

**FEDERAL AID ANNUAL
RESEARCH PERFORMANCE REPORT**

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

**Alaska Department of Fish and Game
Wildlife Restoration Grant**

GRANT NUMBER: W-33

SEGMENT NUMBER: 10

PROJECT NUMBER: 14.25

PROJECT TITLE: Evaluating methods to control an infestation by the dog louse (*Trichodectes canis*) in gray wolves (*Canis lupus*)

PROJECT DURATION: 1 July 2006–30 June 2013

REPORTING PERIOD: 1 July 2011 – 30 June 2012

REPORT DUE DATE: 1 September 2012

PRINCIPAL INVESTIGATOR: Craig L. Gardner, ADF&G; ADF&G coauthors: Kimberlee B. Beckmen, Nathan J. Pamperin, and Patricia Del Vecchio

WORK LOCATION: Game Management Units 20A and 20B, Tanana Flats

I. PROGRESS ON PROJECT OBJECTIVES DURING LAST SEGMENT

OBJECTIVE 1: Determine extent of louse infestation in wolf packs in Game Management Unit 20A using visual observations of live wolves, hide inspections of trapper-caught wolves, and wolf capture and collection.

During 2005–2010, we determined the extent of lice infestation of wolf packs in Game Management Unit 20A by inspecting multiple wolves from individual packs through live capture, pelts purchased from trappers, and observations during survey flights. We developed a treatment area where all packs found infested were treated and a control area where lice infested packs were monitored but not treated. We verified that 15% of the packs in the treatment area were infested at the beginning of the study in April 2005. By winter 2006, 50% of the packs were lice infested. Lice infestation declined from 50% in 2006 to 0% in 2009 following 3 years of treatment.

OBJECTIVE 2: Determine efficacy of den-rendezvous site treatment to manage lice infection.

During 2006–2010, we orally administered ivermectin via baits to all members of wolf packs found to be lice infested within the treatment area, except for 1 pack that also was used as a control. In the control area, we monitored but did not treat 2 lice infested radiocollared packs. We completed 3 adult-treatments/pack/year during the onset of denning (early May) to 19 June. This period coincides to when pups were 0–4 weeks old and mainly in the den (Mech 1970). After 19 June we no longer deposited adult dosages and reduced the dosage to safely treat pups as they began to move out of the den (Mech 1970). All treated packs were lice-free during the winter following treatment and remained lice-free ≥ 15 months. In comparison, all 3 control

packs remained continuously infested for 4 consecutive years. Following treatment, the proportion of packs remaining lice-free (89%) was significantly different to the proportion of packs (11%) that became reinfested ($p_{re-infested} - p_{lice-free} = -0.78$; 95% CI = -1.19, -0.37; $n = 9$, single sample test of proportions). We found no evidence that without treatment, wolves could spontaneously rid themselves of lice or develop innate immunity within the time span of the study; all 3 control packs remained infested throughout the study and lice have persisted in wolf packs on the Kenai Peninsula and in the Matanuska-Susitna valley for 13–30 years.

Literature Cited

MECH, L. D. 1970. The wolf: the ecology and behavior of an endangered species. Natural History Press, Garden City, New York, USA.

OBJECTIVE 3: Establish rate of transmission between packs.

We did not collect the detailed information necessary to determine how fast lice could be transmitted between pack members. Observations made during this study and results from studies on the Kenai Peninsula (Schwartz et al. 1983) and Matanuska-Susitna valley (Golden et al. 1999), suggest that all wolves in a pack once exposed to lice became infested within a year; every wolf either harvested or live handled from an exposed pack had lice within this time period. We evaluated wolf dispersal, pack removal, and dominant wolf survival rates on lice transmission between packs by monitoring the 45 radiocollared wolves in 19 packs within the treatment area. Dispersal type included 9 local and 8 long distance (includes the additional long distance dispersal mentioned above). Annually, 24% (95% CI = 0.15–0.33) of the radiocollared wolves dispersed from the packs in which they were associated with the prior 4 months. Dispersal occurred throughout the year but most wolves dispersed during January–April (10 of 17) and few (2 of 17) during the treatment period (mid-May through mid-August). We found that if there is a local population of enzootically infested wolves, neighboring packs were more vulnerable to infestation due to local dispersing wolves.

Literature Cited

GOLDEN, H. N., T. H. SPRAKER, H. J. GRIESE, R. L. ZARNKE, M. A. MASTELLER, D. E. SPALINGER, AND B. M. BARTLEY. 1999. Briefing paper on infestation of lice among wild canids in Alaska. Pages 98–112 in M. V. Hicks, editor. Wolf management report of survey and inventory activities 1 July 1996–30 June 1999. Alaska Department of Fish and Game, Study 14.0, Juneau, Alaska, USA.

SCHWARTZ, C. C., R. STEPHENSON, AND N. WILSON. 1983. *Trichodectes canis* on the gray wolf and coyote on Kenai Peninsula, Alaska. Journal of Wildlife Diseases 19:372–373.

OBJECTIVE 4: Determine if lice-infected packs have lower productivity and survival rates.

We did not pursue this objective during the study due to funding constraints.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB/ACTIVITY 1: Literature review.

I conducted monthly literature reviews.

Federal funds were used to pay for a portion of Craig Gardner's salary while working on this activity. On a monthly basis, I conducted a literature search on parasite transmission and management and on wolf population dynamics and behavior that may cause greater vulnerability to lice infestations.

JOB/ACTIVITY 8: Data analysis and report preparation.

I completed the data analysis and authored the required reports and a manuscript that was submitted to a peer-reviewed journal.

We completed and submitted a manuscript entitled "Experimental treatment of dog lice infestation in Interior Alaska wolf packs" to the *Journal of Wildlife Management*. The manuscript is currently being reviewed and not available for this report.

IV. PUBLICATIONS

A manuscript has been submitted but is in the review process and not available for this report.

V. RECOMMENDATIONS FOR THIS PROJECT

None.

PREPARED BY: Craig L. Gardner

DATE: 14 August 2012