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Reprint

ANOPLURA FROM BRITISH COLUMBIA AND SOME ADJACENT AREAS

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INTRODUCTION

In 1951 I reported (Spencer, 1952) that 25 named and several unidentified species of Anoplura had been obtained from the mammals of British Columbia. Since this time, I have received species from adjacent areas and have managed to recognise five additional species in British Columbia. It seems appropriate at this time to publish the list of species obtained, with their host data. Not many species occur that have not already been taken and recorded, although we may hope that some unexpected species still remain to be discovered.

MATERIALS AND METHODS

The records in this paper are based principally on specimens in the collections of the University of British Columbia but a few are from the Canadian National Collection [C.N.C.]; some were collected by many biologists for me over the years, and to these I am indebted. Besides the collections made in the field, I have systematically searched the dried skins in the Vertebrate Museum at the University for lice remaining attached. All the specimens of Anoplura were cleared and mounted on microscope slides, according to the method described by Spencer (1959). Determinations were made by myself, using the keys of Ferris (1951), and the list is arranged systematically, according to Ferris (1951). A host list is also appended, arranged according to Cowan & Guiguet (1960) and Walker *et al.* (1964). It will be apparent where extra collecting might prove rewarding.

¹ This paper is based on specimens and notes left by the late Prof. Spencer. The plan of the paper was discussed with him and a first draft was seen by him prior to his death. I have attempted to include all the points that seem relevant.—G. G. E. Scudder.

I have a number of Mallophaga from the mammals of British Columbia, but it has not been possible to identify all the specimens. The list of these must therefore await further research.

Unless otherwise noted, all the specimens recorded here were taken in British Columbia.

SPECIES OF ANOPLURA

Family ECHINOPHTHIRIIDAE

Antarctophthirus microchir (Trouesart & Neumann)

ex. *Eumetopias jubata* (Schreber), Vancouver, 20.ix.1946 (G. J. Spencer); ex. *E. jubata*, Triangle Is., 15.vi.1953 (L. Margolis).

Originally recorded from *Phocarctos hookeri* in Auckland Is., and known also from *Zalophus californianus* and *E. jubata* from the coast of California.

A. trichechi (Bohemann)

ex. *Odobenus rosmarus rosmarus* (L), N.W.T.: Ellesmere Is., Craig Harbour, 6.vi.1935 (H. Kearney).

ex. *Odobenus rosmarus divergens* (Ill.) ALASKA: Barrow, vii.1952 (F. H. Fay);

ex. *O. rosmarus divergens*, ALASKA: St. Lawrence Is., v.1954 (F. H. Fay).

Recorded from *O. rosmarus* previously from Greenland, Spitzbergen and adjacent regions.

In *A. trichechi*, the dorsal aspect of the head of the female is very different from that of the male; it has many large scales of two sizes, somewhat like the ventral aspect of the head of *A. microchir*.

Echinophthirus horridus (von Olfers)

ex. *Pusa hispida* (Schreber), N.W.T.: Baffin Is., Harbour, 14.i.1935 (Cpl. H. McBeth); ex. *P. hispida*, N.W.T.: Ellesmere Is., Craig Harbour, 20.iv.1935 (H. Kearney).

ex. *Phoca vitulina richardii* (Gray), Skeena River, 16.vii.1946 (H. D. Fisher); ex. *P. v. richardii*, Vancouver Aquarium, in captivity, 26.iii.1963 (G. J. Spencer); ex. *P. vitulina*, Sointula, 20.vii.1966 (H. D. Fisher).

ex. *Phoca vitulina concolor* DeKay, N.B.: St. Andrews, vii.1951 (H. D. Fisher).

Described from *P. vitulina*. Recorded many times from this host on the coasts of Europe. Also reported from *P. groenlandica* and *Halichoerus gryphus* in Greenland, *P. hispida* from the Beaufort Sea, Alaska, *P. vitulina geronimensis* from Pacific Grove, California and *P. baikalensis* from Lake Baikal.

