatives of Unit 18 villages was established and remains a vehicle for local input on brown bear issues. After consultation with this group, regulations were established to more closely match their cultural needs and to improve harvest reporting. As a result, the Western Alaska Brown Bear Management Area (WABBMA) was established. In the WABBMA, a registration permit is available for subsistence hunters who pursue bears primarily for the meat.

Obtaining a brown bear density estimate in Unit 18 is an objective that we have been unable to achieve because of local sentiment against the use of radiocollars. We are continuing our brown bear study to obtain other population parameters and are dealing with the working group to increase acceptance of radiocollars.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Maintain the existing brown bear population.
- Minimize adverse interactions between bears and the public.
- Continue to develop brown bear hunting regulations and harvest assessment techniques that are supported by the local village councils, the U.S. Fish and Wildlife Service (FWS), and other users.

- Continue participation in the cooperative management plan for the Unit 18 brown bear population within the WABBMA in cooperation with the FWS and local villages within the management area.

MANAGEMENT OBJECTIVES

- Coordinate with FWS biologists from the Yukon Delta National Wildlife Refuge (YDNWR) and the Togiak National Wildlife Refuge (TNWR) to implement a study plan using mark-recapture techniques to estimate the brown bear densities in Unit 18.

- Monitor harvests through the sealing program, harvest reports from WABBMA registration permit holders and through contacts with the public.

- Provide educational material through the media and informal channels to improve compliance with brown bear hunting regulations and brown bear harvest reporting requirements.

- Inform the public of methods to minimize bear-human conflicts by reducing the attractiveness of fish camps, dumps and other attractive nuisances.

- Meet with Association of Village Council Presidents (AVCP), subsistence brown bear hunters, and FWS to regulate bear hunting and to gather brown/grizzly bear harvest information. We will achieve this by using WABBMA regulations consistent with the cooperative management plan.

- Continue to cooperate with local village councils, the AVCP, and the FWS in developing techniques acceptable to local residents to monitor grizzly bear populations within the WABBMA and Unit 18.

METHODS

We continued the cooperative project with FWS and the Bureau of Land Management (BLM) to study brown bear density, movements, and population parameters, which began in 1993. Methods used in this effort are found in the summary of capture-recapture techniques for bears developed by Miller *et al*. (1987).

We held a meeting of the WABBMA working group in November 1999 that included participants from area villages, YDNWR, AVCP, and the department. Prior to this meeting the Board of Game delayed action on several public proposals to lengthen the general bear season pending recommendations from the working group. The group did not support any of the proposals and the Board subsequently did not make any regulatory changes.

Work toward the management objective to obtain a brown bear density estimate has been stymied because the working group has not supported the necessary deployment of radiocollars, particularly on boars, required by the census technique. Their support was made mandatory after a 1994 federal court decision put a halt to the use of radiocollars in the Kilbuck Mountains. However, some progress was made during the November 1999 meeting. While the group did not

support deploying any radiocollars on boars, they did support replacing existing radiocollars on sows and radiocollaring additional sows for a total deployment of 30 collars.

We recaptured 17 radiocollared sows and deployed fresh collars on 16 of them during late May and early June 2000. One bear did not receive a fresh collar because she was old and crippled and we did not expect her to survive much longer. We radiocollared 13 additional sows and by the end of the project we had a total of 29 collars deployed in the Kilbuck Mountains.

We included members of the working group as observers during our radiocollaring projects. This is an important aspect of our radiocollaring efforts and has improved acceptance of radiocollars. Village representatives from Mt. Village, Quinhagak, Bethel, and Kwethluk participated in the spring 2000 radiocollaring effort.

We sent letters requesting harvest and effort information to everyone who registered to hunt in the WABBMA during the 1998–1999 and the 1999–2000 regulatory years. We monitored the general hunt harvest through our standard sealing requirements. We assisted several local residents who shot bears in defense of life and property (DLP).

We contacted village leaders, local media, village natural resource personnel, hunters, and law enforcement personnel in an effort to minimize bear-human conflicts at camps and dumps. We relayed reports of illegal activities to the Department of Public Safety, Division of Fish and Wildlife Protection.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

The bear population appears stable, although statistically valid bear density estimates have not been made in Unit 18. Density estimates are possible using a modified capture-recapture technique (Miller *et al*. 1987). However, for an accurate, statistically valid estimate, approximately 50% of the population must be marked. Even with the recent increase of 12 radiocollars, a high enough level of collaring was not achieved due to local opposition and is the main factor in our inability to obtain a density estimate.

Kovach *et al* (unpublished draft) found generally low reproductive parameters for bears in the Kilbuck Mountains. The age of first reproduction is 7.2 years. The age of first successful reproduction is 9.0 years. The mean litter size is 1.9. The mean age at weaning is 3.1 years. The reproductive interval is 4.6 years and the mean annual sow productivity is 0.4 weaned cubs per year.

The survival rate of cubs from birth to weaning from 1993 to 1999 was 31.9% (22 weaned of 69 cubs produced). The mean annual survival rate for adult females from 1993 to 1999 was 95.7%.

Population Size

Population size estimates must be viewed with caution until a statistically valid estimate is completed in Unit 18. Based on information from previous reporting periods and assessments of available habitat, approximately 500–700 grizzly bears inhabit Unit 18.

Population Composition

There were no activities to determine brown bear population composition in Unit 18 during the reporting period.

Distribution and Movements

Salmon streams in Unit 18, such as the Kisaralik and Kwethluk Rivers in the Kilbuck Mountains and the Andreafsky River north of St. Marys, support greater brown bear densities than elsewhere in the unit. Lowland habitats along the forested riparian corridors of the Yukon River and tributaries of the Kuskokwim River support moderate densities of brown bears. Other lowland habitats, including the vast treeless lowland of the Yukon–Kuskokwim Delta (Y-K Delta), contain very few bears.

MORTALITY

Harvest

Season and Bag Limit.

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
Unit 18–General Hunt		
Resident Hunters: 1 bear every four regulatory years	10 Sep–10 Oct 10 Apr–25 May (General hunt only)	
Nonresident Hunters: 1 bear every four regulatory years		10 Sep–10 Oct 10 May–25 May (General hunt only)
Unit 18–Subsistence Hunt		
Resident Hunters: 1 bear per regulatory year by registration permit in the WABBMA for subsistence purposes	1 Sep–31 May (Subsistence hunt only)	
Nonresident Hunters:		No open season (Subsistence hunt only)

Board of Game Actions and Emergency Orders. The Board of Game reauthorized the brown bear tag fee exemption associated with the WABBMA registration permit. There were no other changes made to the bear regulations during this reporting period.

Human-Induced Harvest. During the 1998–1999 regulatory year, the Unit 18 reported harvest was 14 bears (1 subsistence and 13 general season) and during 1999–2000 the reported harvest

was 7 bears (2 subsistence and 5 general season). Additional harvest statistics are shown in Tables 1 and 2.

DLP losses are reported infrequently. By their nature, DLP instances are unplanned; people involved in DLP kills are unprepared for dealing with a dead bear, and generally have poor knowledge of proper procedures. We made some progress with DLP reporting, but we probably don't hear about most bears killed under DLP circumstances. During this reporting period we processed 2 DLP bears.

Permit Hunts. The WABBMA registration permit is available to hunters who take bears primarily for the meat. This permit was designed to make bear hunting regulations more suitable for local residents who include bear meat as part of their subsistence fare. Under this permit; hunters must salvage the meat for human consumption, hunters are able to take one bear per regulatory year, the season is longer, the hide and skull need not be salvaged, hunters report their hunting activity after receiving a prompt by mail, and the sealing requirement is eliminated unless the hide is removed from the management area. If a hide is presented for sealing under this last provision, the trophy value of the hide is destroyed by removing the skin of the head and the front claws and these parts are retained by the department.

The percentage of WABBMA permits issued to residents outside Unit 18 has increased from 5% in 1996–1997 to 38% by 1999–2000. In some cases, hunters get the permit so they can shoot a bear causing problems in camp during hunts for other big game. They often don't want to shoot a bear, but if they have to, they also don't care to relinquish it to the State as required by DLP regulations. Provided the meat is salvaged, the WABBMA permit offers them a way to do that without paying the $25 tag fee required under the general hunt regulations. This is an unintended use of the WABBMA permit and needs to be considered if this type of use increases.

Hunter Residency and Success. During the 1998–1999 regulatory year, 3 residents and 10 nonresidents harvested brown bears under the general hunting regulations. During 1999–2000, 2 residents and 3 nonresidents harvested bears (Table 1).

The YDNWR has issued permits to 2 bear hunting guides to operate within the refuge. The TNWR has issued a permit to 1 guide to operate within the portion of the TNWR within Unit 18. Only 1 of these three guides is active. Each is permitted to take up to 5 bears per calendar year. The higher harvest of bears during the 1998–1999 season (Table 1) is largely explained by the fact that these permits are based on calendar rather than regulatory years.

Only residents are eligible for WABBMA registration permits. In 1998–1999, 4 hunters reported taking bears. Only 1 of these was taken in Unit 18. In 1999–2000, 8 hunters reported taking bears and 2 of these were taken in the Unit 18 portion of the WABBMA (Table 2).

General hunt regulations require hunters to report by having their bear sealed. However, this reporting mechanism does not measure the number of unsuccessful hunters so success rates could not be calculated for this group of hunters.

Success rates are available for those hunters using the WABBMA permits (Table 2). In 1998–1999, 42 of 95 permitees reported their hunts. Of these, 21 did not hunt and 21 reported hunting

bears. Four bears were reported harvested. Only 1 of the 4 bears harvested was taken in the Unit 18 portion of the WABBMA. Approximately 19% of those who hunted were successful. In 1999–2000, 63 of 85 permitees reported their hunts. Of these, 36 did not hunt while 27 reported hunting bears for a reported harvest of 8 bears. Only 2 of the 8 bears harvested were taken in the Unit 18 portion of the WABBMA. Approximately 30% of those who hunted were successful.

Harvest Chronology. Most of the bears taken in Unit 18 are killed in the spring with the largest part taken on or before May 15. However, this pattern is variable. When the snow conditions allow travel by snowmachine, hunters are more successful. Additional harvest chronology data are found in Table 1.

Transport Methods. In 1998–1999, 4 hunters used boats in the fall, 5 used airplanes in the spring and 4 used snowmachines. In 1999–2000, 2 hunters used boats, 1 used an airplane in the spring, and 2 used airplanes in the fall. All of these hunters hunted under the general hunt regulations.

The hunters who use WABBMA permits typically use snowmachines. Since the subsistence season is open from 1 September through 31 May, snowmachines are more practical.

Other Mortality

During this reporting period, hunters did not kill any radiocollared bears, but 6 bears died of causes unrelated to hunting. The most likely causes of death include: 1 caught in an avalanche, 1 died of old age, and as many as 4 died during fights with other bears, possibly while defending cubs.

HABITAT

Assessment

Unit 18 contains approximately 14,000 km^2 of fair to excellent brown bear habitat in the Kilbuck and Andreafsky Mountains. Additional lowland riparian habitats surrounded by tundra, support moderate densities of brown bears along the Yukon River and tributaries of the Kuskokwim. Most brown bear habitat in Unit 18 is protected by the YDNWR, and land status is not expected to change.

