

CONTINUED STUDIES ON THE DEMOGRAPHY OF
NOATAK GRIZZLY BEARS

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National Park Service
Northwest Alaska Areas
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FY 1991 Report

INTRODUCTION

A cooperative study between ADF&G and NPS on grizzly bears in northwest Alaska began in 1986. The main objectives of the study were to evaluate effects of human harvest on grizzly bears and provide baseline data on population parameters prior to development of the Red Dog lead-zinc mine. A census was conducted in 1987 (Ballard et al 1990). Data on radio collared bears were collected through the fall of 1990. Study results are presented in a Federal Aid in Wildlife Restoration Research Final Report (Ballard et al 1991). A National Park Service Monograph "Demography of Noatak grizzly bears in relation to human exploitation and mining development" is currently being prepared for publication in 1993.

Following the study's recommendations, NPS continued to monitor radio collared females. This report presents the results of those efforts. Data were collected from November 1990 through December 1991.

OBJECTIVES

To continue collecting reproductive and mortality data for bears within a selected area in, and adjacent to, the Noatak National Preserve.

To continue monitoring bear movements and den site selection around the Red Dog Mine.

To document den emergence dates for radio collared bears.

To establish a monitoring program for brown bears in the vicinity of Red Dog Mine that could be maintained by a 2-3 yr recollaring schedule and a minimum number of relocations.

METHODS

Capture methodology followed that described by Ballard et al (1991) except cubs of the year (COY) were not captured. Bears were immobilized using Telazol administered by dart gun from a helicopter. Approximately four hours were given to allow bears to recover prior to being checked by spotter planes. If this was not possible they were checked the next day. All bears were relocated and the status of their offspring confirmed two days following the capture work. An attempt was made to locate radio collared bears once a month. Twenty-two radio collared females were monitored at 6 to 9 day intervals from April 17th through May 10th. Den sites for radio collared bears were located fall 1991.

RESULTS AND DISCUSSION

Capture Operation

Sixteen female adults, 1 - 2 yr old, and 13 yearlings were captured between May 28 and June 2, 1991 (Table 1 and 2). Only 3 adult females were captured that had not been previously marked. Two adult females were captured having satellite radio collars that had malfunctioned 11/89. Two bears with malfunctioning conventional collars and one bear that had slipped a collar were also captured. The remaining 8 females were from the marked study population that had last been recollared in 1989 and regularly located.

Due to concern over capture related cub mortality, we decided not to capture COY. At first, an attempt was made to keep cubs together if they separated. After several observations it was clear that even with expert piloting, attempts to herd cubs to sow or other cubs caused more confusion and increased the likelihood of separation and abandonment of the area by the cubs. We found that if cub-sow separation did occur while we were darting the female, cubs would return once the helicopter either left the area or landed and shut down. By minimizing human and aircraft activity around the sedated sow we feel we reduced the chances of cub abandoning the area and sow. Close monitoring of captured sows with COY revealed that no cubs or offspring died or were separated from sows.

In previous years, COY were captured, sedated and marked. Captures were accomplished via helicopter by either herding animals to a ground crew or by a quick drop off and chase. It was felt that by sedating cubs they were more likely to remain with the sedated sow. Even if sow and cubs became active at different times without the outside stimuli of the helicopter and ground crew it was thought that they would be more likely to remain on site. Actual capture mortality and related capture mortality was not determined, but investigators felt some mortality was occurring (Ballard pers. comm). Both capturing COY and not capturing COY is practiced by brown bear researchers in Alaska. Few studies document capture related mortality for offspring. In one study where COY were captured and sedated, 8 out of 18 cubs were absent when rechecked following capture (Smith et al. 1990).

Den Emergence and Entrance

Emergence dates ranged from 10 April to 15 May for sows with COY typically not emerging until after May 1 and then remaining in the vicinity of the den through the 10th (Table 3). These dates are similar to those found for bears in the Brooks Range and on the North slope (Reynolds 1978, Garner et al 1984).

