BIBLIOGRAPHY: ECONOMIC IMPORTANCE OF BITING AND SUCKING LICE ON CATTLE IN THE UNITED STATES

Vincent Gibney
J. B. Campbell

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Roy G. Arnold, Director
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Introduction

Each year, cattle throughout the United States are plagued by the presence of lice. In fact, lice are among the most frequently occurring and widespread ectoparasites infesting range cattle and other livestock in the United States (Peterson, et al. 1953, Scharff 1962).

Although it has been estimated that the percentage of cattle severely infested by lice is no more than 2% and that only 5-12% of all lice-infested cattle warrant treatment (Collins, et al. 1965, Nelson, et al. 1970, Scharff 1962, Steelman 1976), the USDA estimated in 1976, that annual losses to livestock production in cattle due to lice infestations, including control costs, were $130 million, with a range from $40 to $150 million (USDA 1976). This degree of variability in regard to the degree of infestation among cattle probably depends upon the region or area within the United States (Nelson, et al. 1970). Cattle in the northern areas of the U.S. usually have higher infestations than southern cattle.

1/ The literature cited in this bibliography was compiled during an extensive review of the literature dealing with the biology and economic effects of the five species of cattle lice which are considered to be of major economic importance. This literature search was undertaken during completion of the requirements for the M.S. degree at the University of Nebraska-Lincoln.

2/ Graduate research assistant, Department of Entomology, University of Nebraska North Platte Station.

3/ Extension and Research Entomologist, University of Nebraska North Platte Station.
Heavily infested adult cattle may manifest symptoms of lice infestation by anorexia, decreased vigor, discolored and greasy appearing haircoat, and general unthrifty condition (Kettle 1974, Krull 1969, Meleney 1978, Scharff 1962, Shemanchuk 1960). Rubbing and scratching may increase due to irritation (Kettle 1974, Roberts 1938, Scharff 1962). Even moderate infestations of biting lice apparently loosens the hair so that rubbing or pulling removes large quantities (Matthysse 1944).


The primary concern to cattlemen is retarded cattle growth rates due to lice infestations. When freed of lice, beef cattle showed an increase in weight (Kettle 1974). Calves heavily infested with lice do not grow or gain weight normally during the winter season and often remain stunted until the spring (Kettle 1974). Heavy infestations of lice on dairy cattle will reduce milk production and retard growth and efficiency. When freed of lice, dairy cows produced more milk (Kettle 1974, Matthysse 1946, Scharff 1962). In addition to decreased animal performance, intense irritation causes cattle to rub against objects in an effort to alleviate their discomfort. This may lead to damage of fences, gates, posts, hay racks, etc. (Burkhart 1973).
Before 1950, control measures consisted almost entirely of insecticide dips. Although dips are still used today, more modern means of controlling cattle lice are the "spot-ons", "pour-ons", and sprays. Since cattle lice are transmitted by direct contact among individuals, examination and treatment of new animals being introduced into the herd may be the best control (Gibney, et al. 1981).

The complete life cycle of all species of cattle lice is ca. 21-30 days depending on environmental conditions. The sucking lice reproduce sexually, and the females of the biting lice reproduce parthenogenetically. Females oviposit one egg every 24-36 hours and these eggs are deposited singly or in clusters to the host animal's hair (Crawford-Benson 1941, Matthesse 1946).

As mentioned previously, there are two distinct kinds of lice affecting cattle, the biting lice and the sucking lice. Briefly, the taxonomic differences of the five species of cattle lice under consideration are as follows:

A) Order: Mallophaga (biting lice)

Family: Trichodectidae (mammal chewing lice)

Genus species: Bovicola bovis (Linn.)

The synonomy existing in the literature for B. bovis is as follows: Ferris (1915) lists this species as Trichodectes scalaris Nitzsch (1874). Ewing (1928) contrived the genus Bovicola for members of the family Trichodectidae attacking Bovines. Hopkins (1943) concluded Bovicola belonged in the genus Damalinia.

In the approved list of common names of insects (Sutherland, Chmm, 1978), this species is listed as Bovicola bovis or the "cattle biting louse." As with all Mallophagans, B. bovis have a broad, flat head with
heavily chitinized mandibles used to gnaw and scrape at the epidermal surface of the skin and at the base of the hair shafts. They feed on detritus, skin secretions and dried blood (Krull 1969, Nelson, et al. 1975, Sloss, et al. 1978).

B) Order: Anoplura (sucking lice)

Family: Haematopinidae (wrinkled sucking lice)

Genus species: Haematopinus eurysternus (Nitzsch)

Haematopinus quadripertusus Fahrenholz

Family: Linognathidae (smooth sucking lice)

Genus species: Linognathus vituli (Linn.)