Enhancement

Bear habitat is largely intact in Unit 18 and protected by the YDNWR and the TNWR. No enhancement is necessary or anticipated.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

The WABBMA working group has been a useful platform for public involvement in bear issues in Unit 18. It was established to bridge the communication gap made apparent by the 1994 lawsuit that brought an end to the Kilbuck Mountains bear census. Since then, our understanding of the bear population has grown and reasonable guesses can be made about the size of the bear population. It is clear that the 1 bear per season bag limit established for the WABBMA permit hunt is sustainable.

The acute need for the working group has faded and funding to maintain the group is more difficult to obtain. While the group still provides valuable input regarding bear issues in Unit 18, future meetings are less certain.

CONCLUSIONS AND RECOMMENDATIONS

The lack of objective bear population data has hampered management in the past and will continue to be an issue until a density estimate can be completed. However, the reproductive data we have gathered and the time spent working with bears in the Kilbuck Mountains has improved our understanding of the Unit 18 bear population and better management decisions are now possible.

Our relationship with members of the WABBMA working group has improved. At the beginning of the project, there was much animosity regarding radiocollaring bears. This has been tempered somewhat as evidenced by the support for deploying additional radiocollars. Having working group members participate in capture operations is a major reason for the increased acceptance.

The arrival of large numbers of Mulchatna caribou in Unit 18 has provided an alternate source of red meat for the people of the Y–K Delta. As a consequence, interest in hunting bears for food has declined, at least in the short term. The contrary impression the reader might get from Table 2 (higher subsistence hunt harvest of bears) is due to the expansion of the WABBMA into other game management units.

We should continue to encourage local residents to report all bear kills. Inaccurate and incomplete data continue to be a problem. We should continue efforts to develop reliable brown bear harvest and DLP information.

LITERATURE CITED

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Table 1 Unit 18 general hunting season brown bear harvest. Season dates are 10 Sept.–10 Oct. and 10 May–25 May.

		Southeast of the Kuskokwim				North of the Yukon			
		Fall harvest		Spring harvest		Fall harvest		Spring harvest	
Regulatory year	Total harvest	Before 20-Sep	After 20-Sep	Before 15-May	After 15-May	Before 20-Sep	After 20-Sep	Before 15-May	After 15-May
1994–1995	3			M'F'	M'				
1995–1996	4		F'M	F'	M'				
1996–1997	5	M'		F'M'M	M'				
1997–1998	4		MM'F'		M				
1998–1999	13	M'F'M'F'	M'	FM'M' M'M'M'		M	F		
1999–2000	5	M	F'	M'	MM'				
Totals	34	6	7	13	6	1	1		

'Nonresident guided hunter

Table 2 Western Alaska Brown Bear Management Area (WABBMA) brown bear harvest, hunter effort and success, 1996–2000.

Regulatory year	Permits issued	Permits returned	Number Hunting	Bears harvested in WABBMA	Bears harvested in Unit 18
1996–1997	57	28	12	0	0
1997–1998	54	16	6	0	0
1998–1999	95	42	21	4	1
1999–2000	85	63	27	8	2

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BROWN BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 22 (25,200 mi^2)

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

BACKGROUND

We believe that brown bear numbers in Unit 22 declined during the early 1900s after the introduction of the gold mining and reindeer herding industries. It was not until these activities declined substantially during the 1940s and when federal predator control efforts ended at statehood in 1959 that bear numbers began to slowly recover (Grauvogel 1986). The population has since continued to increase in most areas, presumably in response to higher prey densities, favorable environmental conditions and conservative management policies.

The increasing number of bears in Unit 22 has many effects and consequences. There is considerable interest in hunting by residents, principally from the Nome area, and by nonresidents through general season and drawing permit hunts. Human-bear encounters in the Nome area, and in Unit 22 villages and camps are increasingly common. Predation on moose calves is believed to be depressing moose populations in many parts of the unit, and reindeer herders report that predation by brown bears on reindeer continues to be a significant problem. Many local residents believe that bear densities in Unit 22 are excessive.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

The management goal for brown bears in Unit 22 is to maintain populations at levels estimated during the 1991 bear research study and census. The density estimate for adult brown bears in the study area in Unit 22C and portions of Units 22B and 22D was 1 bear per 27 mi^2.

MANAGEMENT OBJECTIVES

- Assess population trends through field observations and analyses of harvest data.
- Seal bears and monitor the harvest.
- Improve communication with the public to reduce illegal and unreported harvest, and improve understanding of defense of life and 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.

METHODS

A variety of methods have been used to assess the bear population and meet the management objectives in Unit 22. Assessments of population status were derived from observations made during other wildlife surveys and fieldwork. Information was also gathered through general conversation with knowledgeable local residents. Bear hunting regulations were liberalized in an effort to slow population growth. Efforts were made to inform residents about regulation changes and to increase understanding of Defense of Life and Property (DLP) regulations. Bears were sealed by Nome staff and approved sealing agents in several Unit 22 villages. Harvest data were summarized from sealing certificates, harvest reports from nonresident drawing permits and subsistence registration permits, village-based big game harvest surveys and DLP reports. Problems with nuisance bears were addressed through public education and by working with Fish and Wildlife Protection officials and Village Public Safety Officers to deter or destroy problem bears. An electric bear exclosure fence was set up and used as a demonstration to alleviate bear problems at a camp in the vicinity of Nome.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

We believe that grizzly bear numbers are increasing throughout much of Unit 22 and are probably above densities previously estimated. A bear research study and census, completed during the early 1990s, estimated the brown bear population in eastern Unit 22B, Units 22C, 22D and 22E at 458 bears >2 years-old (density: 1 bear per 27 mi^2). The density estimate varied almost two-fold within the study area with the highest densities (1 bear per 20 mi^2) in the western portion of Unit 22B, and the lowest densities (1 bear per 39 mi^2) in the southern portion of Unit 22E.

Observations by staff, guides and residents of Unit 22 indicate brown bear numbers have increased throughout much of the unit over the last decade in spite of increasingly high harvests. Reports of bear encounters, complaints about nuisance bears and the take of DLP bears have continue to increase during the reporting period. Destruction of cabins and raids on subsistence food caches have expanded to the westernmost parts of the unit where bears previously were seldom seen.

Population Composition

There were no activities to determine population composition in Unit 22 during the reporting period.

Distribution and Movements

There were no activities to determine distribution and movements in Unit 22 during the reporting period.

MORTALITY

Harvest

Season and Bag Limit.

Liberalized bear hunting regulations, adopted by the Board of Game in October 1997, went into effect at the beginning of this reporting period. Spring and fall seasons for general and drawing permit hunts were replaced with a continuous season, except in Unit 22C where a split season remains in effect. Also, Unit 22 except for Unit 22C was included in the Northwest Alaska Brown Bear Management Area.

1998–1999 and 1999–2000 Regulatory Year **Unit and Bag Limits**	**Resident Open Season (Subsistence and General Hunts)**	**Nonresident Open Season**
Unit 22(A) **RESIDENTS & NONRESIDENTS:** One bear every 4 regulatory years	1 Sep–31 May	1 Sep–31 May
Unit 22(B) **RESIDENT HUNTERS:** One bear every 4 regulatory years	1 Sep–31 May	
NONRESIDENT HUNTERS: One bear every 4 regulatory years by drawing permit only. Up to 20 permits maybe issued in combination with Unit 22C.		1 Sep–31 May
Unit 22(C) **RESIDENTS:** One bear every 4 regulatory years	1 Sep–31 Oct 10 May–25 May	
NONRESIDENTS: One bear every 4 regulatory years by drawing permit only. Up to 20 permits maybe issued in combination with Unit 22B.		1 Sep–31 Oct 10 May–25 May
Unit 22(D) **RESIDENTS:** One bear every	1 Sep–31 May	

1998–1999 and 1999–2000 Regulatory Year **Unit and Bag Limits**	**Resident Open Season (Subsistence and General Hunts)**	**Nonresident Open Season**
4 regulatory years **NONRESIDENTS:** One bear every 4 regulatory years by drawing permit only. Up to 5 permits maybe issued in combination with Unit 22E.		1 Sep–31 May
Unit 22(E) **RESIDENTS:** One bear every 4 regulatory years	1 Sep–31 May	
NONRESIDENTS: One bear every 4 regulatory years by drawing permit only. Up to 5 permits maybe issued in combination with Unit 22D.		1 Sep–31 May
Units 22(A), 22(B), 22(D), 22(E) – Subsistence Hunt **RESIDENTS:** One bear per regulatory year by registration permit in the Northwest Alaska Brown Bear Management Area for subsistence purposes	1 Sep–31 May	
NONRESIDENTS:		No Open Season

Board of Game Actions and Emergency Orders. In October 1999, in response to public concern about the effect of bear predation on moose calves in some parts of Unit 22, department staff recommended regulatory changes that were intended to further increase bear harvest in Unit 22. The Board adopted the following regulations effective during the 2000-2001 regulatory year: the resident tag fee requirement was eliminated throughout Unit 22 and the number of nonresident drawing permits was increased from 20 to 27 in Units 22B/22C (Hunt DB685) and from 5 to 8 in Units 22D/22E (Hunt DB690).

Human-Induced Harvest. Harvest increased substantially during this reporting period averaging 95 bears per year, a 76% increase over the 1990–1997 average annual harvest of 54 bears. During the 1998–1999 regulatory year 90 bears were harvested and 99 bears were taken during the 1999–2000 regulatory year (Table 1). We do not attribute the increase in harvest to the regulatory changes that lengthened the season and established a subsistence hunt. Only 3 bears were taken with a subsistence permit and 4 bears were taken during the period from 31 October –

15 April when the season was previously closed. Factors contributing to the high harvests in recent years include large numbers of bears, desire by local residents to reduce bear numbers, exceptional snow conditions for hunting in the spring of 1999, more non-local Alaska resident hunters, and more nonresident hunters in Unit 22A where drawing permits are not required.

In spite of recent increases in harvest, no change in sex and age composition of the overall Unit 22 harvest is apparent. Annual harvest of male bears has consistently exceeded the female harvest. During this reporting period 125 (66%) male bears and 64 (34%) females were harvested (Table 2). The percent of males in the harvest has averaged approximately 65% since 1961 with no deviation from this trend (Figure 1).

The trend-line of the average age of harvested bears has remained constant at 6.5 years since Unit 22 age records began in 1967 (Figure 2). The average ages of bears harvested in the spring are consistently higher than those taken in the fall. The fall hunt generally targets bears in the most accessible places where most of the older, larger bears have now been eliminated. Much of the harvest is by local recreational hunters who are not selective and shoot whichever bear first presents itself. However large bears are available for serious trophy hunters; 39 of 189 bears (21%) taken during this reporting period had skull sizes of 24 inches or larger.

Fourteen bears were reported as non-hunting kills during the 2-year reporting period (Table 1), 9 DLPs were taken and one was a mercy killing. Compared to previous reports, this is the highest number of DLP bears in Unit 22. Whether this represents an actual increase in the number of bears killed or better compliance with reporting is unknown. These totals do not represent the actual number of non-hunting kills for the reporting period. Each year, we receive unverified reports of bears being shot and left unattended, or of not being sealed. The accuracy of these reports is unknown. Nelson (1993) estimated that an additional 10 to 30 bears were killed annually and not reported in Unit 22.

