BioOne COMPLETE

NOTES ON POPULATIONS OF Bovicola jellisoni ON DALL'S SHEEP (Ovis dalli) 1

Author: KIM, KE CHUNG

Source: Journal of Wildlife Diseases, 13(4) : 427-428

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-13.4.427

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 29 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

NOTES ON POPULATIONS OF *Bovicola jellisoni* ON DALL'S SHEEP *(Ovis dalli)*[1]

KE CHUNG KIM, The Frost Entomological Museum, Department of Entomology, The Pennsylvania State University, University Park, Pennsylvania 16802, USA

Abstract: This paper reports the first record of a mallophagan species on the Dall's sheep *(Ovis dalli)*. The numbers and distribution of *Bovicola jellisoni* on two Dall's sheep collected on Crescent Mountain, Kenai Peninsula, Alasaka, is described.

INTRODUCTION

Dall's sheep (*Ovis dalli*) is found in the mountain areas of Alaska, Yukon Territory, and northern British Columbia. There is no verifiable record of ectoparasites from Dall's sheep. Three hides of Dall's sheep were made available for study through the courtesy of Mr. Kenneth A. Neiland, Alaska Department of Fish and Game (AFG) in 1973. These hides were heavily infested with a mallophagan species, *Bovicola jellisoni* initially described from bighorn sheep *(Ovis canadensis)*. This paper reports the infestation, population structure, and distribution of *Bovicola jellisoni* on *O. dalli* collected in Kenai Peninsula.

MATERIALS AND METHODS

The three hides of Dall's sheep used in this study were collected on Crescent Mountain, Kenai Peninsula, Alaska, by Lyman Nichols, on 27 April 1971. One was a 14 year-old ewe (AFG #3233); the second a 6 year-old ewe (AFG #3239); and the last a 12 year-old ewe #3333). They were shipped to my laboratory frozen, and each hide had thick fat, making extraction work extremely difficult.

Hides were first examined visually, but no lice were found. Hides were then dissolved by a modified Cook's technique[3]. To facilitate extraction, the large hide was cut into eight parts representing head, neck, belly (left and right), back (left and right), hip and tail. Each of these parts was then cut into small pieces suitable for digestion in a beaker. The digest used was 1% trypsin and 10% potassium hydroxide. The suspension was then examined for lice using a dissecting microscope. Because of the high fat content the suspension was warmed on a hot plate during examination, and a detergent was used as an emulsifier. Lice were aged, sexed and counted. Results were recorded by body region.

RESULTS AND DISCUSSION

Of three animals examined, two were infested with lice. The hide of the 14 year-old ewe had 18 *B. jellisoni,* consisting of 1 male, 4 females and 13 nymphs. The six-year-old ewe (AFG #3238) was infested with about 19,300 *B. jellisoni.* The lice were concentrated on the sides of the body, the borderline areas between back and belly. About 12,154 lice (63%) were found on the sides of back. There were 4,304 lice (22%) on the belly, and 2,439 lice (13%) on the anal area. Of 19,300 lice, 88% (16,913) were nymphs and 9% were female adults. The sex ratio of adults was 1:3 (male:female).

B. jellisoni preferred the sides and belly; about 85% of the louse population were found in these regions. The area

[1] Authorized for publication on January 25, 1977 as paper no. 5234 in the Journal Series of the Pennsylvania Agricultural Experiment Station, University Park, Pennsylvania 16802, USA.

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 29 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

surrounding the anus had about 13% of the total louse population. The head and neck had the lowest level of infestation.

Murray[5-8] studied the effects of various environmental factors on the distribution of eggs, development, and reproduction of *B. ovis* on sheep. Skin temperature was the main factor in determining the lateral distribution of the eggs. In addition, the diameter of the hair fibers from the legs, face, axilla, and inguinal regions of the sheep was too large for the lice to attach eggs. The topographic distribution of *B. jellisoni* probably is influenced by skin temperatures and the type of hair fibers on different parts of the body. Louse distribution probably varies somewhat with season. Such seasonal variations are well known with *Haematopinus eurysternus*[4] and *Solenopotes capillatus*[2].

Acknowledgements

I am indebted to Mr. Kenneth A. Neiland and his colleagues of the Alaska Department of Fish and Game for making three hides available for this study. My sincere appreciation also goes to Dr. C. F. Weisser for his initial effort in getting the study material, Mrs. Verda L. Haas for technical help in extracting ectoparasites, Dr. K. C. Emerson, National Museum of Natural History Smithsonian Institution, for confirming the identification.

LITERATURE CITED

1. EMERSON, K. C. 1962. A new species of Mallophaga from the Bighorn sheep. J. Kan. Ent. Soc. 35: 369-70.
2. JENSEN, R. E. and J. E. ROBERTS. 1966. A model relating microhabitat temperatures to seasonal changes in the little blue louse *(Solenopotes capillatus)* population. Ga. Agr. Exp. Sta. Univ. Ga. College Agric. Tech. Bull. N.S. 55: 1-22.
3. KIM, KE CHUNG. 1972. Louse populations of the northern fur seal *(Callorhinus ursinus)*. Am. J. Vet. Res. 33: 2027-36.
4. MATTHYSSE, J. G. 1946. Cattle lice, their biology and control. Bull. Cornell U. Agric. Exp. Sta. No. 832. 67 pp. 45 figs.
5. MURRAY, M. D. 1957a. The distribution of the eggs of mammalian lice on their hosts. I. Description of the oviposition behavior. Austr. J. Zool. 5: 13-18.
6. ————. 1957b. The distribution of the eggs of mammalian lice on their hosts. II. Analysis of the oviposition behavior of *Damalinia ovis* (L.) Ibid. 5: 19-29.
7. ————. 1957c. The distribution of the eggs of mammalian lice on their hosts. III. The distribution of the eggs of *Damalinia ovis* (L.) on the sheep. Ibid. 5: 173-82.
8. ————. 1960. The ecology of lice on sheep. II. The influence of temperature and humidity on the development and hatching of the eggs of *Damalinia ovis* (L.). Ibid. 8: 357-62.

Received for publication 23 February 1977

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 29 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use