

**Alaska Department of Fish and Game
Division of Wildlife Conservation
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Evaluating methods to control an infestation by the dog louse in gray wolves

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**Research Annual Performance Report
1 July 2007–30 June 2008
Federal Aid in Wildlife Restoration
W-33-6
Study 14.25**

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FEDERAL AID ANNUAL RESEARCH PERFORMANCE REPORT

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

PROJECT TITLE: Evaluating methods to control an infestation by the dog louse in gray wolves

PRINCIPAL INVESTIGATORS: Craig L. Gardner and Kimberlee B. Beckmen

COOPERATORS: None

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NO. W-33-6

PROJECT NO. 14.25

WORK LOCATION: Units 20A and 20C

STATE: Alaska

PERIOD: 1 July 2007 – 30 June 2008

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

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

In FY08, we inspected 25 wolf hides from Unit 20A that were purchased from trappers (13), collected by department personnel (9), or were from natural wolf kills (3). We inspected 7 additional wolves following capture through visual inspection and by skin biopsy (tissue sample collected from the top of back between the shoulder blades). We maintained a sample of 18 radiocollared wolves in 11 packs to help estimate the extent and spread of louse infestation in Unit 20A. In FY08 we inspected 13 of 23 known wolf packs in Unit 20A; one of which was infected with lice. This pack was not part of our radiocollared sample. In comparison, during FY06 and FY07, 7 of 12 and 4 of 12 packs inspected were infected. During November 2008–March 2009, we will inspect the current 11 radiocollared packs and attempt to capture, radiocollar (deploy 1–2 radios/pack), and inspect 2–5 additional packs.

In FY07, we inspected 37 wolf hides from Unit 20A that were purchased from trappers (28), found dead (3) or collected by department personnel (6). We captured 34 additional wolves using helicopter capture techniques and tested for lice through visual inspection and by conducting skin biopsies using a small tissue sample collected from the top of the wolves back between the shoulder blades. We radiocollared 29 wolves in 12 packs to help estimate the extent of louse infestation in Unit 20A. We inspected 14 of the 23 known packs in Unit 20A and found lice infestation on 4 packs (3 were radiocollared).

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

We treated louse infected packs by dropping baits (fist size chunks of moose meat) injected with ivermectin at the den/rendezvous sites during May–August. We varied the dose depending on pup presence and size. During 11 May and 19 June, pups were 0–6 weeks old and not very mobile. We used this period to treat the adult wolves by dropping 5–20 baits injected with 12 mg ivermectin at the den site. We completed 3 adult treatments/pack during this period during each treatment year. The number of baits dropped at each den or rendezvous site was based on pack size. After 19 June we commonly observed pups at the dens or rendezvous sites and reduced the dosage to safely treat both the pups and adults. During 19 June–5 July the dose was 0.15 mg/bait. We increased the dosage as the pups grew to 0.18 ml and 0.20 ml during 15–31 July and 1–26 August. Our dose was based on estimated pup weights obtained from the literature. We completed 4 pup treatments/pack/year.

We treated 5 packs in 2006, 4 packs in 2007, and 0 packs in 2008. We did not treat during 2008 because none of the radiocollared packs were infected and we did not locate the den of the known infected pack. We attempted to find the den by visiting known dens within the pack's territory but without success.

To evaluate treatment effects from May–August 2007, we collected 9 6-month-old pups. One from each of the 4 treated packs and from 5 of the 7 untreated packs during November 2007–February 2008. In February 2008 we collected one 10-month-old pup from a pack in Unit 20C that we verified as infected in March 2007 and that was not treated in summer 2007. We used packs in Unit 20C as our control to evaluate treatment effects. The hides of the collected wolves were chemical digested to detect occult lice infestations. During FY09 we will collect one 6- to 10-month-old pup each from past treated and untreated packs in Unit 20A and from 2 to 3 untreated infected packs in Unit 20C to monitor the efficacy and duration of treatment methods.

In FY07, we evaluated treatment affect by collecting one 6- to 10-month-old pup from 4 of the 5 treated packs and from 2 of the 5 untreated packs and chemically digested the hides to determine louse presence. We captured an adult wolf from the remaining treated pack and visually inspected for lice and also collected a skin biopsy.

OBJECTIVE 3: Establish rate of transmission between packs.