In 1998–1999 14 individuals registered for the NWABBMA subsistence hunt and 1 bear was taken by a Wales hunter. In 1999–2000 23 people registered and 2 bears were taken by hunters from Wales and Elim. In Unit 22 brown bears are seldom hunted for food and most people register so they may keep the hide and skull if they are forced to kill a bear under DLP circumstances.

During this reporting period a community harvest assessment project was initiated in cooperation with the ADF&G Subsistence Division and Kawerak Native Corporation in an attempt to better quantify unreported subsistence harvest of big game species, including bears, by village residents. During this reporting period the villages of Koyuk, Shaktoolik, White Mountain and Elim were surveyed. Only one bear taken by a Koyuk resident was reported.

Permit Hunts. During this reporting period 20 drawing permits were allocated annually to nonresident hunters in Units 22B and 22C in combination, and 5 permits to nonresidents in Units 22D and 22E in combination. In regulatory year 1998 the split fall and spring seasons were replaced with a continuous season from 1 September – 31 May in all but Unit 22C, allowing drawing permit holders to hunt during either spring or fall. To increase opportunity for nonresidents, all qualified drawing permit applicants are maintained on alternate lists and permits are issued to alternates in ranked order if drawing permit winners decline their permits

and chose not to hunt. Over-the-counter permits were issued when the alternate list was exhausted in each regulatory year of the reporting period.

Hunter Residency and Success. In Unit 22A, where nonresident drawing permits are not required, the size of the nonresident harvest surpasses the resident harvest. In the remainder of the Unit where nonresident effort has been restricted by a drawing permit quota, the size of the resident harvest normally exceeds the nonresident harvest (Table 3). The number of non-local resident hunters is increasing, perhaps because the Seward Peninsula is gaining a reputation as a place where record book bears are taken regularly.

During this reporting period, all 20 nonresident drawing permits for Units 22B and 22C and the 5 drawing permits for Units 22D and 22E were issued annually by drawing or over the counter. In Units 22B and 22C, 55% of the nonresident permittees reported successful harvests. In Units 22D and 22E, 70% of the nonresident permittees were successful.

We cannot easily evaluate hunter effort and success for resident hunters under the present harvest reporting system because unsuccessful hunters are not required to report. However, it appears hunter success is normally higher in the spring, particularly when suitable snow conditions exist for snowmachine travel and tracking.

Harvest Chronology. Historically, more bears are taken during the spring season because bears are more easily observed and tracked, hunter effort is greater, and bears tend to be more accessible to hunters using snowmachines as transportation (Nelson 1993). This was the case in 1998–1999 when 58% of the annual harvest occurred in the spring. However, in 1999–2000, only 43% of the annual harvest occurred in the spring (Table 2).

Transport Methods. The Nome road system makes it possible for bear hunters to use highway vehicles as the primary transportation for hunting or to use roads as access points for boats, 4-wheelers and snowmachines. Most hunters use snow machines in the spring. In the fall 4-wheelers followed by boats and highway vehicles were most frequently used. Aircraft use in the unit is primarily limited to registered guides moving clients in and out of camps. Other transport methods are used from the camps (Table 4).

Other Mortality

There were no observations of other mortality during the reporting period.

HABITAT

Assessment

There were no brown bear habitat assessment activities in Unit 22 during the reporting period.

Enhancement

There were no brown bear habitat enhancement activities in Unit 22 during the reporting period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

Moose research in Unit 22B indicates that brown bear predation on moose calves significantly reduces calf survival in western Unit 22B, and research in other parts of Alaska has shown that brown bear predation can be the primary limiting factor on moose population growth. Moose recruitment rates have declined to less than 10% in much of Unit 22 over the last 10 years, during which time bear numbers are believed to have increased. Anecdotal evidence suggests bear predation on adult moose is increasingly common.

During much of the last decade winters were relatively mild and berry crops were noted to be particularly bountiful between 1995 and 1998. During this same period informal and anecdotal evidence suggests productivity, litter sizes and cub survival were high. In 1998 and 1999 reliable reports of sows with 4 cubs came from 4 widely separate parts of the unit. In recent years there have been an abundance of bears of younger age classes that are often less wary and more likely to inhabit accessible areas and to venture into areas of human habitation, resulting in bear/human conflicts.

CONCLUSIONS AND RECOMMENDATIONS

Over the last decade we believe Unit 22 brown bear numbers have increased above the density estimated in the bear census and research study reported in 1991. During the same period moose populations and recruitment rates have declined in many parts of the unit and we attribute the moose decline to be largely the result of increased bear predation on calves. In areas such as western Unit 22B and eastern Unit 22D where moose hunting opportunity has been greatly reduced, we should consider maximizing hunting opportunity of brown bears to reduce and maintain the bear population at the density observed in 1991. This can be achieved by revising the management objective to provide maximum hunting opportunity of brown bears in selected portions of Unit 22. Although uncertain, the reduction of brown bear density may have the benefit of reducing bear predation on moose calves.

During this reporting period the reported harvest increased by 76% over the previous 10-year average harvest, but no change is evident in the age or sex composition of the harvest. The department will consider recommending further liberalization of hunting regulations to promote continued high harvest rates including: 1) changing the bag limit for general season hunts from one bear every 4 years to one bear per year, and 2) opening the bear season in August to increase the chance of harvesting sows not accompanied by cubs and to allow the public to use a hunting license to eliminate problem bears at camps during August.

In other parts of Alaska, liberalized bear hunting regulations have not been effective at reducing bear densities to allow improved ungulate calf survival. In Unit 22, particularly along the Nome road system in western Unit 22B and eastern Unit 22D, liberalized seasons and bag limits may increase harvest more than in other areas of the state because bears are particularly vulnerable in the open country, especially during the long spring snow machine season on the Seward Peninsula. Also, there is great interest in bear hunting in Nome and a widespread desire to reduce bears numbers in the area. We should strive for high harvest rates and reductions in the bear population only as long as necessary to rebuild moose populations that have been limited by predation.

It is important to increase educational efforts aimed at understanding bear behavior, bear safety and minimizing bear/human conflicts, emphasizing the importance of clean camps and not leaving food, dog food, scraps or garbage unattended or accessible to bears. We should continue efforts to improve understanding of hunting and DLP regulations in the villages.

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Table 1 Unit 22 brown bear harvest[a] for regulatory years 1998–1999 and 1999–2000

Regulatory year	Reported harvest											
	Hunter kill				Non-hunting kill				Total			
	M	F	Unk.	Total	M	F	Unk.	Total	M	F	Unk.	Total
1998–1999												
Fall 1998	19	16	0	35	4	1	0	5	23	17	0	40
Spring 1999	34	14	0	48	0	1	0	1	34	15	0	49
NWABBMA	1	0	0	1	-	-	-	-	1	0	0	1
Total	54	30	0	84	4	2	0	6	58	32	0	90
1999–2000												
Fall 1999	29	23	0	52	3	1	0	4	32	24	0	56
Spring 2000	32	5	0	37	2	2	0	4	34	7	0	41
NWABBMA	2	0	0	2	-	-	-	-	2	0	0	2
Total	63	28	0	91	5	3	0	8	68	31	2	99

[a] Represents the total known harvest including nonresident permit hunt harvest, DLP and other human-caused accidental mortality.

Table 2 Sex of Unit 22 brown bear harvest[a] for regulatory years 1998–1999 and 1999–2000

Regulatory year	Game Management Unit											
	22A		22B		22C		22D		22E		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
1998–1999												
Fall 1998	9	6	6	5	6	6	1	2	0	0	22	19
Spring 1999	10	5	14	4	4	1	4	4	3	0	35	14
1999–2000												
Fall 1999	13	8	10	9	5	4	4	3	0	0	32	24
Spring 2000	9	2	15	2	3	2	6	1	3	0	36	7

[a] Includes nonresident permit hunts and NWABBMA harvest and non-hunting mortalities.

Table 3 Number, residency and success rates of brown bear hunters in Unit 22 for regulatory years 1996–1999

Regulatory Year	Successful hunters						
	Local Residents[a]		Nonlocal Residents		Nonresidents		Total
	(*n*)	%	(*n*)	%	(*n*)	%	(*n*)
1996–1997	25	44%	10	17%	23	39%	58
1997–1998	30	51%	5	8%	24	41%	59
1998–1999	30	36%	14	17%	39	47%	83
1999–2000	30	33%	18	20%	43	47%	91

[a] Hunters residing in Unit 22

Table 4 Unit 22 brown bear harvest by transport method for regulatory years 1993–1999

Regulatory Year	Number harvested							
	Airplane	Boat	Snowmachine	ORV	Highway vehicle	Walk	Unknown	Total (*n*)
1993–1994	7	4	20	8	5	0	0	44
1994–1995	1	4	27	6	4	0	0	42
1995–1996	7	1	29	6	5	0	0	48
1996–1997	9	5	14	15	12	3	0	58
1997–1998	7	6	28	8	10	0	0	59
1998–1999	4	13	42	13	8	3	0	83
1999–2000	7	8	35	25	12	2	0	91

