Preparation of Manuscripts on Serologic Surveys of Alaska Wildlife for Microbial Pathogens

Research Final Report
1 July 2001 – 30 June 2002

Randall Zarnke

Alaska Department of Fish and Game
Division of Wildlife Conservation

Federal Aid in Wildlife Restoration
Grant W-27-5
Project 18.72
November 2002
STATE OF ALASKA

Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME
Frank Rue, Commissioner

DIVISION OF WILDLIFE CONSERVATION
Wayne L. Regelin, Director

For questions about copies of this and other Wildlife Conservation reports, contact our publication specialist.

Publications Specialist
ADF&G, Wildlife Conservation
P.O. Box 25526
Juneau, AK 99802-5526
(907) 465-4176

Any information taken from this report should be cited with credit given to authors and the Alaska Department of Fish and Game. Citations for using this report should be referenced as:


The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you want further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfield Drive, Suite 300, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, contact our ADA Coordinator at (voice) 907-465-4120, (TDD) 907-465-3646, or (fax) 907-465-2440.
I. PROBLEM OR NEED THAT PROMPTED THIS RESEARCH

Diseases and parasites negatively impact wildlife populations. In this respect, diseases are not unlike other factors such as predation, overharvest, or adverse weather conditions. In many populations, we have only an incomplete understanding of the identity, pathogenicity, prevalence, seasonality, age-specificity, sex-specificity, or other parameters of such diseases. Because of our lack of understanding of these parameters, both from limited data ADF&G has collected in the past and literature currently available on various wildlife diseases, we cannot properly assess the effects of the diseases on population dynamics of wild animals. A more complete understanding of wildlife diseases and their effects upon populations would enable wildlife managers to make more well-informed decisions on matters such as population growth and allowable harvest. In addition, this increased knowledge might allow human intervention into the disease process with resultant healthier individuals and populations.

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

Serologic surveys of varying degrees of sophistication have been conducted by ADF&G since the early 1960s. In the early days these surveys were limited in scope, consisting of tests for 1 or 2 diseases in 1 or 2 host species. Since the late 1970s, however, the surveys have been expanded to where they now include up to 30 diseases and 23 potential host species. Such a framework provides for a meaningful health profile of Alaska's wildlife.
From 1970 through 2000, surveys have included approximately 18,000 samples consisting of 4000 caribou, 3000 moose, 2000 grizzly bears, 600 Dall sheep, 1000 bison, 1000 wolves, 150 black bears, 600 walruses, 2000 other marine mammals, and lesser numbers of muskoxen, deer, polar bears, mountain goats, red foxes, ravens, arctic foxes, snowshoe hares, and other species. Some of these data have already been reported by us in the scientific literature including, but not limited to, the following:


III FINDINGS RELATED TO THE OBJECTIVES AND TO PROBLEM OR NEED

OBJECTIVE 1: The primary objective of this project will be to prepare 4 scientific manuscripts based on data collected in previous Alaska Federal Aid wildlife disease projects, including the last one, Study 18.71.

IV MANAGEMENT IMPLICATIONS

Results of this project will enable ADF&G to provide information in the form of manuscripts to the *Journal of Wildlife Diseases* based on data collected in previous Alaska Federal Aid projects.
V  SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN FOR LAST SEGMENT PERIOD ONLY (if not reported in previous performance report)

Job 1 Prepare the following 4 manuscripts for publication in the Journal of Wildlife Diseases:

(1) Serologic survey for bovine respiratory viruses in caribou from Alaska and the Yukon Territory

Status: This paper has been ready to go for 2 years. One of the coauthors is the editor for Journal of Wildlife Diseases and has not had time to work on the paper.

(2) Prevalence of the nematode Soboliphyme baturini in marten (Martes americana) populations from three regions of Alaska, 1990–1998

Status: The paper was submitted but referees wanted a simpler statistical analysis. The paper is being revised.

(3) Geographic pattern of serum antibody prevalence for Brucella spp. in caribou, grizzly bears, and wolves from Alaska, 1975–1998

Status: The paper was submitted, but referees again wanted a simpler statistical analysis so it is being revised.