Two females had already emerged from their dens on 17 April and were still at the den site. We found bears without COY typically remained at den sites for a week before departing. Therefore, it is estimated that these bears emerged from their dens no earlier than April 10th. Between April 17 and 26, 5 more females emerged, all but one female was accompanied by yearlings and one by 1 - 2.5 yr old. Between April 26 and May 2, 5 more females emerged from dens. These bears were accompanied by 2.5 yr olds, yearlings, and one with 2 COY. Between May 2 and 10, all remaining bears emerged from their dens. Of this group of late emerging

bears 8 of 10 were accompanied by COY, one was alone, and one had a 2.5 yr old.

On October 15 and 16 a radio tracking flight indicated 12 of 24 radio collared bears were still active. Active bears tended to be found along the Noatak River corridor. Light snowfall, warm temperatures, and open water providing access to spawning salmon are contributing factors to later than usual den entrance dates in 1991 but not later than some dates observed during the study.

Mortality of Marked Bears

Sow #102 was found dead near a caribou carcass in the lower Eli drainage. The hide minus head and claws along with rifle casings were found near the carcass. When sow #102 was last observed she was accompanied by 3 yearlings. As of 9/23 the following mortalities had occurred in the subadult classes; 6 out of 21 yearlings, and 3 out of 25 COY. Two of the yearlings lost were observed with the female and an adult male. Their deaths are likely related to this incident. Three yearlings that were with female #102 were assumed to have also died. The survival for yearling bears was 71.4%, this was lower than the study average of 88.7%. The survival rate for cubs that were observed with sows at or within a week of den emergence was 88% compared to the study average of 87.4%.

Nine 2.5 year olds were followed through August 1991. Three of these nine were not observed accompanying females as of 8/91. Five were still observed with, and appeared to be denning with, the sow as of 10/15. One was accompanying sow #195 that was shot in the fall sport harvest.

One radio collared female (#195), observed with 2.5 yr old during the summer, was shot during the fall sport hunt in the vicinity of the Kelly River. The hide was sealed in Kotzebue and collar returned to ADF&G. The open sport season in Unit 23 for resident and nonresident hunters in 1990 and 1991 was 1 September to 10 October and 15 April to 25 May. The bag limit for resident hunters is 1 bear every 4 years. The bag limit for nonresident hunters is 1 bear every 4 years by drawing permit only; 25 permits are issued (7 spring and 18 fall). Harvest data are collected through a statewide sealing program. In 1991, 28 bears were reported harvested in the Noatak and Wulik drainages combined. Data available from the state sealing program indicates that almost all the nonresident and a majority of resident grizzly bear harvest occurs in the Noatak Drainage (Table 2).

It has been widely acknowledged that much of the local harvests of brown bears rarely enter this system (Loon and Georgette, 1989). Estimates of the unreported harvests vary widely (Ballard et al 1991, Loon and Georgette 1989). A large proportion of this harvest probably occurs in the Noatak National Preserve and Cape Krusenstern Monument. Harvest data indicates that local residents, who do report, primarily harvest bears in the spring using snowmachines for transportation.

The illegal take of brown bears for sale of gall bladders and the sale of gall bladders from bears legally taken continues to be a problem. Several individuals have reported being approached in Kotzebue and informed of the potential price paid for gall bladders and various other bear parts. Prices range from \$500 to \$800. State and Federal enforcement authorities have been informed.

Red Dog Mine

An incident at the Red Dog Mine site involved the first Mine related mortality of a bear (Appendix A). On 9/22/91 a female grizzly bear was hit and killed by a truck on the road between the port site and mine. Drivers had often observed bears in the tundra areas surrounding the road but not traveling on the road. Evidently the bear was crossing the road when hit. The incident was reported to ADF&G.