Proechinophthirus fluctus (Ferris)
ex. *Callorhinus ursinus cyanocephalus* (Walbaum), ALASKA, St. Paul Is., 15.vii.1946 (G. C. Carl).

Previously recorded from the Alaskan fur seal on St. Paul Is. and on other of the Pribilof Islands. The identity of the host of the type is doubtful.

Family HAEMATOPINIDAE

Haematopinus asini (Linnaeus)
ex. Horse, Vancouver, ii.1926 (M. A. Alan); ex. Horse, Kamloops, 10.iii.1938 (W. Godlonton); ex. Horse, Kamloops, 10.x.1943 (H. D. Fisher).

The type host is *Equus asinus*. Recorded also from domestic horses in various parts of the world and apparently occurring naturally on zebras.

H. eurysternus (Nitzsch)
ex. Bull, Kamloops, 10.iii.1938 (W. Godlonton); ex. Cattle, Douglas Lake, 20.ii.1944; ex. Cattle, Kamloops, 22.ii.1944 (G. J. Spencer).

Originally described from domestic cattle in Europe and known from these hosts from many parts of the world.

H. suis (Linnaeus)
ex. Hog, Quesnel, 15.vii.1949 (G. J. Spencer); ex. Hog, Vancouver, University of B.C., 4.xi.1954 (G. Cowan).

Recorded originally from domestic swine in Europe, and now known from this host from many parts of the world. It is reported from *Sus cristatus* in Tenasserim and India by

Ferris (1919-1935) and from Wild Hog in India by Spencer (unpublished).

Family HOPLOPLEURIDAE

Microphthirus uncinatus (Ferris)

ex. *Glaucomyssabrinus oregonensis* (Bachman), Vancouver, University of B.C. campus, 1.xi.1954, 15.xi.1954, 11.vii.1955, 12.viii.1955 (G. J. Spencer); ALTA., 1947.

Described from *G. sabrinus* in Yosemite National Park, California. The B.C. and Alberta records have been published before (Spencer, 1956) and at that time were apparently only the second captures of this louse.

Hoplopleura acanthopus (Burmeister)
ex. *Ochotona princeps fenisea* Osgood, Fraser River, 24 miles W. of Williams Lake, 7.xi.1946 (J. Hatter)—ex. Museum skin.

ex. *Thomomys talpoides fuscus* Merriam, Anarchist Mt., 29.v.1941 (I. McT. Cowan)—ex. Museum skin.

ex. *Synaptomys borealis chapmani* Allen, ALTA.: Banff, 6.ix.1930 (I. McT. Cowan); ALTA.: Jasper Park, Elysium Pass, 26.vi.1946 (I. McT. Cowan)—ex. Museum skin: Wells Gray Park, Murtle Lake, 24-26.vii.1950 (P. Martin).

ex. *Lemmus trimucronatus trimucronatus* (Richardson), N.W.T.: Baffin Is. Clyde, 10.vi.1958 (J. E. H. Martin) [C.N.C.].

ex. *Neotoma cinerea occidentalis* (Baird), Chilcotin River Valley, 29.v.1929 (G. J. S.).

ex. *Sorex cinereus cinereus* Kerr, ONT.: Algoma District, Pancake Bay, 4.ix.1935 (C. H. D. Clarke) [C.N.C.].

ex. *Clethrionomys gapperi saturatus* (Rhoads), Princeton, 23.viii.1965 (W. Sheppe).

ex. *Rattus norvegicus* (Berkenhout), Vancouver, 4.ix.1940 (J. Poole).

ex. *Microtus pennsylvanicus drummondii* (Audubon & Bachman), Nicola Range, Minnie Lake, 17.vi.1932 (G. J. Spencer); Grindrod, 12.iii.1948, 24.iii.1948, 1.v.1948 (J. Wynne).

ex. *Microtus townsendii* (Bachman), Vancouver, 18.ix.1934 (R.A.C., G.J.S.); Vancouver, 13.iv.1955 (G. Rolandson); Vancouver, University of B.C., 14.iii.1959 (J. Lanko).