Solenopotes capillatus Enderlein

Ferris (1932, 1933) cites the synonomy for the sucking lice as follows:

Haematopinus eurysternus (Nitzsch)

1818. Pediculus eurysternus Nitzsch

1829. Haematopinus eurysternus (Nitzsch), Stephens

1838. Pediculus eurysternus Nitzsch, Burmeister

1842. Haematopinus eurysternus (Nitzsch), Denny

1874. Haematopinus eurysternus (Nitzsch), Giebel

1880. Haematopinus eurysternus (Nitzsch), Piaget

1891. Haematopinus eurysternus (Nitzsch), Osborn

1896. Haematopinus eurysternus (Nitzsch), Osborn

1908. Haematopinus eurysternus (Nitzsch), Dalla Torre

1909. Haematopinus eurysternus (Nitzsch), Newmann

1913. Haematopinus eurysternus (Nitzsch), Patton and Cragg

1916. Haematopinus quadripertusus Fahrenholz

1916. Haematopinus parniprocursus Fahrenholz
1917. Haematopinus eurysternus (Nitzsch), Lamson
1927. Haematopinus eurysternus (Nitzsch), Freund
   Linognathus vituli (Linnaeus)
1758. Pediculus vituli Linnaeus
1761. Pediculus vituli Linnaeus, Linnaeus
1764. Pediculus bovis vituli Linnaeus, Geoffroy
1781. Pediculus vituli Linnaeus, Fabricus
1800. Pediculus vituli Linnaeus, Latraille
1805. Pediculus vituli Linnaeus, Fabricus
1829. Haematopinus vituli (Linnaeus), Stephens
1838. Pediculus tenvirostris Burmeister
1842. Haematopinus vituli (Linnaeus), Denny
1844. Haematopinus vituli (Linnaeus), Cernais
1864. Pediculus oxyrrhynchus Nitzsch
1874. Haematopinus tenvirostris (Burmeister), Biebel
1880. Haematopinus tenvirostris (Burmeister), Piaget
1883. Haematopinus tenvirostris (Burmeister), Stroebelt
1885. Haematopinus tenvirostris (Burmeister), Piaget
1891. Haematopinus vituli (Linnaeus), Osborn
1896. Haematopinus vituli (Linnaeus), Osborn
1904. Trichaulus vituli (Linnaeus), Enderlein
1905. Linognathus vituli (Linnaeus), Enderlein
1908. Linognathus vituli (Linnaeus), Dalla Torre
1913. Linognathus vituli (Linnaeus), Patton and Cragg
1916. Linognathus vituli (Linnaeus), Ferris
1923. Linognathus vituli (Linnaeus), Dudich
1924. *Linognathus vituli* (Linnaeus), Freund
1927. *Linognathus vituli* (Linnaeus), Freund

*Solenopotes capillatus* Enderlein

1904. *Solenopotes capillatus* Enderlein
1908. *Solenopotes capillatus* Enderlein, Dalla Torre
1916. *Linognathus vituli* (Linnaeus), Ferris
1918. *Solenopotes capillatus* Enderlein, Freund
1920. *Solenopotes capillatus* Enderlein, Freund
1921. *Solenopotes capillatus* Enderlein, Bishopp
1923. *Solenopotes capillatus* Enderlein, Pillers
1924. *Solenopotes capillatus* Enderlein, Freund
1927. *Solenopotes capillatus* Enderlein, Freund
1929. *Solenopotes capillatus* Enderlein, Kohn
1929. *Solenopotes capillatus* Enderlein, Ewing

*Haematopinus quadripertusus* Fahrenholz

There is no list of the synonymy by which this species has been known. It should be realized, however, that this species has often been confused with *H. eury sternus*. This species has only recently been reported from the United States (Bruce, 1947) and other parts of the world. Perhaps it was not until these later dates that it was distinguished from *H. eury sternus* as a different species.

In the approved list of common names of insects (Sutherland, Chmn, 1978), these lice species are given the following common names: *H. eury sternus* the "short-nosed sucking louse", *L. vituli* the "long-nosed sucking louse" and *H. quadripertusus* the "cattle tail louse." *S. capillatus* is not recognized by the committee on common names of insects; however, Matthysse
(1946) records it as the "little blue cattle louse." The Anoplurans morphologically differ from the Mallophagans because they possess a conical head which is pointed anteriorly. Their haustellate proboscis protrudes from the oral opening at the anterior of the head and penetrates the host's epidermis. Hence, Anoplurans survive on blood withdrawn from their host (Kettle 1974, Kruil 1969). These species of cattle lice are not found solely within the United States but are distributed worldwide wherever cattle exist.

The following listing of literature should not be considered complete, but it contains a major portion of literature available in U.S. libraries. The United States Surgeon General's Catalog, 1860-1935, and the Index Medicus, 1935 to present, are reference texts containing additional information regarding these insects; however, they were not available to us for specific listings.

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