During the beginning construction phase of the mine, two immediate concerns emerged, garbage availability during the construction phase, and den site disturbance from blasting and winter activities. Garbage storage and incineration problems at the temporary site were never resolved. Once the permanent incinerators were in place the situation has appeared to improved. Bears that had shown signs of habituating to the use of garbage materials were no longer observed by personnel and their movement patterns no longer centered at the mine site. The second concern was disruption of den site selection or actual displacement of dened bears. Fidelity to den sites appears to remain high for most bears. It should be noted that several den sites are located near blasting areas and high use travel corridors. One den site was located early in the fall directly above a material site to be used in the winter 1991-1992. Cominco was contacted (Charlotte McKay). The material site access and site itself was developed. NPS was informed by J. Hemming, Comico's consulting biologist, that when checked later in the winter, the den site had been abandoned and neither the bear nor a new den site was found.

RECOMMENDATIONS

1. NPS should maintain a sample of radio collared bears in order to assess harvest and natural mortality. Currently the only population trend data available to both Federal and State agencies for brown bears in GMU 23 is a result of this project. With the high unreported harvest, mining development, liberalization of hunting regulations, and illegal sale of gall bladders, managers must be able to assess the status and viability of the population. A sample population in a representative area can provide valuable information and alert biologists when additional data collection efforts are needed.
2. NPS and ADF&G should continue cooperative plans to conduct a post development census. This should occur by 1995 or prior to any further mine development. Current plans for expansion of the Red Dog Mine include areas along the western Preserve boundary northwest of Deadlock Mountain (between Wrench Creek and the Kelly River).
3. Replication of a study similar to that conducted by Loon and Georgette (1989) should be considered to evaluate reporting compliance with the new subsistence season for grizzly bears.
4. In future capture operations COY should not be captured. Although comparison of mortality rates can not

be rigorously made, they were clearly lower this year than in previous study years and with other studies (Seward Brown Bear Study, Tim Smith, pers. comm.). Not capturing cubs will reduce the cost of the operation and increase the safety. Disadvantages of not tagging cubs include loss of sex ratio data and a reduction in the number of marked animals available for recapture through collaring or harvest.

5. Northwest Alaska Areas needs to develop management objectives for bears in the Noatak and Cape Krusenstern Monument. Special care should be taken so that objectives are measurable and have time components that are obtainable. Parameters such as acceptable levels of unreported harvest and minimum densities of bears should be defined.

6. If NPS decides not to continue the study through a recollaring effort, bears with functioning collars should be captured and collars removed no later than 1994.

LITERATURE CITED

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Table 1. Dates of first capture and offspring status for females captured between May 29 and June 2 1991 in the Noatak study area.

ID#	Date of First Capture	Associated Offspring
53	5/29/87	2 yearlings (209, 208)
58	5/30/87	3 yearlings (210,211,212)
59	5/30/87	1 COY
63	5/30/87	2 yearlings (209,208)
65	5/31/87	2 yearlings (200, 201)
67	5/31/87	3 yearlings (202,203,204)
70	6/02/87	2 yearlings (215, 216)
74	6/04/87	2 COY
87	6/7/88	No cubs, not lactating
102	5/28/89	Found dead
103	5/28/89	2 COY
117	5/30/89	2 2 yr olds
120	5/31/89	2 2 yr olds
195	6/1/90	1 2 yr old
213	6/1/91	1 2yr old (214)
217	6/1/91	3 COY
218	6/1/91	3 2 yr olds

Table 2. Radio Collar frequencies and ear tag numbers of adult females and their offspring captured in 1991.