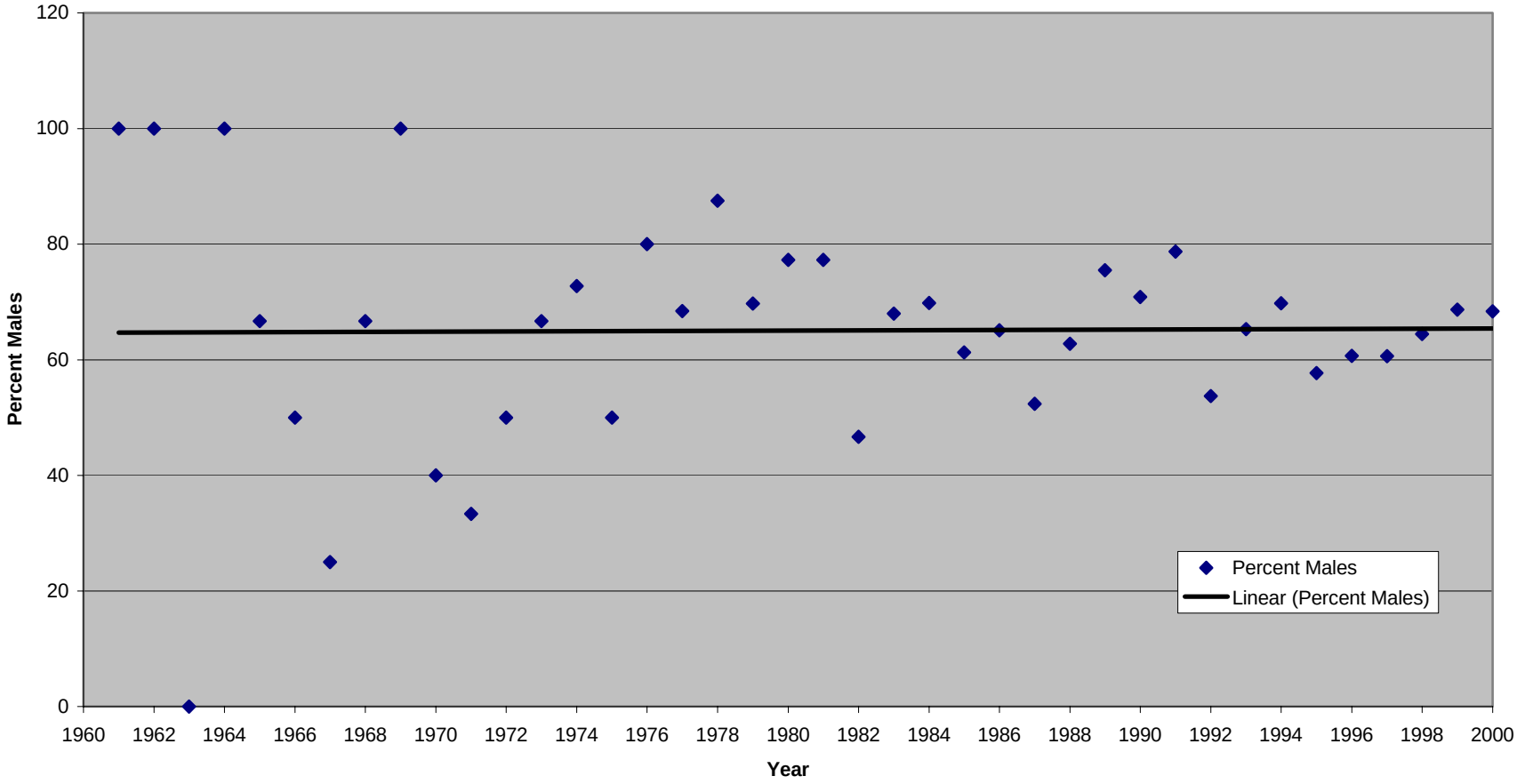

Figure 1 Trend of percent male brown bears in Unit 22 harvest, 1960-2000

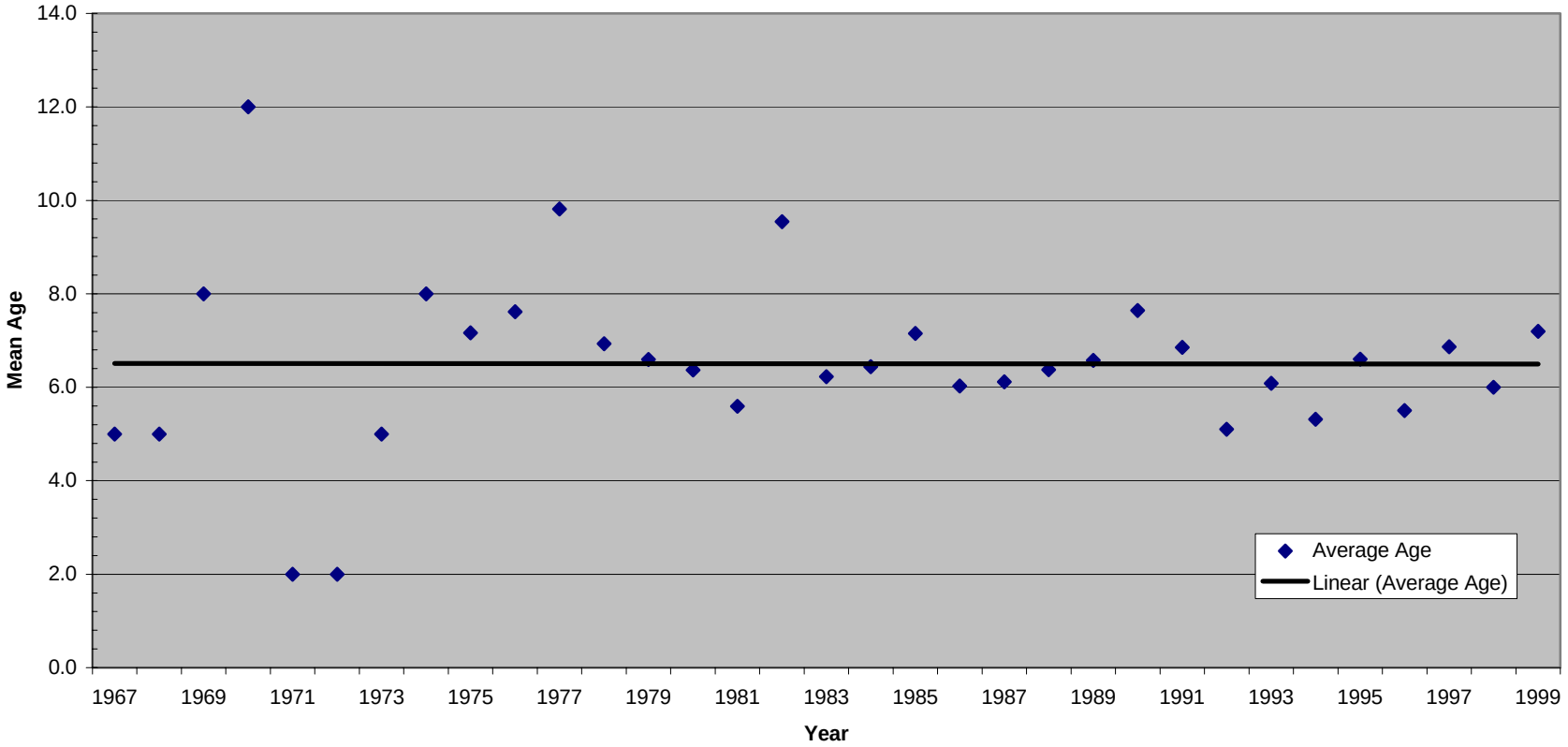

Figure 2 Trend of mean age of reported brown bear harvest in Unit 22, 1967 – 2000

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BROWN BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2000

LOCATION

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

GEOGRAPHICAL DESCRIPTION: Kotzebue Sound and western Brooks Range

BACKGROUND

In 1961 the department established brown bear hunting regulations and sealing requirements for Unit 23. The Board of Game created regulations under the assumption that the primary use of brown bears was for general season (trophy) hunting. However, Inupiat hunters in inland communities of Unit 23 traditionally harvested brown bears for meat, fat and hides (Loon and Georgette 1989). In response to frustration expressed by local residents over hunting regulations for brown bears and other species, department staff began an extensive regulation review in Unit 23 in 1988. This review provided the basis for establishing the Northwest Alaska Brown Bear Management Area (NWABBMA) subsistence registration hunt in 1992. Since 1992, 3 types of brown bear hunts have existed in Unit 23: 1) 2 drawing permit hunts (1 each during spring and fall) for nonresident hunters seeking trophy hunting opportunities; 2) a general season hunt for residents; and 3) a subsistence registration permit hunt for residents.

Biological research on brown bears in Unit 23 consists of a baseline study of density, movements and productivity in the vicinity of the Red Dog Mine (Ballard et al. 1991).

MANAGEMENT DIRECTION

MANAGEMENT GOALS

The management goal for brown bears in Unit 23 is to maintain a minimum density of one adult bear per 25.7 mi^2 in the Noatak drainage.

MANAGEMENT OBJECTIVES

- Conduct a census in the Noatak drainage before further development occurs. The census should be comparable to the census completed in 1987.
- Continue community-based assessments to collect harvest information from residents of Unit 23.

METHODS

We obtained harvest information from sealing documents and harvest reports. We encountered several problems compiling harvest information for this report. 1) Compliance with license and reporting requirements has historically been low for residents of Unit 23. This reduced the accuracy of harvest information for this and previous reports. 2) Harvest information from the

1999-2000 regulatory year was incomplete at the time of this report. Although we report this data it should be viewed as minimal estimates of harvest and will likely be updated for future reports. 3) Archived harvest data recently became available to Area Biologists through computer files and access systems (Info Access). While using this system it became evident that brown bears harvested under the NWABBMA subsistence hunt had not been reported to the statewide harvest section. As for past Unit 23 reports, this data was compiled by hand. It also became clear that many brown bears taken under DLP regulations have not been entered in the statewide harvest files. Although none of these difficulties were serious, harvest data in future reports will likely be slightly different after these discrepancies are corrected.

Kotzebue staff telephoned subsistence registration permit holders who did not respond to the first harvest report letter. Community based harvest assessments were conducted in Kiana, Noatak, Selawik and Shungnak during the reporting period (S. Georgette, pers. commun.). Our understanding of the current population status of bears in Unit 23 is based largely on qualitative information from local residents, some long-term commercial operators and my opportunistic observations.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Brown bears currently appear to be abundant throughout Unit 23 in relation to previous years, and in relation to other portions of northern Alaska (ADF&G, unpub. data). The only brown bear population census conducted in Unit 23 occurred during 1987 and estimated a density of one adult bear (2.5+ years) per 25.7 mi^2 in the vicinity of the Red Dog Mine (Ballard et al. 1991). We have no other quantitative data to indicate population trend.

Many residents of Unit 23 indicate brown bear numbers have increased since about 1990. Several developments over the last 50 years have probably contributed to this. Local residents speculate that the abundance of moose and caribou in this region since the 1950s provided a stable prey base for brown bears to thrive and multiply. In addition, the presence of these ungulates substantially reduced the subsistence harvest of brown bears for food (R. Stoney, pers. commun.). The practice of exhuming bears from their dens and killing all cubs and adults was reportedly a common practice when bears provided the only reliable source of terrestrial hides, meat and fat. Also, since the decline of the commercial fishery in Kotzebue Sound, more salmon appear to be reaching spawning areas compared to previous years.

Population Composition

There were no activities to determine brown bear population composition in Unit 23 during the reporting period.

Distribution and Movements

There were no activities to determine brown bear distribution and movements in Unit 23 during the reporting period.

MORTALITY

Harvest

Season and Bag Limit.

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
Unit 23		
Residents: One bear every 4 regulatory years	1 Sep–31 May (General hunt)	
Nonresidents: One bear every four regulatory years by drawing permit (18 permits fall; 18 permits spring)		1 Sep–10 Oct 15 Apr– 25 May
Residents: One bear per regulatory year by registration permit in the Northwest Alaska Brown Bear Management Area for subsistence purposes	1 Sep-31 May (Subsistence hunt)	
Nonresidents:		No open season

During this reporting period resident hunters could hunt brown bears in Unit 23 under a general season or the NWABBMA subsistence registration permit hunt. The general season bag limit was 1 bear per 4 regulatory years and hunters were required to use a big game tag and seal the hide and skull.

Since July 1992 subsistence hunting has been allowed under the NWABBMA subsistence registration permit hunt. During this reporting period the NWABBMA consisted of Unit 21D, Units 22A, B, D and E; Unit 23 excluding the Baldwin Peninsula north of the Arctic Circle; Unit 24; and Unit 26A. The bag limit was 1 bear per regulatory year and the season was 1 September-31 May. A brown bear tag was not required for hunters to participate in this hunt. Hunters could not use aircraft for transportation to the field and were required to salvage all meat for human consumption. There was no requirement to salvage the hide or skull of a bear taken for subsistence; however, if the hide or skull was salvaged and transported out of the management area the hide had to be sealed. Trophy value of the hide was destroyed at the time of sealing by removing the skin of the head and the front claws. The portions of the hide removed during sealing were retained by the state.

