

NOATAK GRIZZLY BEAR STUDY : FY 1991 ANNUAL REPORT

(NRPP/ARO Continued Study: Demography of Noatak Grizzly Bears in Relation to Human Exploitation and Mining Development)

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ABSTRACT:

The original study began in 1986 and was designed to evaluate effects of human harvests by comparing bear densities with known reported harvests and provide baseline data on population parameters prior to large scale development of the Red Dog Mine. Results of this phase of the study is presented in a Federal Aid in Wildlife Restoration Research Final Report, Demography of Noatak grizzly bears in relation to human exploitation and mining development.

Following the census a selection of radio collared females were chosen for continued monitoring. The objectives of these monitoring efforts were to determine reproductive and mortality rates of bears within a selected area in and adjacent to the Noatak National Preserve, identify short term changes in behavior and habitat use of bears as a result of development and operation of the Red Dog Mine. Additional objectives for 1990-91 were to improve documentation of den emergence dates for radio-collared bears and establish a monitoring program for brown bears in the vicinity of Red Dog Mine that could be maintained by capture work on a 2-3 yr recollaring schedule and a minimum of relocations.

RESULTS

Den Emergence

Twenty-two radio collared females were monitored at 6 to 9 day intervals from April 17th through May 10th (Table 1). Two sows had already emerged from their dens on 17 April and were still at the den site. It was found that bears with out coy typically

remained at den sites a week before departing. Therefore it is estimated that these bears emerged from their dens no earlier than April 10th. Between 17 and 26th of April, five more females emerged, all but one sow was accompanied by yearlings and one by 1 2.5 yr old. Between 26th April and 2 May, 5 more females emerged from dens these females had 2.5 yr olds, yearlings as well as one with 2 COY. Between May 2 and May 10 all but one female (with 2 2yr-olds) emerged from their dens. Of this group of late emerging sows 8 out of 10 were accompanied by cubs of the year, one was alone, and one had a 2.5 yr old.

Emergence dates ranged from 10 April to 15 May with sows with cubs of the year typically not emerging until after May 1 and then remaining in the vicinity of the den through the 10th. These dates are similar to those found in the literature for the Brooks Range and North slope (Reynolds Garnier).

Den entrance dates for the fall of 1991 were not closely determined. On October 15 and 16 a radio tracking flight found 12 out of 24 bears located still active. Those bears active tended to be along the Noatak River corridor where open water was still present. 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 outside those observed during the study.

Capture Operation

Capture methodology followed that reported in previous progress reports. Sixteen female adults, 1 - 2yr old, and 13 yearlings were immobilized using Telazol administered by dart gun from a helicopter. Of the 16 bears captured, 3 were unmarked adult females, 2 adult females had been fitted with satellite radio collars that had malfunctioned with last locations in 11/89, one female that had dropped a conventional collar in 1990, one bear missing since capture in 1988 and another collared in 1987 and missing since 1990. The remaining 8 were females from the marked study population that had last been re-collared in 1989 and

regularly located.

In previous years cubs of the year were captured, sedated and marked. Captures were accomplished via helicopter by with 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 animals awoke 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 calculated for previous years in the study but had occurred. It was felt that due to the hazardous nature of the operation and associated logistic costs alternative methodologies should be explored. Other investigators working with brown bears were interviewed. Both capturing and not capturing of cub were currently found to be practiced with most studies not having documented related capture mortality. It was decided to try **not** capturing cubs and allocate aircraft and project time to determining associated mortality. 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 offspring status confirmed two days following the end of the capture work. No cubs or offspring were lost. During the capture work we found that even if cub sow separation did occur cubs would return to the sow if once the darting was complete and helicopter left the area or landed and shut down. At first an attempt was made to keep cubs together if they separated. After several observations it was clear that even with expert piloting the use of the helicopter in attempts to herd cubs to sow or each other often caused more confusion and increased the likelihood of separation and abandonment of the area by the cubs. We found that by minimizing activity cub separation was reduced.

Recommendations

It is recommended that for this study cubs of the year should not be captured. Although comparison of mortality rates can not be

made rigorously, they were clearly lower this year than previously and with other studies (Seward Brown Bear Study, Tim Smith, pers. comm.). This practice will also improve the safety and reduce the cost of the operation. The disadvantages of not tagging cubs will be that collaring will need to be done at 2 year intervals in order to document sex ratios at recruitment age 2.5 years and maintain marked population of study animals. Early sex ratio data would not be collected.

Mortality of Marked Bears

One collared sow (#102) with three yearling 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. It was concluded this was an unreported spring subsistence harvest. One radio collared female (#195) with 2.5 yr old (unknown if still with sow) was taken during the fall sport hunt in the vicinity of the Kelly drainage. This hide was sealed in Kotzebue and collar returned to ADF&G. As of 9/23 the following mortalities had occurred in the subadult classes 6 out of 21 yearlings, 3 out of 25 cubs of the year. Two of the yearlings lost were observed with the sow and an adult male. Their deaths are likely related to this incident. Three other yearlings were with sow #102 who was shot during the spring at the den site where they were observed. Survival for yearling bears was 71.4%, this was lower than the study average of 88.7%. Survival rates 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 sows as of 8/91. Five were still observed with sows 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.

Red Dog Mine

An incident at the Red Dog Mine site involved the first Mine

related mortality of a bear. On 9/23? a female 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. The storage and incineration problems were never resolved however once the permanent incinerators were in place the situation was improved and temporary dumps closed. Bears that had shown signs of habituating to the use of garbage materials were no longer observed by personnel or did movement patterns center on the mine site. The second concern was den site selection. Again no impacts have been linked to mine activities. Fidelity to den sites appears to remain high and no abandonment of dens has occurred. It should be noted that several den sites are located near both blasting areas and high use travel corridors. One den site was located directly above a material site to be used in the winter 91-92. Cominco was contacted (Charlotte McKay) and when the site was rechecked by Dames and Moore's consulting biologist J. Hemming it was reported abandoned and a neither the bear or new den site has been found.

Table 1. 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 yr1s	OUT	OUT
067	IN DEN	ND - 3 yr1s	OUT	OUT
102	IN DEN	ND - 3 yr1s	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 yr1s	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 yr1s	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