ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

Alaska Department of Fish and Game
State Wildlife Grant

Grant Number: **W-33-8** **Segment Number: 1**

Project Number: 4.41

Project Title: Nelchina Brown Bear Demographics

Project Duration: July 1, 2009 – June 30, 2011

Report Period: July 1, 2009 – June 30, 2010

Report Due Date to HQ: September 1, 2010

PRINCIPAL INVESTIGATORS: Robert Tobey, ADF&G (retired May 2010); Becky Schwanke, ADF&G, Principal Investigator

WORK LOCATION: Western GMU 13A, Southcentral Alaska

I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH

The brown bear management strategy in Unit 13 since the mid 1990s has included liberalized seasons and bag limits, aimed at reducing the brown bear population for the purpose of increasing moose calf survival and eventually, the harvestable surplus of moose. It is necessary to evaluate population demographics, survival, movement, and predation characteristics in a heavily hunted portion of the unit to address current regulation effectiveness. This project was initiated with State funds in 2006.

II. REVIEW OF PRIOR RESEARCH AND STUDIES IN PROGRESS ON THE PROBLEM OR NEED

Predator-prey investigations in Unit 13 beginning in the 1970s documented that brown bears were major predators of moose calves and adults (Ballard et al. 1980, Spraker et al. 1981). The first attempt at reducing moose calf mortality by brown bears in this area was a bear transplant experiment in the Upper Susitna during the spring of 1979. Summer calf mortality was reduced from 55% to 12%, though the effects were only temporary considering nearly all the bears returned (Ballard and Miller 1990).

Prior to 1980, brown bear hunting regulations were considered conservative, with a bag limit of 1 bear every 4 years, a required $25 tag fee and a short 30-40 day fall season. The first spring season was adopted in 1980. The brown bear hunting regulations were further liberalized in 1983; the bag limit was changed to 1 bear every year and seasons lengthened to 1 Sept. – 31 May. The liberalized regulations immediately increased harvest by approximately 35%. The higher take caused concern for the bear population, and it was predicted that the increased harvest would have long-term negative

consequences on the bear population and hunting opportunity (Miller and Ballard 1992). The bag limit was changed back to 1 bear every 4 years in 1990.

In 1994 the decision was made to intensively manage moose for high levels of human use in Unit 13. The Board of Game again decided to increase brown bear hunting opportunity in Unit 13, specifically for the purpose of increasing recruitment and eventually the harvestable surplus of moose. In 1995, a minimum population objective of 350 bears unit-wide was adopted. The season has since been lengthened to 12 months, the limit liberalized to 1 bear per year, and the $25 resident tag fee requirement waived.

The harvest subsequently increased, and has stabilized at 135 bears per year. Even with increased harvest levels, there have been no significant trends ($P>0.05$) over that past decade in harvest data for average age (either sex), skull size (either sex), sex ratio, or effort necessary to take a brown bear (1995-2005; ADF&G harvest data). The minimum population objective of 350 bears remains (Tobey and Kelleyhouse 2007).

III. APPROACHES USED AND FINDINGS RELATED TO THE OBJECTIVES AND TO PROBLEM OR NEED

Using radio collars and fixed wing aircraft, brown bear demographics, movements and activity patterns are being documented. The data collected will be used to evaluate the effect brown bear harvest regulations have had on this brown bear population. Data analyses are ongoing.

IV. MANAGEMENT IMPLICATIONS

Study results will be used to evaluate whether harvest can effectively be used to reduce predation by brown bears in this region and ultimately increase sustainable harvest of moose. The results of this study will be used to refine the management strategy for brown bears in Unit 13, and will be integral in drafting a bear management plan. Data analyses are ongoing.

V. SUMMARY OF WORK COMPLETED ON JOBS FOR LAST SEGMENT PERIOD ONLY

JOB/ACTIVITY 1a: Bear captures
Accomplishments: Fourteen bears (11 males and 3 females) 2 years of age and up were captured and radiocollared in the spring of 2010 to augment the currently established study population. Teeth, hair, blood, and genetic samples were taken.

JOB/ACTIVITY 1b: Bear monitoring and data analysis
Accomplishments: Fixed-wing aircraft were utilized to track all radio collared bears. A total of 69 individual collared bears were monitored from 1 July – 31 December 2009. A total of 335 bear locations were collected throughout the fall. For 2009, cub-of-the-year survival averaged 65% (N=17); yearling survival averaged 77% (N=22). A total of 57 individual collared bears were monitored from 1 January 2010 – 30 June 2010. A total of 505 bear locations were collected throughout the spring. In the spring of 2010 a total of

(10) cub-of-the-year litters were documented; the average initial litter size was 2.1. A total of (11) yearling litters were documented; the average initial litter size was 2.0. Further data analyses are ongoing.

JOB/ACTIVITY 2a: Monitor predation characteristics of study bears
Accomplishments: Predation activities on large prey by individual bears were determined by visual observation while radio tracking with fixed wing aircraft. Large prey included moose calves, yearlings and adults, as well as caribou calves and adults. Of the 69 individual collared bears monitored throughout the fall of 2009, a total of 8 individual bears were observed on at least one fresh kill. Of the 57 individual collared bears monitored throughout the spring of 2010, a total of 27 individual bears were observed on at least one fresh kill.

JOB/ACTIVITY 3a: Develop management strategy
Accomplishments: A management strategy for brown bears in Unit 13 will be drafted following data collection and analyses.

VI. PUBLICATIONS

No publications were produced during this segment period.

VII. RECOMMENDATIONS FOR THIS PROJECT

Continue to monitor the currently established study population through the spring of 2011. Complete a mark-recapture population project in the spring of 2011. Fully analyze all data collected since 2006, and finalize a bear management strategy for Unit 13.

VIII. LITERATURE CITED

Ballard, W.B., S.D. Miller, and T.H. Spraker. 1980. Moose calf mortality study. Final Report. Federal Aid in Wildlife Restoration. Projects W-17-9, W-17-10, W-17-11, and W-21-1. Job 1.23R. Alaska Department of Fish and Game. Juneau, Alaska.

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Miller, S.D. and W.B. Ballard. 1992. Analysis of an effort to increase moose calf survivorship by increased hunting of brown bears in south-central Alaska. Wildlife Society Bulletin 20:445-454.

Spraker, T.H., W.B. Ballard, and S.D. Miller. 1981. Game Management Unit 13 Brown Bear Studies. Final Report. Federal Aid in Wildlife Restoration. Projects W-17-10, W-17-11, and W-21-1. Job 4.13R. .Alaska Department of Fish and Game. Juneau, Alaska.

Tobey, R.W. and R.A. Kelleyhouse. 2007. Unit 13 brown bear management report. Pages143-154 *in* P. Harper, editor. Brown bear management report of survey and inventory activities 1 July 2004–30 June 2006. Alaska Department of Fish and Game. Juneau, Alaska.

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