Board of Game Actions and Emergency Orders. There were no emergency orders issued for brown bears during the reporting period. The number of spring nonresident drawing permits (DB791) was increased from 7 to 18 at the fall 1997 Board of Game meeting. This change went into effect during the 1998-1999 regulatory year. The number of nonresident brown bear drawing permits was again increased to 24 for the fall hunt (DB781) and 24 for the spring hunt (DB791) at the fall 1999 Board meeting. These increases went into effect during the 2000-2001 regulatory year. At the fall 1999 Board meeting board members also informally discussed modifying Defense of Life Property (DLP) requirements to make them less onerous to residents of Region V and thus increase compliance with reporting requirements. Several potential changes were identified and the Board directed Region V staff to prepare proposals for a subsequent Board meeting. These modifications were not supported by department staff in other regions or by Department of Public Safety staff and no proposals were submitted. Units 22A, B, D and E were added to the NWABBMA beginning 1 July 1998.

Human-Induced Harvest. Fifty four brown bears (44 males, 6 females and 4 unknown sex) were reported taken during 1998-1999, and 54 (32 males, 15 females and 7 unknown sex) in 1999-2000 (Table 1). An usually large number of bears were taken under DLP circumstances during 1999-2000 (3 of which were cubs of the year taken after their mother had been killed).

Sealing data for brown bears in Unit 23 should be viewed with caution. Compliance with reporting requirements has historically been low for all species taken by local residents. Compliance with reporting requirements was especially low for bears taken for subsistence prior to establishment of the NWABBMA subsistence hunt and for bears taken in DLP situations (Loon and Georgette 1989). Therefore, the figures reported here are minimum estimates of actual harvest. The additional opportunity afforded by establishing the subsistence hunt in 1992 did not increase harvest levels. Rather, it provided local hunters a means of legally practicing traditional hunts and improved our harvest data to some degree. The NWABBMA subsistence hunt now collects harvest information for a portion of the subsistence take that used to go unreported. Community harvest estimates suggest villages within Unit 23 take relatively few brown bears for subsistence: only 7 bears were reported taken by the 4 villages surveyed during 1998-1999 (S. Georgette, unpub. data). The unreported harvest associated with DLP kills and illegal take (for selling gall bladders, claws, etc.) is probably greater than the unreported component of legitimate subsistence harvest. For example, several years ago 8 brown bears were taken illegally between Kivalina and Cape Thompson within a period of several days for their gall bladders (C. Bedingfield, pers. commun.). We think trophy hunters' compliance with reporting requirements has approached 100% for many years.

As in previous years, most brown bears reported harvested in Unit 23 during this reporting period were taken in the Noatak River drainage (Fig. 1, Table 2). Since 1961, the proportion of total harvest taken from the Noatak River drainage has averaged 54% (SD=12), and the correlation between Noatak harvest and total harvest has been high, $r = 0.86$. This is partly because guides and residents of Kotzebue who tend to report their harvests concentrate on the Noatak River drainage where brown bears are abundant and easier to hunt than in the more densely forested Kobuk and Selawik river drainages.

Brown bear hunting regulations in Unit 23 have been modified many times since 1962. Since 1992 these regulations have become incrementally more liberal to provide for traditional subsistence hunting practices and increase opportunity for recreational hunting. These regulatory changes have also attempted to slowly reduce bear density to reduce bear-human conflicts and reduce predation on moose. Despite these regulatory changes the long-term trend in reported brown bear harvest has increased only slowly in the Noatak River drainage and remained essentially stable in all other drainages since 1961 (Fig. 1). The large variability in harvest among years (Fig. 2) suggests harvests are affected more by short-term factors, e.g. favorable weather and snow conditions, than by regulatory changes.

Permit Hunts. It has taken guides several years to fully utilize the increased number of nonresident brown bear drawing permits in Unit 23. The increase from 7 to 18 nonresident brown bear drawing permits for the spring hunt (DB791) during the 1998-1999 regulatory year resulted in under-subscription for this hunt. All 9 hunters who applied for a permit received one leaving 9 permits to be issued over-the-counter. Four of these permits were issued. Likewise, in the 1999-2000 regulatory year, 11 nonresident drawing permits were available over-the-counter and 6 were issued. During the 2000-2001 regulatory year (after this reporting period) 12 permits were available over-the-counter and all were issued. Success rates for both drawing permit hunts have generally been high (Table 3).

Participation in the NWABBMA registration hunt continues to be primarily by residents of the NWABBMA, and especially by residents of Unit 23 (Table 4). As in the past Unit 23 hunters harvested the majority of bears taken in the NWABBMA area. Overall harvest continued to be low during this reporting period (Table 5). Males comprised 90-100% of the harvest (Table 6).

Hunter Residency and Success. Nonlocal resident and nonresident hunters took 83% and 77% of all brown bears reported taken in Unit 23 during 1998-1999 and 1999-2000, respectively (Table 7).

Harvest Chronology. Most bears were taken during the months of September, April and May for the NWABBMA subsistence permit hunt (Table 8), general hunt and nonresident drawing permit hunt (Table 9).

Transport Methods. Most hunters used aircraft to access hunting areas in the fall, and snow machines during spring (Table 10). The use of ATVs in Unit 23 is increasing as more guides and outfitters base ATVs at remote camps.

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

The Red Dog Mine appears to have had little impact on bears in that area. Cominco staff remedied initial problems by improving garbage incineration procedures and facilities. Development plans call for increased staffing and production at the current lead-zinc deposit. The need for additional gravel may increase the possibility of disturbing bears near the mine.

CONCLUSIONS AND RECOMMENDATIONS

- Repeat a census in the 1987 Red Dog brown bear project study area before further development occurs.
- Continue community-based harvest assessments to collect information from residents of Unit 23.
- Continue to inform local residents of subsistence brown bear regulations especially in upper Kobuk River villages. Also, continue to issue permits by mail and collect harvest information by telephone.
- Solicit information and observations on the distribution and numbers of bears near the Red Dog mine from NANA/Cominco, Inc. environmental staff. There should be a special emphasis on identifying and protecting bear denning habitat.

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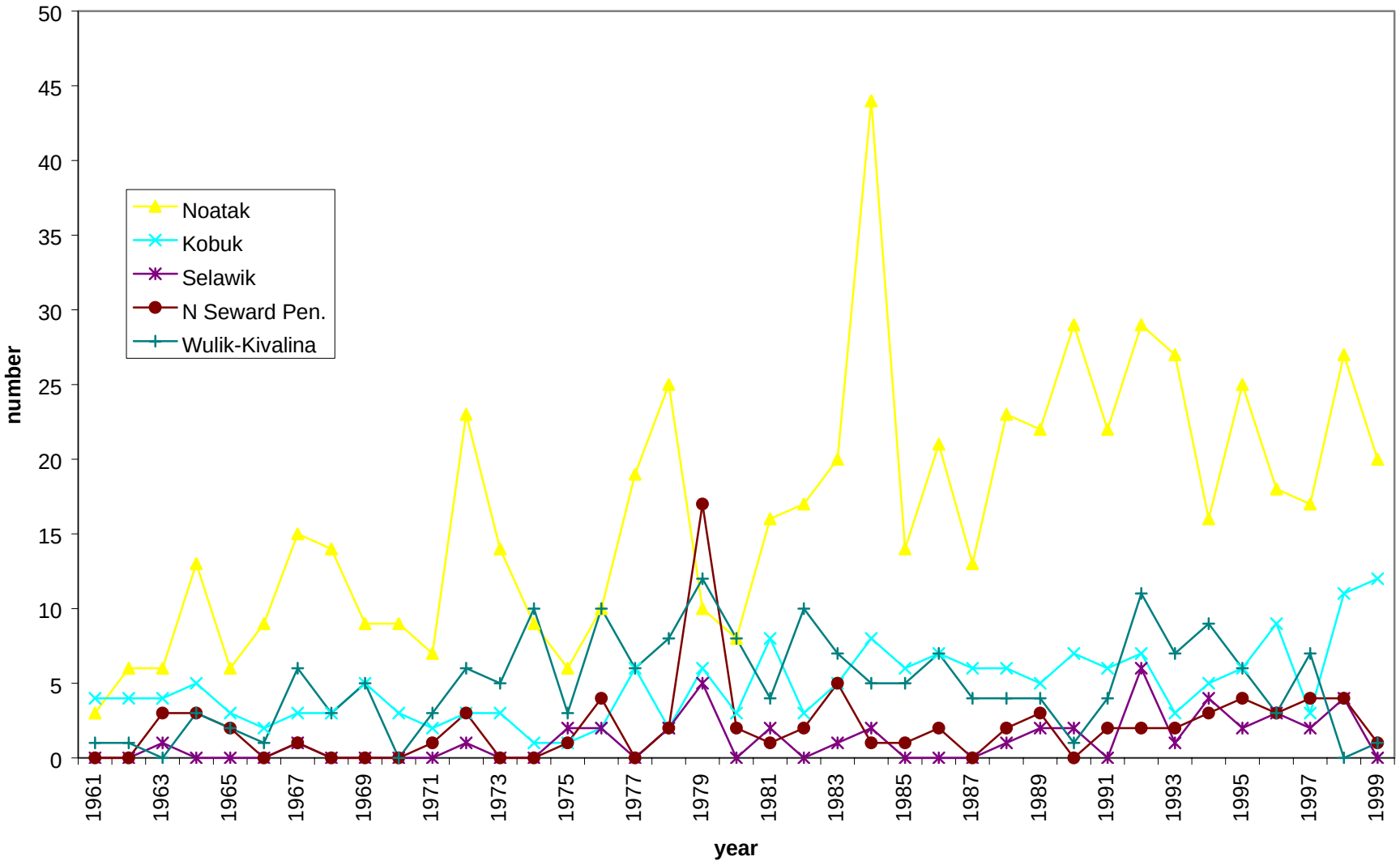

Figure 1 Unit 23 brown bear harvest by major drainage through time, 1961-1962 through 1999-2000