(4) Serologic survey of lynx (Felis lynx) from northwestern North America for evidence of exposure to eight selected disease agents

Status: This paper has not yet been submitted but will be shortly.

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

SEROLOGIC SURVEY FOR BOVINE RESPIRATORY GROUP VIRUSES IN CARIBOU FROM ALASKA AND THE YUKON TERRITORY

RANDALL L. ZARNKE,1,3 JAY M. VER HOEF,1 AND E. S. WILLIAMS2

1300 College Road, Fairbanks, Alaska 99701-1599, USA
2 Department of Veterinary Sciences, University of Wyoming, 1174 Snowy Range Road, Laramie, Wyoming 82070, USA
3 Corresponding author (email: randy_zarnke@fishgame.state.ak.us)

ABSTRACT: Blood samples were collected from 3,359 free-ranging caribou (Rangifer tarandus) in Alaska and the Yukon Territory. Sera were tested for evidence of exposure to four respiratory viruses (infectious bovine rhinotracheitis, bovine viral diarrhea, parainfluenza 3, and respiratory syncytial virus) by means of a serum neutralization method. Herd-specific antibody prevalences ranged from 0 to 19%. Prevalences for each of
the viruses were higher in northern herds. No explanation is apparent for either the cause or the effect of this pattern of exposure.

PREVALENCE OF THE NEMATODE SOBOLIPHYMÉ BATURINI IN MARTEN (MARTES AMERICANA) POPULATIONS FROM THREE REGIONS OF ALASKA, 1990–1998

RANDALL L. ZARNKE, 1, 4 JACK WHITMAN, 2 RODNEY W. FLYNN, 3 AND JAY M. VER HOEF 1
1 Alaska Department of Fish and Game, 1300 College Road, Fairbanks, Alaska 99701-1599, USA
2 304 Lake Street, Sitka, Alaska 99835-7563, USA
3 PO Box 240020, Douglas, Alaska 99824-0020, USA
4 Corresponding author (e-mail: randy_zarnke@fishgame.state.ak.us)

ABSTRACT: Marten (Martes americana) carcasses were collected from trappers in three regions of Alaska. Stomachs were examined for the nematode parasite Soboliphymé baturini. Both prevalence and intensity of infection exhibited an increase from north to south. Prevalence was higher in adults (compared to juveniles) from the two mainland study areas. Prevalences in these two age cohorts were similar for the Southeast region. There were no sex-specific differences in prevalence. No pathologic changes were observed in the gastrointestinal tract. Impact of the parasite on either individual animals or populations appeared to be minimal.

GEOGRAPHIC PATTERN OF SERUM ANTIBODY PREVALENCE FOR BRUCELLA SPP. IN CARIBOU, GRIZZLY BEARS, AND WOLVES FROM ALASKA, 1975–1998

RANDALL L. ZARNKE, JAY M. VER HOEF, AND ROBERT A. DELONG
1300 College Road, Fairbanks, Alaska 99701-1599, USA

ABSTRACT: Blood samples were collected from 2,635 caribou (Rangifer tarandus groenlandicus), 1,238 grizzly bears (Ursus arctos), and 930 wolves (Canis lupus) from throughout mainland Alaska during 1975–1998. Sera were tested for evidence of exposure to Brucella spp. Serum antibody prevalences were highest in the northwestern region of the state. In any specific area, prevalences for caribou and wolves were of a similar magnitude, whereas prevalence for bears in the same area was two to three times higher.

VIII RESEARCH EVALUATION AND RECOMMENDATIONS

None.

IX PROJECT COSTS FROM LAST SEGMENT PERIOD ONLY

FEDERAL AID SHARE $53.6 + STATE SHARE $17.9 = TOTAL $71.5

X APPENDIX

None.
(Signature not available)
Randall L Zarnke
Wildlife Biologist II

SUBMITTED BY:

Patrick Valkenburg
Research Coordinator

Laura A McCarthy
Publications Technician II

Thomas W. Paul, Federal Aid Coordinator
Division of Wildlife Conservation

Wayne L Regelin, Director
Division of Wildlife Conservation

APPROVAL DATE: ____________________