ex. *Microtus montanus canescens* Bailey, Kamloops, Lac du Bois, 1.vii.1936 (G. J. Spencer).

ex. *Microtus longicaudus mordax* (Merriam), WASH., American & Bumping R., 20.vii.1957 (W. Sheppe); WASH.: River Bend Camp, 29.vi.1957 (W. Sheppe); WASH.: Crystal Springs Camp, 7.vii.1957 (W. Sheppe); Princeton, 31.vii.1965 (W. Sheppe); 4 miles S.W. of Princeton, 23.viii.1965 (W. Sheppe).

ex. *Microtus longicaudus vellerosus* Allen, Mount Robson, Berg Lake, 26.vii.1944.

ex. *Microtus oregoni serpens* Merriam, Vancouver, 15.iii.1955 (G. J. Spencer).

Originally described from *Microtus arvalis*, from Europe. Recorded also from *M. agrestis* and *M. nivalis* in Europe; *M. californicus*, *M. intermedius* and *M. ochrogaster* in the U.S.A.; *Lemmus alaskensis* in Alaska; *Synaptomys borealis* in Canada; *Pitymys pinetorum* in the eastern U.S.A. and on *Mus* in Europe. The occurrences reported here on *Ochotona*, *Clethrionomys*, *Rattus* and several species of *Microtus* therefore appear to be new host records.

H. arboricola (Kellogg & Ferris)

ex. *Eutamias amoenus affinis* (Allen), Savona, Deadman's Creek, 14.viii.1934 (D. Cameron & G. J. Spencer); Kamloops, Lac du Bois, 30.v.1934 (D. Cameron & G. J. Spencer); 17 miles from Kamloops, on Nicola road, 13.vi.1934 (D. Cameron & G. J. Spencer); Aspen Grove, 17.vii.1932, 28.viii.1934, 18.viii.1935 (G. J. Spencer); Rayleigh, 18.viii.1935 (G. J. Spencer); Tranquille range, Davis ranch, 19.vii.1934 (D. Cameron & G. J. Spencer).

ex. *Eutamias amoenus luteiventris* (Allen), Kinbasket Lake, 4.viii.1943 (G. P. Holland & G. J. Spencer).

The type host is *Eutamias townsendii* (= *Neotamias hindsi*) from California. According to Kellogg & Ferris (1915), Ferris (1919-1935) and Ferris (1951) the British Columbia material listed above, runs to *arboricola* and not *H. erratica* (Osborn), but other more atypical specimens have

been taken from *Eutamias* in the Province.

H. hesperomydis (Osborn)

ex. *Peromyscus sitkensis prevostensis* Osgood, Queen Charlotte Islands, Frederick Is., 25.vi.1946, 11.vii.1947 (C. Guiguet) — ex. Museum skin; Queen Charlotte Islands, Knight Is., 11.vii.1947 (C. Guiguet)—ex. Museum skin; Queen Charlotte Islands, Hippa Is., 25.vi - 11.vii.1947 (C. Guiguet); Queen Charlotte Islands, Lina Is., 27.vi.1960 (P. Joslin).

ex. *Peromyscus maniculatus austerus* (Baird), Vancouver, West Point Grey, 17.xi.1946 (J.D.Y., G.J.S.); Cultus Lake, 27.iii.1948 (J. Yarwood); Vancouver, 28.i.1948, 29.iii.1951, 2.ii.1959 (G. J. Spencer); Vancouver, Point Grey, 19.ii.1959 (J. Macdonald); Haney, Loon Lake, 29.viii.1957 (W. Sheppe).

ex. *Peromyscus maniculatus oreas* Bangs, Alta Lake, 28.viii.1941 (I. McT. Cowan); Vancouver, 14.i.1954 (G. J. Spencer); Princeton, 31.vii.1965 (W. Sheppe).

ex. *Peromyscus maniculatus artemisiae* (Rhoads), Kamloops, 9.vi.1929, 21.vii.1934 (G. J. Spencer); Aspen Grove, 12.vi.1932 (G. J. Spencer); Kamloops, Lac du Bois, 27.viii.1939 (G. J. Spencer); Armstrong, 4.ii.1941 (I. McT. Cowan); Princeton, 12.viii.1957 (W. Sheppe).

ex. *Peromyscus* sp., Vancouver, University of B.C.: 31.v.1940 (G. J. Spencer); Mahood Lake, 9.vii.1950 (P. W. Martin); Mount Seymour, 22.vii.1965 (W. Sheppe).