ID#	Sex	Age Class	Radio Collar Frequency	Ear tags	
				Left	Right
53	F	adult	149.380	blue 737	blue 736
58	F	adult	148.460	blue 758	blue 757
210	M	yearling		red 3099	red 3100 (offspring of 58)
211	M	yearling		red 3098	red 3097 (offspring of 58)
212	M	yearling		red 3095	red 3094 (offspring of 58)
59	F	adult	149.350	blue 732	blue 1066
63	F	adult	148.430	blue 748	blue 747
208	F	yearling		blue 1053	blue 1055 (offspring of 63)
209	M	yearling		red 3082	red 3083 (offspring of 63)
65	F	adult	149.230	blue 729	blue 728
200	M	yearling		red 3077	red 3078 (offspring of 65)
201	F	yearling		red 3080	red 3079 (offspring of 65)
67	F	adult	149.410	blue 738	blue 739
202	F	yearling		blue 1057	blue 1056 (offspring of 67)
203	M	yearling		red 3092	red 3093 (offspring of 67)
204	M	yearling		red 3090	red 3091 (offspring of 67)
70	F	adult	149.300	red 1274	red 1262
74	F	adult	148.650	*blue 1073	blue 1058
87	F	adult	148.720	red 110	red 111
103	F	adult	149.260	red 143	red 144
117	F	adult	148.920	red 22	red 21
120	F	adult	149.450	red 23	red 24
195	F	adult	149.420	red 3043	red 3044
213	F	adult	148.710	red 3085	red 3086
214	F	yearling		blue 1038	blue 1069 (offspring of 213)
215	M	yearling		red 3081	red 3089 (offspring of 213)
216	M	yearling		red 3088	red 3087 (offspring of 213)
217	F	adult	149.330	blue 1101	blue 1102
218	F	adult	148.700	blue 1104	blue 1103

*Bear 74's original ear tags were broken and replaced with new tags.

Table 3. Den emergence dates for radio collared females.

Bear ID #	17 April 91	26 April 91	2 May 91	10 May 91
198	*ND - 2 coy	OUT	OUT	OUT
117	ND - 2 2.5	OUT	OUT	OUT
081	IN DEN	OUT - 1 2yr	OUT	OUT
021	IN DEN	ND - 3 yrls	OUT	OUT
067	IN DEN	ND - 3 yrls	OUT	OUT
102	IN DEN	ND - 3 yrls	OUT	OUT
053	IN DEN	OUT -2 yrls	OUT	OUT
020	IN DEN	IN DEN	ND - 1 2yr	OUT
065	IN DEN	IN DEN	ND - 2 yrls	OUT
025	IN DEN	IN DEN	OUT - 2 2yr	OUT
103	IN DEN	IN DEN	ND - 2 COY	OUT
052	IN DEN	IN DEN	ND - 2 yrls	OUT
194	IN DEN	IN DEN	IN DEN	ND - 3 COY
178	IN DEN	IN DEN	IN DEN	ND - 3 COY
095	IN DEN	IN DEN	IN DEN	ND - 2 COY
041	IN DEN	IN DEN	IN DEN	ND - 2 COY
014	IN DEN	IN DEN	IN DEN	ND - 2 COY
195	IN DEN	IN DEN	IN DEN	ND - 1 2yr
059	IN DEN	IN DEN	IN DEN	ND - 1 COY
004	IN DEN	IN DEN	IN DEN	ND - ALONE
039	IN DEN	IN DEN	IN DEN	ND - 3 COY
074	IN DEN	IN DEN	IN DEN	ND - 2 COY

* ND = Near or at Den Site

Table 4. Harvest of brown bears in the Noatak Drainage^a and all of Unit 23, by hunter residence, 1989-1992.

Regulatory Year ^b	Local resident		Nonlocal resident		Nonresident		Total	
	Unit	NOAT	Unit	NOAT	Unit	NOAT	Unit	NOAT
1989-90	9	5	9	4	13	12	31	21
1990-91	12	8	11	7	13	13	36	28
1991-92	9	8	14	6	12	10	35	24

a Includes the upper Wulik River and Deadlock mountains and excludes nonhunting mortalities.

b A regulatory year begins July 1 and ends June 30, the following calendar year.