

**FEDERAL AID ANNUAL
RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
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PROJECT TITLE: Evaluating methods to control an infestation by the dog louse (*Trichodectes canis*) in gray wolves

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COOPERATOR: None

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NO. W-33-7

PROJECT NO. 14.25

WORK LOCATION: Units 20A and 20C

STATE: Alaska

PERIOD: 1 July 2008 – 30 June 2009

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 collection.

In fiscal year (FY) 2009, we inspected 27 wolf hides from Unit 20A for louse infestation using hide digestion, visual inspection, and skin biopsies. Wolves were purchased from trappers (4) and collected (8) or live captured (13) by department personnel. We also collected a hide from a wolf killed by other wolves. We maintained a sample of 15–19 radiocollared wolves in 11–15 packs to help estimate the extent and spread of louse infestation. Overall, we inspected 16 of the 23 known wolf packs (69.6%) in Unit 20A during FY09; none of which were infested with lice. During FY06–FY08, we evaluated 12, 12, and 13 of the 23 Unit 20A packs and verified that 7, 4, and 1 packs were infested. Over the course of the study we have radiocollared 36 wolves and evaluated 18 Unit 20A packs (78%) for louse infestation. We have documented wolf dispersal patterns and frequency of inter-pack conflicts and are analyzing the effects of these factors in louse transmission.

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

We treat louse infested packs by dropping baits (fist size chunks of moose meat) injected with ivermectin at the den/rendezvous sites from aircraft (Piper Super Cub) during May–August. We vary the dose depending on pup presence and size. During the period when pups are 0–6 weeks old and not very mobile (early May–19 Jun) we treat the adult wolves by dropping 5–20 baits injected with 12 mg ivermectin at the den site. We completed 3 adult treatments/pack/year. The number of baits dropped at each den or

rendezvous site varies by pack size. After 19 June we reduced the dosage to safely treat both the pups and adults. During 19 June–5 July the dose was 0.15 ml/bait. We increased the dosage 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 and 2009. We did not treat during 2008 because none of the radiocollared packs were infected and we did not locate the den of the known non-radiocollared infected pack. Treatment was not necessary during 2009. The one known infested pack during 2008 was trapped out and the newly established pack in the area was found clean.

During FY09, to evaluate short- and long-term treatment effects, we collected 1 pup from each of the treated and untreated radiocollared packs in Unit 20A during the winter. We also collected 1 wolf from each of our 2 louse infested control packs in Unit 20C to evaluate longevity of louse infestations. The hides of the collected wolves were chemically digested to detect occult lice infestations. This technique is highly sensitive in detecting louse presence. We also collected a skin biopsy sample from 13 live-captured wolves from Unit 20A for inspection.

OBJECTIVE 3: Establish rate of transmission between packs.

We maintained 1–3 radiocollared wolves in 11–15 Unit 20A packs in FY09. We identified dispersals and pack interactions and evaluated the effects of these factors on louse transmission. We monitored 12–13 packs during 2006–2008 in Unit 20A. During the course of the study, we documented 11 dispersals of radiocollared wolves of which 5 were local (established a territory within the study area) and 6 left the area. Four of the wolves that dispersed from the area had been infested with lice but were treated and clean at the time of dispersal. All 4 of these wolves were documented with other wolves following dispersal. We documented 5 occasions of pack conflict involving 7 packs; 1 of which acted as the conduit for louse transmission.

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

We did not specifically conduct fieldwork for this objective during FY09. We decided to allocate more funding and effort to find, capture, and evaluate more packs for lice infestation in Units 20A to more thoroughly evaluate extent and transmission rates.

In FY09, during July and August, we located treated and untreated radiocollared packs in Unit 20A to monitor pup production and pack numbers. We observed the packs 5–7 times during the winter to compare pack size and rate of change. However, we did not radiocollar enough wolves in each pack or monitor the packs at the necessary intensities to complete this objective.

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

JOB/ACTIVITY 1: Literature review of symptoms and severity of secondary infections in wolves carrying the dog louse and possible treatments.

We reviewed published literature and management reports concerning lice infestation within Alaska. We also consulted with fellow colleagues and the literature on treatment

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and detection methods for other types of ectoparasites on canids that may apply to managing dog lice on wolves.

JOB/ACTIVITY 2: Visually inspect wolves to determine louse infestation by collections, purchasing wolves from trappers, and skin biopsies.

We collected a 6- to 10-month-old wolf from 8 of 11 packs we had radiocollared during the collection period (Oct 2008 and Feb 2009) in Unit 20A. We also inspected the hides of 2 wolves purchased from trappers in Unit 20A and 2 wolves from Unit 20C. We evaluated skin biopsies from 13 live captured wolves in Unit 20A. We used these data to evaluate the presence and transmission of lice and the long-term effectiveness of treatment. All the Unit 20A wolves representing 16 packs were lice free and both Unit 20C wolves representing 2 different packs were louse infested. Seven (43.7%) of the 16 Unit 20A packs had been infested prior to treatment within the last 3 years. Both Unit 20C packs had remained infested for 3 years.

JOB/ACTIVITY 3: Maintain a radiocollar sample of 1–2 wolves in 10–15 packs in Unit 20A.

We maintained 1–3 radiocollars (<2 yr operating time) in 11–15 packs during the report period. We caught and radiocollared 7 wolves from 6 packs (4 new) in October 2008 and 5 wolves from 5 packs (2 new) in February 2009.

JOB/ACTIVITY 4: Periodically locate radiocollared wolf packs from the air and monitor movements, dispersals, inter-pack interactions, and evidence of louse infestation.

During the report period, we completed 24 radiotracking flights and located 2–11 of the radiocollared packs/flight. Our intent was to monitor pack movement patterns and inter-pack conflict, determine pack territory boundaries, and identify dispersal patterns to help delineate louse transmission through Unit 20A. We documented 1 inter-pack conflict involving 2 neighbor packs, 1 of which had been louse infested prior to treatment in 2007 and 3 dispersals, 2 of which were local. One of these wolves was from a pack that had been successfully treated for lice prior to dispersal.

JOB/ACTIVITY 5: Treat den and rendezvous sites of louse infected packs with ivermectin injected baits.

We did not conduct this activity during this report period because none of the radiocollared packs in Unit 20A were louse infested.

JOB/ACTIVITY 6: Radiocollar 1–2 wolves in up to 5 louse infested packs in Unit 20C to act as an experimental control.

During FY09 we did not radiocollar any additional wolves in Unit 20C but continued to monitor the 2 packs with operating radiocollars that were instrumented previously in 2007.

JOB/ACTIVITY 7: Compare litter size, pack size, and rate of change between infected and non-infected packs.

Completed inspections of 7 of the 13 wolf hides collected during FY09. All 13 biopsy samples were analyzed and were negative for lice. We began analyzing movement data to evaluate louse transmission. We presented results of the efficacy of treating louse

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infestation of wolves by distributing ivermectin injected baits at den and rendezvous sites from an airplane at 2 different conferences.

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

During the final year of the project, we will attempt to capture and evaluate the remaining packs in Unit 20A for louse infestation. We will also continue to prioritize documenting dispersal of wolves from previously treated packs to estimate possible louse transmission rates.

VI. APPENDIX

None.

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