Alaska Department of Fish and Game
Division of Wildlife Conservation
2005

Preparation of manuscripts on brown bear ecology in arctic Alaska and pharmacokinetics of Telazol in brown bears

Jay M. Ver Hoef
John E. Blake

Final Research Report
1 July 2004–30 June 2005
Federal Aid in Wildlife Restoration
Grant W-33-3
Project 4.32

This is a progress report on continuing research. Information may be refined at a later date.

FEDERAL AID
FINAL RESEARCH REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Preparation of manuscripts on brown bear ecology in arctic Alaska and pharmacokinetics of Telazol in brown bears

PRINCIPAL INVESTIGATOR: Harry V. Reynolds, III

COOPERATORS: Jay M. Ver Hoef; John E. Blake (University of Alaska Fairbanks)

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR: Initiated under W-32-2, completed under W-33-3

PROJECT NR: 4.32

WORK LOCATION: Fairbanks

STATE: Alaska

PERIOD: 1 July 2004–30 June 2005

I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH

Parameters of brown bears population dynamics were measured in the northeastern Brooks Range from 1982 to 1990. This long-term data set allowed application of a model to assess population growth rates and sustainable harvest rates for females. Use of similar methods, data and analysis were employed for a population in the northcentral Alaska Range (Project 4.28). Publication of Arctic grizzly bear population parameters, including growth rates and sustainable mortality rates, will prove useful for comparative analysis and understanding of factors affecting population trajectories in a much larger portion of the state.

In addition, drugs used in immobilization of bears might be an issue for human safety where bear meat is consumed. Also, it is important to determine if there are potential long-term effects of drugs on immobilized bears that may affect well-being of individuals. Analysis of the half-life of immobilizing drugs and the time necessary for bears to clear drugs from their systems will be useful steps in assessing these factors. The appropriate data to determine these effects have been collected and analyzed but not reported.

In order to derive maximum benefit in understanding population behavior, more effective management of brown bears in Alaska and elsewhere, and adoption of safe use of capture drugs, this information should be published in widely available scientific publications.

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

Research was conducted on population characteristics of brown bears in the northeastern Brooks Range from 1982 to 1990. This long-term study can be compared with a similar study completed in the northcentral Alaska Range >400 miles south. Although those efforts are complete, the work in the Arctic has not been prepared for publication in a scientific journal.

Immobilization drugs are widely used to capture brown bears, but the rates at which bears cycle drugs through bodily processes is not known. Blood samples for determination of half-life and deterioration rates of the widely used drug tiletamine/zolazepam were collected during captures in the northcentral Alaska Range during 1997 and sent to the pharmacology laboratory at the University of Saskatchewan for analysis. Data analysis is complete but a manuscript reporting the research has not been completed.

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

OBJECTIVE 1: Prepare a scientific manuscript on population dynamics and sustainable mortality rates of females of an Arctic brown bear population.

Not completed because principal investigator was assigned to other duties.

OBJECTIVE 2: Prepare a scientific manuscript on the deterioration rates of immobilizing drugs in brown bears.

Not completed because principal investigator was assigned to other duties.

IV. MANAGEMENT IMPLICATIONS

Publication of these results would provide broad dissemination of information on brown bear population dynamics that would be useful for devising effective management programs and avoiding potential impacts of development in Arctic ecosystems. In addition, publication of information on the deterioration rates of immobilizing drugs would be of use to those concerned about the safety of human consumption of meat from bears that have been previously captured. It would also be useful in establishing appropriate standards for animal care during projects that involve capture of wild animals with the use of immobilizing drugs.

V. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN FOR LAST SEGMENT PERIOD ONLY

JOB 1: Prepare the following 2 manuscripts for publication in scientific journals:

1) Calculation of natural and human caused mortality rates of female brown bears in Arctic Alaska.
2) Pharmacokinetics of the immobilization drug tiletamine/zolazepam in brown bears in Alaska

Work not completed because principal investigator was assigned to other duties.

VI. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THE LAST SEGMENT PERIOD, IF NOT REPORTED PREVIOUSLY

None.

VII. PUBLICATIONS

None.

VIII. RESEARCH EVALUATION AND RECOMMENDATIONS(optional)

IX. PROJECT COSTS FROM LAST SEGMENT PERIOD ONLY

Stewardship Investment items purchased: *list any equipment or other items purchased for which the cost of the individual item was $5,000 or more (include cost)*

No funds were spent on these projects during this segment period.

Total Costs
FEDERAL AID SHARE $0 + STATE SHARE $0 = TOTAL $0

X. APPENDIX

XI. PREPARED BY:

Harry V Reynolds, III
Wildlife Biologist III

APPROVED BY:

Tom Paul
Federal Aid Coordinator
Division of Wildlife Conservation

SUBMITTED BY:

Mark E McNay
Research Coordinator

Matthew H Robus, Director
Division of Wildlife Conservation

Laura A McCarthy
Publications Technician II

APPROVAL DATE: _____