Described from *Peromyscus leucopus* in Iowa. Recorded from *P. boylii* and *P. maniculatus* in California; *Onychomys torridus* in California; *O. leucogaster* in Colorado; *Oryzomys fulvescens* in Mexico; *Oryzomys chaparensis* in Bolivia; *Eligmodontia collisae* in Argentina; *Mus musculus* in the U.S.A. and Turkestan; *Mus gansus* and *M. wagneri* in China. The occurrences reported here on *P. sitkensis* thus appear to be a new host record.

H. oenomydis Ferris

ex. *Rattus norvegicus* (Berkenhout), Vancouver, 4.ix.1940 (J. Poole).

Originally described from *Oenomys hypoxanthus* in East Africa. Recorded from *Dasymys incomtus* and *Grammomys surdaster* in East Africa; *Rattus exulans* and *R. mearnsi* in the Philippines; *Rattus exulans* in Hawaii and the Marquesas, and on *R. norvegicus* in the south-eastern U.S.A.

H. sciuricola Ferris

ex. *Tamiasciurus hudsonicus streator* (Allen), Nicola, Coyote Valley, 26.vi.1933 (T. K. M., D. C., G. J. S.); Aspen Grove, 21.viii.1934 (D. Cameron); Grindrod; 6.xii.1946 (J. Wynne).

ex. *T. hudsonicus*, Vancouver, 2.iv.1949 (G. J. Spencer); Grindrod, 19.ii.1947 (J. Wynne).

ex. *Tamiasciurus douglasi mollipilosus* (Audubon & Bachman), Vancouver, 4.ii.1952 (G. J. Spencer); Gambier Is., 21.ii.1943 (I. McT. Cowan).

Originally described from *Sciurus carolinensis* from Mississippi. Reported from *T. hudsonicus* in Alaska, *T. douglasi* in California, *S. ignitus* in Peru, *S. nasaeus* in Venezuela and *S. variabilis* in Colombia.

H. trispinosa Kellogg & Ferris

ex. *Glaucomys sabrinus columbiensis* Howell, Princeton, 6.x.1957 (W. Sheppe).

ex. *Glaucomys sabrinus oregonensis* Bachman, Vancouver, University of B.C. campus, 26.i.1944, 12.viii.1955, 11.vii.1955, 15.xi.1954 (G. J. Spencer); ALTA.: 1947 (Spencer, 1956).

Originally described from *G. sabrinus* from Oregon. Recorded on this species also in California, B.C., and Alberta (Spencer, 1956) and on *G. volans* in Maryland.

Pedicius eurygaster (Burmeister)

ex. Rhesus monkey, Vancouver, University of B.C., in captivity 1934 (G. J. Spencer).

Recorded from *Macaca*, *Cercopithecus*, *Pithecus* and *Rhinopithecus*, both wild and captive.

P. obtusus (Rudow)

ex. Rhesus monkey, Vancouver, University of B.C., in captivity, 5.iii.1934 (G. J. Spencer); Vancouver, in captivity, 10.v.1953 (G. J. Spencer).

Originally from *Semnopithecus maurus*, but may occur on almost any Cercopithecoid monkey, either wild or captive. It is the species most likely to be found on captive monkeys.

Fahrenholzia pinnata Kellogg & Ferris

ex. *Perognathus parvus lordi* (Gray), Osoyoos, 21.v.1941 (I. McT. Cowan)—ex. Museum skin; 10 miles S. of Oliver, 7.vii.1963 (W. B. Preston)—ex. Museum skin.