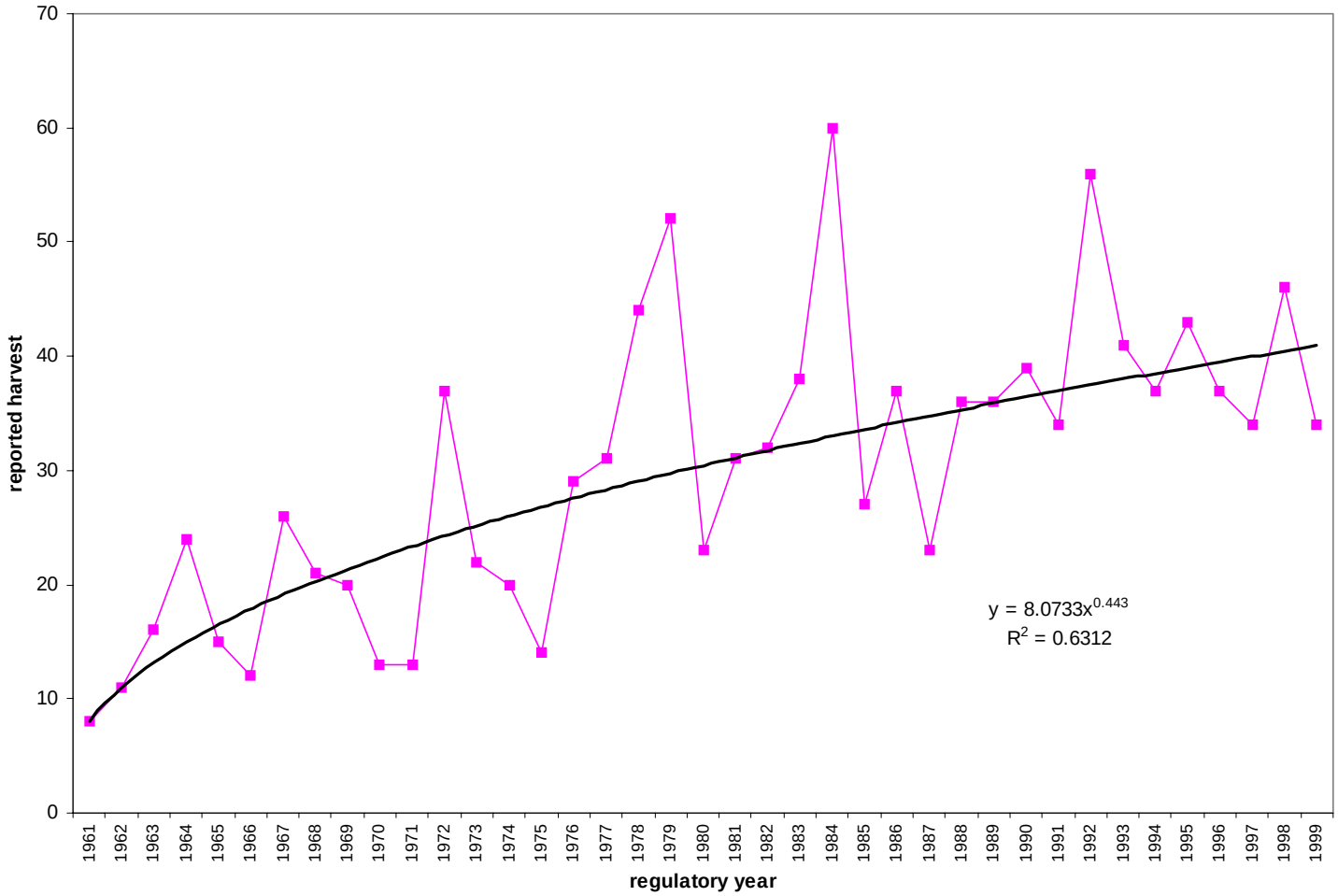

Figure 2 Total reported brown bear harvest for Unit 23, 1961-1999

Table 1 Reported harvest[a] of brown bears in Unit 23, 1995–1996 through 1999-2000

Regulatory year/Hunt type	Male	Female	Unknown	Total
1995-1996				
General hunt	19	7	0	26
Fall nonresident (DB781)	6	2	0	8
Spring nonresident (DB791)	1	0	0	1
NWABBMA (subsistence)	4	0	2	6
Non hunting harvest	1	0	0	1
Total	31	9	2	42
1996-1997				
General hunt	12	7	2	21
Fall nonresident (DB781)	4	1	2	7
Spring nonresident (DB791)	3	0	0	3
NWABBMA (subsistence)	5	1	0	6
Non hunting harvest	3	1	0	4
Total	27	10	4	41
1997-1998				
General hunt	15	5	0	20
Fall nonresident (DB781)	2	2	0	4
Spring nonresident (DB791)	3	0	0	3
NWABBMA (subsistence)	2	0	0	2
Non hunting harvest	2	0	1	3
Total	24	7	1	32
1998-1999				
General hunt	22	4	1	27
Fall nonresident (DB781)	9	2	2	13
Spring nonresident (DB791)	5	0	1	6
NWABBMA (subsistence)	7	0	0	7
Non hunting harvest	1	0	0	1
Total	44	6	4	54
1999-2000				
General hunt	6	6	0	12
Fall nonresident (DB781)	7	4	0	11
Spring nonresident (DB791)	9	1	0	10
NWABBMA (subsistence)	4	1	0	5
Non hunting harvest	6	3	7	16
Total	32	15	7	54

Table 2 Reported Unit 23 brown bear harvest by drainage, 1983-1984 through 1999–2000 (excludes bears with unknown harvest location)

Regulatory year	Noatak	Kobuk	Selawik	N. Seward Peninsula	Wulik/ Kivalina	Total
1983-1984	20	5	1	5	7	38
1984-1985	44	8	2	1	5	60
1985-1986	14	6	0	1	5	27
1986-1987	21	7	0	2	7	37
1987-1988	13	6	0	0	4	23
1988-1989	23	6	1	2	4	36
1989-1990	22	5	2	3	4	36
1990-1991	29	7	2	0	1	39
1991-1992	22	6	0	2	4	34
1992-1993	29	7	6	2	11	56
1993-1994	27	3	1	2	7	41
1994-1995	16	5	4	3	9	37
1995-1996	25	6	2	4	6	43
1996-1997	18	9	3	3	3	37
1997-1998	17	3	2	4	7	34
1998-1999	27	11	4	4	0	46
1999-2000	20	12	0	1	1	34

Table 3 Results of Unit 23 nonresident brown bear fall (DB781) and spring (DB791) drawing permit hunts, 1989-1990 through 1999-2000

	Number of drawing permittees					Number of	Permits
	Successful		Unsuccessful	Did not hunt	No report	applicants	available
Season	*n*	(%)	*n*	*n*	*n*	*n*	*n*
1989 Fall	7	(58)	5	5	1	42	18
1990 Spring	5	(100)	0	2	0	13	7
1990 Fall	7	(58)	5	2	0	31	18
1991 Spring	6	(100)	0	1	0	15	7
1991 Fall	7	(47)	8	1	0	26	18
1992 Spring	5	(83)	1	0	0	6	7
1992 Fall	7	(64)	4	7	0	21	18
1993 Spring	2	(100)	0	4	1	11	7
1993 Fall	7	(54)	6	1	1	21	18
1994 Spring	5	(83)	1	1	0	7	7
1994 Fall	4	(36)	7	4	3	23	18
1995 Spring	3	(75)	1	3	0	8	7
1995 Fall	8	(50)	8	1	1	24	18
1996 Spring	1	(14)	1	1	0	7	7
1996 Fall	7	(44)	9	1	1	38	18
1997 Spring	3	(50)	3	0	0	6	7
1997 Fall	4	(31)	9	3	2	27	18
1998 Spring	3	(43)	4	0	0	7	7
1998 Fall	13	(72)	2	3	0	27	18
1999 Spring	6	(33)	3	0	0	9	18
1999 Fall	11	(61)	1	0	6	33	18
2000 Spring	10						18

Table 4 Residency of hunters participating in the Northwest Alaska Brown Bear Management Area subsistence registration hunt, 1992–1993 through 1999-2000

Regulatory year	Unit 21D	Unit 22	Unit 23	Unit 24	Unit 26A	Other	Total
1992–1993	-	-	65	10	14	4	93
1993–1994	-	-	63	9	9	6	87
1994–1995	-	-	27	10	5	3	45
1995–1996	-	-	52	24	1	4	81
1996–1997	12	-	45	31	7	7	102
1997–1998	16	-	47	29	13	5	110
1998-1999	14	20	61	23	8	8	114
1999-2000	15	25	106	20	9	13	188

Table 5 Harvest of brown bears taken under the Northwest Alaska Brown Bear Management Area subsistence registration hunt by Game Management Unit, 1992-1993 through 1999-2000

Regulatory year	Unit 21D	Unit 22	Unit 23	Unit 24	Unit 26A
1992-1993	-	-	10	1	1
1993-1994	-	-	4	2	1
1994-1995	-	-	2	0	0
1995-1996	-	-	6	0	1
1996-1997	-	-	6	1	0
1997-1998	3	-	2	0	1
1998-1999	0	1	7	1	1
1999-2000	0	3	5	1	1

Table 6 Sex of brown bears harvested in the Northwest Alaska Brown Bear Management Area subsistence registration hunt, 1992-1993 through 1999-2000

Regulatory year	Male	Female	Unknown	Total
1992-1993	9	3	0	12
1993-1994	6	0	1	7
1994-1995	1	0	1	2
1995-1996	5	0	2	7
1996-1997	5	1	0	6
1997-1998	2	0	4	6
1998-1999	10	0	0	10
1999-2000	9	1	0	10

Table 7 Unit 23 brown bear harvest[a] by hunter residency, 1985–1986 through 1999-2000 (excludes bears with unknown date of kill)

Regulatory year	Unit 23 resident	Nonlocal resident	Nonresident	Total
1985–1986	9	3	19	22
1986–1987	6	12	15	33
1987–1988	4	10	9	23
1988–1989	17	8	9	34
1989–1990	9	9	13	31
1990–1991	12	11	13	36
1991–1992	9	14	12	35
1992–1993	12	27	9	48
1993–1994	10	14	12	36
1994–1995	10	15	7	32
1995–1996	10	16	8	34
1996–1997	10	9	10	29
1997–1998	11	9	8	28
1998-1999	7	16	19	42
1999-2000	11	14	22	47

[a] Includes nonresident permit hunts and excludes non-hunting moralities.

Table 8 Monthly harvest of brown bears in the Northwest Alaska Brown Bear Management Area subsistence registration hunt, 1992–1993 through 1999-2000

Regulatory year	Number of brown bears harvested										
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Unk	Total
1992–1993	5	1	-	-	-	-	1	5	-	-	12
1993–1994	1	1	-	-	-	-	-	4	1	-	7
1994–1995	-	-	-	-	-	-	-	2	-	-	2
1995–1996	2	1		1				2	1	-	7
1996–1997	3	1	-	-	-	-	-	2	-	-	6
1997–1998	3	-	-	-	-	-	-	2		1	6
1998-1999	2	-	1	-	-	-	-	2	4	1	10
1999-2000	1	-	1	-	-	-	-	4	4	-	10

Table 9 Reported harvest of brown bears in Unit 23 by month, 1986–1987 through 1999-2000 (excludes bears with unknown date of kill)

Regulatory	August		Septembe		October		April		May		Other		
year	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	Total
1986–1987	0	(0)	20	(61)	0	(0)	8	(24)	5	(15)	0	(0)	33
1987–1988	0	(0)	17	(74)	3	(13)	1	(4)	3	(9)	0	(0)	23
1988–1989	0	(0)	13	(38)	2	(6)	12	(35)	7	(21)	0	(0)	34
1989–1990	1	(3)	16	(52)	3	(10)	7	(23)	4	(13)	0	(0)	31
1990–1991	0	(0)	18	(50)	1	(3)	14	(39)	3	(8)	0	(0)	36
1991–1992	0	(0)	15	(43)	1	(3)	16	(46)	3	(8)	0	(0)	35
1992–1993	0	(0)	34	(71)	2	(4)	12	(25)	0	(0)	0	(0)	48
1993–1994	0	(0)	19	(53)	0	(0)	14	(39)	3	(8)	0	(0)	36
1994–1995	0	(0)	21	(66)	1	(3)	6	(19)	4	(12)	0	(0)	32
1995–1996	0	(0)	24	(70)	1	(3)	5	(15)	3	(9)	1[b]	(3)	34
1996–1997	0	(0)	19	(65)	1	(3)	7	(24)	2	(7)	0	(0)	29
1997–1998	0	(0)	16	(57)	1	(4)	9	(32)	2	(8)	0	(0)	28
1998-1999	0	(0)	32	(76)	1	(2)	3	(7)	5	(12)	1	(2)	42
1999-2000	0	(0)	23	(48)	0	(0)	16	(33)	9	(19)	0	(0)	48

[a] Excludes non-hunting moralities.
[b] Harvested in December.