We maintained 1–3 radiocollared wolves in 10 packs in 2006, 11 packs in 2007, and 11 packs in 2008 in Unit 20A. Louse infection rate in treated and untreated packs was monitored using visual inspection, skin biopsies, and collection. In FY09 this objective will be further studied by radiocollaring louse infected packs in Unit 20C that will not be treated until the end of the study and compare infestation rates by area. We are also monitoring louse migration by purchasing wolf hides from trappers who caught wolves in areas of Alaska that have not previously reported lice infestations. These data will be part of a study conducted by Master's degree candidate Theresa Woldstad through the University of Alaska.

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

We did not conduct fieldwork for this objective during FY08 because we planned to use more of our funding to find, capture, and evaluate more packs for lice infestation in Units 20A and 20C. Poor snow conditions prevented us from meeting our objective, but it was too late in the year to shift back to Objective 4.

In FY07, during July–November, we located treated and untreated radiocollared packs in Unit 20A once/7–10 days to monitor pup and pack numbers. We continued to observe the packs throughout the winter to compare pack size and rate of change.

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

OBJECTIVE 1: Extent of louse infestation.

JOB/ACTIVITY 1A: Literature review on symptoms and severity of secondary infectious in wolves carrying the dog louse.

We reviewed literature and management reports concerning lice infestation on the Kenai Peninsula and in Units 14 and 16, Southcentral Alaska, and on treatment and detection methods for other types of ectoparasites on canids.

Federal funds were used to pay salaries while working on this task.

JOB/ACTIVITY 1B: During annual wolf surveys, attempt by visual inspection of wolves and behavior to determine if the pack is infected by lice.

We will verify lice infection by collecting one pup from each radiocollared pack and search for lice using laboratory techniques. We will also verify the presence of lice in study packs and other packs in Unit 20A by inspecting the hides of trapper-caught wolves.

We collected a 6- to 10-month-old wolf from 9 of the 11 radiocollared packs in Unit 20A and one from the only radiocollared pack in Unit 20C during November 2007–February 2008 to determine the presence and transmission of lice and to evaluate treatment effectiveness. The 4 infected packs that received treatment during May–August 2007 were devoid of lice in November 2007. The infected pack in Unit 20C that did not receive treatment in summer 2007 remained infected in February 2008. None of the 7 radiocollared packs in Unit 20A that were louse-free in spring 2007 had become reinfected by February 2008.

Federal funds were used to pay salaries for project personnel.

JOB/ACTIVITY 1C: Maintain a radiocollar sample of 1–2 wolves in 10–15 packs in Unit 20A. We will catch wolves using standard helicopter capture techniques.

We maintained 1–3 radio collars (<2 years operating time) in 11 packs during the report period. We caught and radiocollared 4 wolves in November 2007 and 2 wolves in February 2008. Snow conditions were inadequate to efficiently locate additional packs by snow tracking during late February–March 2008 (our planned capture period). We plan to capture additional packs in Unit 20A when conditions allow during fall 2008 and spring 2009.

Federal funds were used to pay salaries for project personnel.

JOB/ACTIVITY 1D: Periodically locate radiocollared wolf packs from the air and look for signs of infection.

During the report period, we completed 16 radiotracking flights and located 2–11 of the radiocollared packs/flight. Our intent was not to find every radiocollared pack during each survey flight but to ensure an adequate sample size to determine home range size and use and to detect interactions with other wolves in the most logistically efficient manner.

Federal funds were used to pay salaries for project personnel.

OBJECTIVE 2: Efficacy of den/rendezvous site treatment.

JOB/ACTIVITY 2A: Monitor radiocollared packs during late April through June to identify den and rendezvous sites. Treat den and rendezvous sites of louse infected packs with treated baits.

During the report period (Jul–Aug 2007), we completed the treatment of 4 packs that we initiated in May 2007. We dropped baits injected with 12 mg ivermectin every 10–14 days in order to treat adults between the onset of denning in May and 19 June. After 19 June, pups were commonly observed outside the den and became increasingly mobile. To ensure we did not overdose the pups, we reduced the ivermectin dosage to 1.5–2 mg during 19 June–26 August. Dosage was dependent on estimated pup weights. We maintained the 10–14 day treatment intervals during this period.

Federal funds were used to pay salaries for project personnel.

JOB/ACTIVITY 5A: Conduct data analysis and prepare reports.

During the report period, we completed the required federal aid reports and Dr. Kimberlee Beckmen presented aspects of the treatment data at several symposiums and workshops.

Federal funds were used to pay salaries for project personnel.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None.

IV. PUBLICATIONS

None.

V. RECOMMENDATIONS FOR THIS PROJECT

Prioritize expenditures to increase sample size of infected and clean packs in Unit 20A and infected packs in Unit 20C.

VI. APPENDIX

None.

Project No. 14.25 - Wolf lice
FY08 Annual Performance Report

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