Apparently this species also from *Perognathus parvus laingi* Anderson, Okanagan Landing, 11.viii.1949 (I. McT. Cowan)—ex. Museum skin.

Originally described from *Dipodomys californicus* in California, and noted from *D. merriami* and *Perognathus* sp. in the same State, *D. ornatus* and *D. phillipsii* in Mexico, and *Perognathus parvus* in Nevada.

Haemodipsus ventricosus (Denny)

ex. Laboratory rabbit, Vancouver, University of B.C., 27.i.1942, 14.x.1934 (G. J. Spencer); ex. rabbit, Vancouver, 24.x.1931 (G. J. Spencer).

Described from the European rabbit, *Oryctolagus cuniculus* in England. Recorded from this host and from its domestic descendants in many parts of the world.

Neohaematopinus inornatus (Kellogg & Ferris)

ex. *Neotoma cinerea occidentalis* Baird, Chilcotin R. Valley, 29.v.1929 (G. J. Spencer); Nicola, 24.viii.1933 (G. J. Spencer); Vavenby, 25.x.1933 (G. J. Spencer); Cariboo, Dempsey Lake, 12.viii.1934 (D. Cameron & G. J. Spencer); Kamloops, Lac du Bois, 7.ix.1938 (G. J. Spencer).

ex. *Neotoma cinerea* (Ord), WASH.: American & Bumping R., 22.vii.1957 (W. Sheppe).

Described from *Neotoma cinerea* in California, and known from the same host also in Colorado.

N. laeviusculus (Grube)

ex. *Spermophilus columbianus columbianus* (Ord), Birch Is., 6000 feet, 12.viii.1931 (G. J. Spencer); 30 miles from Vernon, on Vernon-Kamloops road, 27.v.1934 (D. C. & G. J. Spencer);

Lower Arrow Lakes, Syringa Creek, 30.vi.1934, 6.vii.1934 (D. Cameron); Grand Forks, 15.v.1939 (J. B. Poole); Bridesville plateau, 25-30.vi.1940 (J. Poole); Windermere - Golden, 20.vii.1940 (J. Poole); Yoho Park, 2.viii.1940 (J. Poole); Mt. Tod, 27.vi.1943 (G. J. Spencer); Kennedy Lake, 3.v.1956 (W. Sheppe).

ex. *Spermophilus undulatus parryi* (Richardson), N.W.T.: Thelon R., Lookout Point, 7.viii.1963 (J. F. Bendell)—ex. Museum skin;

ex. *S. undulatus*, N.W.T.: Fort Smith, 25.viii.1965 (E. Kuyt).

Described from *Citellus eversmanni* in Siberia. Known from many other species of *Spermophilus* in North America, from Point Barrow in Alaska, south to Mexico. Recorded from *Cynomys leucurus* in Colorado. The use of *Spermophilus* rather than *Citellus* follows Hall and Kelson (1959).

N. marmotae Ferris

ex. *Marmota flaviventris avara* (Bangs), Nicola, 14.v.1931 (R. T. Turner); Kamloops, 8.vi.1934 (D. Cameron); Agassiz, 15.vi.1934 (W. Riley); Rayleigh, 2.viii.1934 (D. Cameron); Tranquille, 21.vii.1934 (D. Cameron); Tranquille range, Davis ranch, 3.vi.1934 (D. Cameron, G. J. Spencer); Kamloops, Lac du Bois range, 2.vi.1935 (G. J. Spencer); Kamloops, Strawberry Heights, 23.ii.1936 (L. C. Curtis, G. J. Spencer); Kamloops, 4.viii.1935 (I. Ward, G. J. Spencer); Upper Hat Creek, 30.vi.1935 (I. Ward); Tranquille, 17.xi.1937 (G. P. Holland, G. J. Spencer); Keremeos, 30.iii.1959 (G. Gibson).

ex. *Marmota monax petrensis* Howell, Oliver (Fairview), 17.iv.1934 (E. R. Buckell, G. J. Spencer); Kootenays, Alder Creek, 12.vi.1932; Kootenays, Sirdar, 20.viii.1949 (I. McT. Cowan).