Table 10 Reported Unit 23 brown bear harvest by transport method, 1985–1986 through 1999-2000

Regulatory year	Airplane	Boat	4-wheeler	Snowmachine	Other	Unknown	Total
1985–1986	15	1	0	8	2	2	27
1986–1987	20	7	0	6	1	3	37
1987–1988	17	4	1	0	1	0	23
1988–1989	13	3	7	11	0	2	36
1989–1990	24	4	1	6	0	1	36
1990–1991	24	6	0	8	0	1	39
1991–1992	20	2	0	11	0	1	34
1992–1993	32	3	5	1	3	2	46
1993–1994	24	0	1	10	0	2	37
1994–1995	17	8	1	7	2	0	35
1995–1996	20[a]	5[b]	2	7	1	2	37
1996–1997	18	3	0	4	1	2	29
1997–1998	15	7	1	4	1	0	28
1998–1999	25	10	1	7	3	0	46
1999–2000	19	3	0	0	0	7	29

[a] One hunter indicated he used a boat in conjunction with an airplane, 2 hunters indicated they used 4–wheelers in conjunction with an airplane.
[b] Three hunters used both a boat and 4–wheeler to harvest brown bears.

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 26A (56,000 mi^2)

GEOGRAPHIC DESCRIPTION: Western North Slope

BACKGROUND

Densities of brown/grizzly bears vary widely in Unit 26A, with densities highest in the foothills of the Brooks Range and lowest in the northern portion of the unit. Bear populations were reduced during the 1960s by hunting, but are currently stable or slowly increasing. Hunters, particularly those from out of state, have continued to show an interest in hunting bears in Unit 26A. Subsistence hunting regulations for the Northwest Alaska Brown Bear Management Area (NWABBMA) allow residents to hunt brown bears primarily for food in Units 21D, 22 except 22C, 23 except Baldwin Peninsula, 24, and 26A.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Maintain the existing brown bear population.

MANAGEMENT OBJECTIVES

- Maintain a grizzly bear population of approximately 800 bears or greater.
- Maintain a harvest success rate of least 60%.
- Minimize adverse interactions between grizzly bears and the public.

METHODS

There has been a radiotelemetry study in the southern portion of Unit 26A for a number of years, with methods previously reported in research progress reports (Reynolds 1984, 1989) and management reports (Trent 1985, 1989; Carroll 1993).

Population densities for broad habitat zones in Unit 26A were estimated using subjective comparisons to areas of the North Slope with known bear densities. The habitat zones include the coastal plain (<800 ft elevation), the foothills (800–2500 ft elevation), and mountains (>2500 ft elevation). Bear densities within these habitat zones are available from studies in the western

Brooks Range (1992), the Arctic National Wildlife Refuge (1982–1990), the Canning River and Ivashak River drainages (1973–1975), and the Prudhoe Bay oilfield area (1990–1993).

We used brown bear sealing certificates to determine seasonal harvests. For sealed bears we summarized the date and location of taking, skull sizes, and sex/age composition of harvested animals. Hunting activity was summarized by residency of hunters and their methods of transportation. For reporting population estimates and harvest summaries, we divided Unit 26A at 159^{o} W longitude into Unit 26A East and Unit 26A West.

The sealing certificate system has not proven to be an effective method to determine local harvest, so we reviewed several community-based harvest assessment studies to get an insight into local harvest. Some of the communities have been studied more than once so we were able to calculate mean harvests for these villages. In 1992 nearly all the villages were studied so we determined the total harvest for that year. For the villages of Anaktuvuk Pass and Nuiqsut, which are on the border of Unit 26A, we assumed that half of their bear harvest came from Unit 26A.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The most recent bear density information comes from June 1992 for the Utukok and Kokolik drainages in Unit 26A West. The density was calculated at 29.5 bears/1000 km^2 with a 95% confidence interval of 28.1–31.5 bears/1000 km^2 (Reynolds, personal communication).

The current population estimate for bears in Unit 26A is 900–1120 bears (Reynolds 1989). We estimate there are 400 bears in Unit 26A West and 500–720 bears in Unit 26A East (Table 1). This represents a substantial increase from the pre–1987 population estimate of 645–780 bears.

Bear populations in the Brooks Range apparently declined during the 1960s due to guided hunting (Reynolds, personal communication) and have been recovering since permit hunts were instituted during the 1977–78 regulatory year (Trent 1989). Bear densities appear to be at high levels relative to carrying capacity of the habitat.

Population Composition

The most recent population composition and productivity data are available from Reynolds (1984) for the western portion of the unit in the Utukok and Kokolik drainages. The sex ratio for bears older than 1 year was approximately 40 males/60 females; for cubs and yearlings it was approximately 50:50, but may have slightly favored females.

Age composition was as follows: cubs of the year - 13%; yearlings - 10%; 2-year-olds - 14%; 3 and 4-year-olds - 11%; and bears over 5 years - 52%. Mean age at first reproduction was 8.0 years, mean litter size was 2.0 cubs, mean reproductive interval was 4.0 years, and mean productivity was 0.5 cubs/year.

Distribution and Movements

We estimate densities for habitat zones in Unit 26A at 0.5–2 bears/1000 km^2 on the coastal plain, 10–30 bears/1000 km^2 in the foothills, and 10–20 bears/1000 km^2 in the mountains. These densities yield an estimated total of 1007 bears, with 81 in the coastal plain, 666 in the foothills, and 260 in the mountains.

MORTALITY

Harvest

Season and Bag Limit.

Unit and Bag Limits	Resident Open Season (Subsistence and General Hunts)	Nonresident Open Season
Unit 26A Resident and Nonresident Hunters: 1 bear every regulatory year.	20 Aug–31 May (General hunt only)	20 Aug–31 May (General hunt only)
Unit 26A Resident Hunters: 1 bear per regulatory year by registration permit in the Northwest Alaska Brown Bear Management Area for subsistence purposes.	20 Aug–31 May (Subsistence hunt only)	
Nonresident Hunters		No open season

Board of Game Actions and Emergency Orders. During their spring 1996 meeting, the Board eliminated the drawing permit requirements for nonresident brown bear hunters in Unit 26A and lengthened the season to 20 August–31 May. The change was made to simplify the complex permit system. The harvest in Unit 26A had been well below the maximum sustained yield and the permit hunt was undersubscribed. Our goal will be to keep the harvest at or below an average of 5% of the bear population during any 2-year period. Therefore, the maximum allowable harvest will be 31 bears per year in Unit 26A East and 20 bears in Unit 26A West. If this quota is exceeded during one year then the quota for the next year will be reduced by as much as it was exceeded during the first year. If the average is exceeded, more restrictive regulatory action, including emergency orders, will be considered. The system depends upon open lines of communication among the department, guides, and hunters.

During their fall 1999 meeting, the board increased the bag limit from one bear every 4 years to one bear every year. This was done to provide more opportunity for hunters because the bear harvest had remained well below the maximum sustained yield level.

Human-Induced Harvest. Ten bears were sealed during 1998–1999. One bear was reported killed in defense of life and property (DLP). Four bears were killed in Unit 26A West and 6 in Unit 26A East (Table 1). Six bears were males and 4 were females (Table 2).

Eleven bears were sealed during 1999–2000. Seven bears were killed in Unit 26A West and 4 in Unit 26A East (Table 1). Seven bears were males and 4 were females (Table 2). Preliminary results indicate that 16 bears have been reported harvested during the 2000–2001 season.

The sealing certificate system has not proven to be an effective method to determine actual local harvest, so we reviewed several community-based harvest assessment studies to get an indication of local harvest. We determined that the total of the mean number of bears harvested per year was approximately 11–12 bears (Braund et. al. 1991, 1993; Brower and Opie 1996, 1997; Fuller and George 1997; Hepa et. al. 1997; Pedersen 1987, 1995, 2001). These numbers are reflected in Unreported Kill in Table 2. Fuller and George (1997) obtained information from nearly every village in 1992, which indicated that local residents harvested at least 9–10 bears that year. Sealing certificates indicated a reported local harvest of 3 bears in 1992.

The reported harvest in 1998–1999 (10 bears) and 1999–2000 (11 bears) was well below average number harvested in past years. The harvests reported in 1990–1991 (32 bears) and 1991–1992 (34 bears), remain the highest reported harvests for Unit 26A (Table 2).

For bears harvested during 1998–1999, the mean skull size for males was 22.1 inches and 19.4 inches for females; the mean age was 6.0 years for males and 7.3 years for females. During 1999–2000 the mean skull size for males was 21.7 inches and 18.4 inches for females; the mean age was 10.0 years for males and 5.5 years for females (Table 3).

Permit Hunts. There were no permit hunts for brown bears in Unit 26A. Permit hunts were discontinued by Board action as of the 1996-1997 regulatory year.

Hunter Residency and Success. Of the 10 bears sealed in Unit 26A during 1998–1999, 8 were harvested by nonresidents, 1 by a nonlocal Alaska resident, and 1 by a North Slope resident. During 1999–2000, 8 of 11 bears were harvested by nonresidents, 3 by nonlocal Alaska residents, and 0 by North Slope residents (Table 4).

Harvest Chronology. During 1998–1999 6 bears were harvested during August and 4 in September. In 1999–2000 3 bears were harvested in August and 5 in September. No bears were reported harvested during the spring months for either year. (Table 5).

Transport Methods. Most bear hunters continued to use aircraft as transportation in Unit 26A. During 1998–1999, 9 hunters used aircraft for transportation and 1 used a boat. All 11 hunters used aircraft during 1999–2000 (Table 6).

Other Mortality

No recent estimate of natural mortality for grizzly bears in Unit 26A is available. However, Reynolds and Hechtel (1983) reported mortality rates among offspring accompanied by marked adult females in the western Brooks Range to be 44% for cubs, 9% for yearlings, and 14 % for 2-year-olds from 1977–81.

HABITAT

Assessment

Most of the brown bear habitat in Unit 26A remains undisturbed and supports a fairly large and growing population of bears. It would be difficult to evaluate many of the food sources for brown bears in Unit 26A, such as herbivorous forage and ground squirrels. Caribou represent a large food resource available to bears for at least part of the year. The decline in the Colville River moose population in the early 1990s and the current recovery may have affected bear numbers.

Potential hazards to brown bear habitat include oil, gas, and mineral exploration and development. Exploration is currently underway in Unit 26A, including areas within the foothills on the north side of the Brooks Range.

Some areas in Unit 26A, particularly some east/west-oriented ridges, are used much more heavily than the surrounding area by brown bears for at least part of the year (Reynolds, personal communication). An attempt should be made to catalogue as many of these areas as possible. These areas should be considered critical habitat for brown bears and given special protection in the future.

Enhancement

There were no habitat enhancement activities in Unit 26A during the reporting period.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

There were no activities related to nonregulatory management problems/needs in Unit 26A during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

Hunters reported 10 bears harvested during 1998–1999 and 11 bears during 1999–2000. This was well below the average number of bears harvested since 1990 (27.3) and the allowable sustained yield of approximately 51 bears. The reported harvests in Unit 26A East, of 6 bears in 1998–1999 and 4 bears in 1999–2000, and Unit 26A West, of 4 bears in 1998–1999 and 7 in 1999–2000, were well below the allowable limits of 31 and 20, respectively. Even if unreported harvest is as high as 100% of the reported harvest, the total estimated yearly harvest of 20–22 bears would still be well within safe harvest limits.

