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EXPERIMENTAL INVESTIGATIONS OF TRICHODECTES CANIS  
LOUSE INFESTATION IN WOLVES

By

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Final Report

Federal Aid in Wildlife Restoration  
Project W-22-3, W-22-4, Job 18.9

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FINAL REPORT (RESEARCH)

State: Alaska

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Project No.: W-22-3      Project Title: Big Game Investigations  
W-22-4

Job No.: 18.9              Job Title: Experimental Investigations  
of Trichodectes canis Louse  
Infestation in Wolves

Period Covered: 10 July 1983-10 September 1984

SUMMARY

Four wolf (Canis lupus) pups were captured and housed in outdoor pens near Fairbanks. Attempts to infest these wolves with the biting louse (Trichodectes canis) were unsuccessful.

Key words: Trichodectes canis, louse, wolf.

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## BACKGROUND

Biting lice (Trichodectes canis) were first detected on wolves (Canis lupus) from the Kenai Peninsula during winter 1981-82 (Schwartz et al. 1983). The presence of these lice in the wolf population may affect population dynamics by: (1) decreasing survival of pups and adults, and (2) altering human harvest. Therefore, attempts have been made to eradicate the lice from the wolf population. At present, it appears as if these efforts may be unsuccessful. Alternate strategies may have to be developed. Therefore, in an attempt to better understand the host-parasite relationship, the current study was undertaken.

## OBJECTIVES

The primary objectives were to determine:

1. The progression of louse infestation from its initial stages to the severe condition observed in Kenai Peninsula wolves.
2. The degree of transmissibility of T. canis from infested individuals to noninfested pack-mates.
3. The effectiveness of selected drug treatment regimes.
4. The probability and severity of a re-infestation after an animal has been treated and has subsequently recovered from an initial infestation.

The secondary objectives were to determine:

1. If an infestation alters the growth rate of pups.
2. The effects of cold temperatures common in Interior Alaska on louse-infested individuals.
3. The degree of internal pathology (if any) associated with infestation.

## MATERIALS AND METHODS

Two wolf pups were captured on 20 July 1983 at the Mosquito Flats of the Fortymile River drainage. The pups were transported to Fairbanks where they were housed in separate, adjacent 8 ft x 16 ft outdoor pens. Their diet was altered for short periods, but consisted mainly of commercial dog food.

All local veterinarians were contacted and notified of our search for a source of T. canis. In addition, contacts were established with the Assistant State Veterinarian, several practitioners in Anchorage, and the Research Director for Merck, Sharp and Dohme, Inc. (producer of Ivermectin).

On 10 August 1983, a local dog musher reported the presence of lice in a litter of pups. Approximately 100 T. canis were collected from the pups by means of plucking or cutting the hair to which the lice were attached. On 2 separate occasions, veterinarians contacted us to report a case of T. canis in sled dogs. Unfortunately, in both cases the dogs had been chemically treated prior to the notification. Lice were found on the dogs in question, but the lice were dead.

During September-December 1983, the 2 captive wolves were examined on an irregular but approximately once-monthly basis. Handling techniques and procedures for the proposed collection of samples were developed and modified.

In early March 1984, Ted Spraker began the Ivermectin treatment program for infested wolves on the northern portion of the Kenai Peninsula. He collected several hundred lice from a heavily infested individual. These lice were shipped to Fairbanks and arrived alive. The 2 captive wolves were sedated with 100 mg of Rompun. Clumps of hair and lice were placed in the axillary and inguinal regions of the wolves.

A second shipment of lice from Mr. Spraker a few days later was handled similarly. The captive wolves were examined for the presence and number of lice, as well as any evidence of pelt damage approximately twice per month for the next several months.

On 15 June 1984, 2 wolf pups were taken from their den near Elephant Lake on the Kenai Peninsula. These animals were transported to Fairbanks where they were housed in the same cage complex as the 2 older wolves. After several days of close behavioral observation to assure no aggression by older animals toward the pups, the gate between the 2 pups and 1 of the yearling wolves was opened to allow the animals to have closer contact. All 4 wolves were examined several times before the experiment was terminated 1 September 1984.

## RESULTS AND DISCUSSION

All attempts to obtain viable T. canis from local dog owners were unsuccessful. On the 1 occasion when live lice were collected from a litter of pups, the lice died during the 1½ hour trip from the musher's residence to the University pens. Two possible explanations for the death of these lice were: (1) the warm air temperature in the cab of the truck en route, or

(2) some toxic substance in the glass container in which the lice were transported. Neither explanation was likely after further examination, so the cause of death remains unknown.

The viable lice which were placed on the 2 captive wolves in March 1984 did not survive. Several lice were seen during a 2-minute examination in late March. Two weeks later, live lice were still present but the absolute number had significantly decreased and the time required to find the few remaining lice had increased. In late April, no lice could be found during a 15-minute examination period. No lice were observed on the wolves until late May when a thorough examination revealed 2 lice on 1 wolf and no lice on the other. This was the last time any lice were found on any of the captive wolves.

The purpose for allowing close contact between the 23 pups captured in 1984 and 1 of the wolves captured during 1983 was to allow transmission of lice from the older to the younger animals. Based upon experience and theory, the pups should have been more susceptible to infestation and the older animals more resistant. Thus, if the older wolf were harboring a subclinical infestation, transmission to the more susceptible pups might occur under a regime of close contact between the animals. This did not occur. Either the pups were more resistant than expected, or no viable lice remained on the previously infested yearling wolf. We suspect the latter.

Although none of the original objectives of this project were accomplished, the effort should not be considered a total loss. The absence of a viable T. canis infestation precluded any meaningful attempts to address the objectives. We demonstrated that transmission of lice and establishment of a louse population is not as easy as earlier believed. The inability of the lice to establish and maintain an infestation remains a mystery. Prior to this project, the ease of louse transmission was readily accepted. The findings of the current study add credence to the attempts to eradicate lice from the free-ranging wolves on the Kenai Peninsula. If transmission of lice is always as difficult to accomplish as observed in the current study, then we could expect wild wolves to remain free of lice for an extended time period if we could eradicate existing infestations.

T. canis infestation in sled dogs in Interior Alaska appears to be maintaining a low-level, enzootic condition. Epizootic levels have not occurred during the past 3 years. Based upon interviews with local veterinarians, such an epizootic has never occurred.

One hypothesis which has been proposed for the slow but steady decline of the number of lice on the 2 captive wolves was the possibility that the drug Rompun (Xylazine) possessed some previously hidden anti-lice activity. We lack any direct evidence on this matter, but of 2 experts who were consulted on the matter, both rejected the hypothesis.

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#### LITERATURE CITED

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