Oil, gas, and mineral exploration and development are potential hazards to brown bear habitat. Reynolds has stated that some areas, particularly some east/west-oriented ridges, have very high brown bear densities. We should identify these critical habitat areas and catalogue them so they can be given special protection during upcoming mineral exploration and development projects.

A significant management problem in Unit 26A continues to be unreported harvest and non-compliance with bear hunting regulations. To accommodate rural hunting practices, the Board of Game established the Northwest Alaska Brown Bear Management Area (NWABBMA) with alternate hunting regulations for subsistence users in 1992. The regulations are designed for

people who hunt bears for food. The regulations eliminate tags and sealing procedures and allow harvest reports by mail. Hopefully, these regulations will improve harvest reporting and compliance.

One problem not addressed by the current regulatory system or the special management area regulations is that accurate harvest information still depends upon hunters buying licenses and reporting their harvest. Many local hunters do not buy hunting licenses or report their harvest. To help alleviate this problem, department personnel worked with the North Slope Borough to develop a harvest documentation system that is more acceptable to local residents. Harvest monitors have been hired in some villages and are collecting harvest information for several species.

In order to approximate local harvest, we used data from the North Slope Borough and other community-based harvest assessment studies. We determined that the total of the mean number of bears harvested in Unit 26A villages per year was approximately 11–12 bears. Fuller and George obtained information from most villages in 1992 which indicated that local residents harvested approximately 9–10 bears in Unit 26A that year. Sealing certificates indicated a reported local harvest of 3 bears in 1992. While not all harvested bears are reported, the local unreported harvest does not appear to be at a level that creates a biological problem.

In 1996 the Board of Game discontinued the brown bear drawing permit system and lengthened the season in Unit 26A. It was surprising that in 1996–1997 and in 1997–1998 bear harvest was less than average even though the regulations were liberalized. This might be explained by a lack of a concurrent moose season and hunters that would have secondarily harvested bear while hunting moose. Eliminating the drawing permit system has reduced paper work and time spent administering the hunt and has not led to overharvest. We will continue communicating with the guides and urge them to limit their harvests and to be selective toward males. In 1999 the board increased the bag limit from 1 bear every 4 years to 1 bear every year. Preliminary results indicate that 16 bears have been reported harvested during the 2000–2001 season. This indicates an increase over the previous 2 years, but is still well below the harvestable surplus. We do not recommend any changes in seasons or bag limits at this time.

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Table 1 Estimated Population Size and Reported harvest of brown/grizzly bears in Unit 26A, 1988–2000

Unit	Estimated population size	5% harvest rate	Reported harvest											
			1988–1989	1989–1990	1990–1991	1991–1992	1992–1993	1993–1994	1994–1995	1995–1996	1996–1997	1997–1998	1998-1999	1999-2000
26A West	400	20	25	12[a]	16	13[a]	16	9[a]	7	6	8	6	4[a]	7
26A East	500–720	25–36	6	14	16[a]	21	13	17	13	17	12	14	6	4
Total	900–1200	45–56	31	26[a]	32[a]	34[a]	29	26[a]	20	23	20	20	10[a]	11

[a] Includes DLP-killed bears

Table 2 Unit 26A brown bear harvest[a], 1985–2000

Regulatory	Hunter harvest						Non-hunting		Un-reported	Total
year	M	(%)	F	(%)	Unk.	Total	kill	Total	est. kill	est. kill
1985–1986										
Fall 1985	3	(43)	4	(57)		7				
Spring 1986	2	(40)	3	(60)		5				
Total	5	(42)	7	(58)		12	2	14	5–7	19–21
1986–1987										
Fall 1986	10	(77)	3	(23)		13				
Spring 1987	6	(86)	1	(14)		7				
Total	16	(80)	4	(20)		20		20	8–11	28–31
1987–1988										
Fall 1987	11	(58)	8	(42)		19				
Spring 1988	2	(67)	1	(33)		3				
Total	13	(59)	9	(41)		22		22	8–12	30–34
1988–1989										
Fall 1988	12	(71)	5	(29)		17				
Spring 1989	11	(79)	3	(21)		14				
Total	23	(74)	8	(26)		31		31	12–17	43–48
1989–1990										
Fall 1989	10	(53)	9	(47)		19				
Spring 1990	7	(100)	0			7				
Total	17	(63)	9	(33)	1	27		27	8–13	34–39
1990–1991										
Fall 1990	15	(75)	5	(25)		20				
Spring 1991	8	(73)	3	(27)		11				
Total	23	(74)	8	(26)		31	1	32	5–12	37–44
1991–1992										
Fall 1991	22	(81)	5	(19)		27				
Spring 1992	6	(100)	0			6				
Total	28	(82)	5	(15)	1	34	0	34	5–10	39–44
1992–1993										
Fall 1992	18	(95)	1	(5)		19				
Spring 1993	8	(80)	2	(20)		10				
Total	26	(90)	3	(10)		29	0	29	6–12	35–41

Regulatory	Hunter harvest						Non-hunting		Un-reported	Total
year	M	(%)	F	(%)	Unk.	Total	kill	Total	est. kill	est. kill
1993–1994										
Fall 1993	11	(79)	3	(21)		14				
Spring 1994	8	(89)	1	(11)		9				
Total	19	(83)	4	(17)		23	3	26	6–12	32–38
1994–1995										
Fall 1994	9	(75)	3	(25)		12				
Spring 1995	7	(88)	1	(12)		8				
Total	16	(80)	4	(20)		20	0	20	6–12	26–32
1995–1996										
Fall 1995	7	(53)	6	(47)		13				
Spring 1996	6	(60)	3	(30)	1(10)	10				
Total	13	(57)	9	(39)	1(10)	23	2	23	6–12	29–35
1996–1997										
Fall 1996	11	(69)	5	(31)		16	0			
Spring 1997	2	(67)	1	(34)		3	0	3	1	
Total	13	(68)	6	(32)		19	1	20	6–12	06–32
1997–1998										
Fall 1997	11	(69)	5	(31)		16	0			
Spring 1998	2	(50)	2	(50)		4				
Total	13	(65)	7	(35)		20	0	20	6–12	26–32
1998–1999										
Fall 1998	6	(60)	4	(40)		10	0			
Spring 1999	0		0			0	0			
Total	5	(56)	4	(44)		9	1	10	6–12	16–22
1999–2000										
Fall	7	(64)	4	(36)		11				
Spring	0		0			0				
Total	7	(64)	4	(36)		11		11	6–12	17–23

[a] Permit hunt harvest included.

[b] Includes DLP kills, research mortalities, and other known human caused accidental mortality.

Table 3 Unit 26A brown bear skull size and age, 1985–2000

	Mean skull size, inches				Mean age, years			
Regulatory year	Male	*n*	Female	*n*	Male	*n*	Female	*n*
1985–1986	20.6	5	20.2	5	8.8	5	10.3	5
1986–1987	20.9	10	19.2	5	8.2	12	4.6	5
1987–1988	22.5	16	20.0	9	11.1	16	11.9	9
1988–1989	22.0	14	19.9	6	11.2	13	9.2	6
1989–1990	21.5	17	19.7	8	9.8	16	11.7	9
1990–1991	21.1	22	19.5	8	10.1	22	7.8	8
1991–1992	20.0	28	19.9	5	7.9	25	16.6	4
1992–1993	21.2	17	19.0	1	8.3	17	3.0	1
1993–1994	20.9	11	19.0	3	8.0	10	4.3	3
1994–1995	21.4	16	18.8	4	7.7	14	3.5	4
1995–1996	21.2	13	19.1	7	8.1	12	6.1	4
1996–1997	20.9	12	19.5	6	7.8	12	6.0	6
1997–1998	21.4	10	19.3	6	8.5	11	7.6	5
1998–1999	22.1	5	19.4	4	6.0	3	7.3	4
1999–2000	21.7	7	18.4	4	10.0	6	5.5	4

Table 4 Unit 26A brown bear successful hunter[a] residency, 1985–2000

Regulatory year	Local resident	Nonlocal resident	Nonresident	Unknown	Total hunters
1985–1986	2	7	2	1	12
1986–1987	0	8	12		20
1987–1988	1	8	13		22
1988–1989	1	10	20		31
1989–1990	2	12	13		27
1990–1991	1	9	21		31
1991–1992	2	15	16		33
1992–1993	1	8	20		29
1993–1994	1	10	12		23
1994–1995	0	5	15		20
1995–1996	6	4	13		23
1996–1997	2	0	18	0	20
1997–1998	1	1	18	0	20
1998–1999	1	1	8		10
1999–2000	0	3	8		11

[a]Hunters in permit hunts are included.
[b]Local means North Slope residents.

Table 5 Unit 26A brown bear harvest chronology by time period, 1985–2000

Regulatory year	Aug	Sep	Oct	Nov	Apr	May	June	*n*
1985–1986		6	1	0	0	5	0	12
1986–1987		13	0	0	0	7	0	20
1987–1988		19	0	0	0	3	0	22
1988–1989		17	0	0	0	14	0	31
1989–1990	1	18	1	0	0	7	0	27
1990–1991	1	18	1	0	1	10	0	31
1991–1992	0	25	2	0	3	3	0	33
1992–1993	0	18	1	0	6	4	0	29
1993–1994	0	13	1	0	4	5	0	23
1994–1995	0	12	0	0	0	8	0	20
1995–1996	0	11	2	0	2	8	0	23
1996–1997	5	11	1	0	1	2	0	20
1997–1998	11	5	0	0	1	3	0	20
1998–1999	6	4	0	0	0	0	0	10
1999–2000	3	8	0	0	0	0	0	11

Table 6 Unit 26A brown bear harvest[a] percent by transport method, 1985–2000.

Regulatory year	Transport method for brown bear harvest														Total
	Airplane		Horse		Boat		Snowmachine		ORV		Walk		Unknown		
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*
1985–1986	7	(50)	2	(14)			3	(22)			1	(7)	1	(7)	14
1986–1987	19	(95)							1	(5)					20
1987–1988	20	(92)					1	(4)	1	(4)					22
1988–1989	27	(87)			3	(10)			1	(3)					31
1989–1990	21	(78)			3	(11)	1	(4)	1	(4)					27
1990–1991	26	(84)							3	(10)			2	(6)	31
1991–1992	30	(91)					2	(6)					1	(3)	33
1992–1993	24	(83)					5	(17)							29
1993–1994	15	(65)			3	(13)	4	(18)			1	(4)			23
1994–1995	15	(75)			1	(5)	3	(15)			1	(5)			20
1995–1996	12	(52)			2	(9)	7	(30)			2	(9)			23
1996–1997	15	(75)					1	(5)	1	(5)	2	(10)	1	(5)	20
1997–1998	17	(85)			1	(5)	2	(10)							20
1998–1999	9	(90)			1	(10)									
1999–2000	11	(100)													

[a] Permit hunt harvest is included.

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge and attitudes for responsible hunting. Seventy-five percent of the funds for this report are from Federal Aid.

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