ex. *Marmota caligata okanagana* (King), Birch Is., 6000 feet, 12.viii.1931 (G. J. Spencer); Dunn Peak, 9.viii.1937, 8000 feet (G. P. Holland, G. J. Spencer).

ex. *Marmota caligata nivaria* Howell, MONTANA: Whitefish Range, 19.vii.1965 (C. Jonkel).

ex. *Cynomys ludovicianus ludovician-*

us (Ord), SASK.: 13 miles S.E. of Val Marie, 6.vii.1942 (G. P. Holland).

ex. *Mustela frenata nevadensis* Hall, Nicola range, Dry Farm, 1.ix.1932 (G. J. Spencer): apparently this species.

Described originally from *Marmota flaviventris* in California and known from *Marmota* in Montana, Idaho and Colorado.

N. sciurinus Mjöberg

ex. *Tamiasciurus hudsonicus streator* (Allen), Aspen Grove, 21.viii.1934 (D. Cameron); Kamloops, 4.viii.1935 (G. J. Spencer); Nicola range, 2.xi.1932 (G. J. Spencer); Grindrod, 28.xii.1947 (J. Wynne).

ex. *Tamiasciurus hudsonicus columbiensis* Howell, Chilcotin, Riske Creek, 29.vi.1930 (G. J. Spencer).

ex. *Tamiasciurus hudsonicus lanuginosus* (Bachman), Courtenay-Comox, Miracle Beach, 1.viii.1960 (W. J. Merillees).

ex. *Sciurus carolinensis pennsylvanicus* Ord. Vancouver, Stanley Park.*

Described from *Sciurus niger rufiventer* in Iowa. Recorded from many species of *Sciurus* from North, Central and South America and the Malayan region.

N. sciuropteri (Osborn)

ex. *Glaucomyx sabrinus alpinus* (Richardson), Hazelton, Terano Lake, 11.v.1938 (J. F., G. J. Spencer).

ex. *Glaucomyx sabrinus columbiensis* Howell, near Kelowna, Canyon Creek, Kettle Valley, Res. 2, xii.13 (Gillard); Kamloops, 10.ii.1934 (G. J. Spencer); Princeton, 6.x.1957 (W. Sheppe).

ex. *Glaucomyx sabrinus oregonensis* (Bachman), Vancouver, West Point Grey, 26.i.1944 (G. J. Spencer); Vancouver, University of B.C. campus, 1.xi.1944, 15.xi.1954, 11.vii.1955, 12.viii.1955 (G. J. Spencer).

ex. *Glaucomyx sabrinus*, ALTA., 1947 (Spencer, 1956).

ex. *Eutamias amoenus affinis* (Allen), Aspen Grove, 24.vii.32 (G. J. Spencer).

Described from *Glaucomyx volans* in Iowa and known also from *G. sabrinus* in California. Previously re-

* Anoplura specimens not seen by G. G. E. S.

corded from *G. sabrinus* in B.C. and Alberta by Spencer (1956).

Polyplax auricularis Kellogg & Ferris
ex. *Peromyscus maniculatus borealis* Mearns, ALTA.: Devona, 18.iv.1943 (I. McT. Cowan).

ex. *Peromyscus maniculatus oreas* Bangs, WASH.: Crystal Springs Camp, 7.vii.1957 (W. Sheppe).

The type of this species was taken from *Peromyscus maniculatus* in California. It is recorded from *P. sitchensis* in Alaska, *Onychomys torridus* in California, *O. leucogaster* in Colorado and Kansas. In Mexico it occurs on *Reithrodontomys mexicanus* and *Neotomodon alstoni*.

P. spinulosa (Burmeister)

ex. *Microtus oregoni serpens* Merriam, Vancouver, 15.iii.1955 (G. J. Spencer).
ex. *Rattus norvegicus* (Berkenhout), Tofino, 20.vi.1926 (G. J. Spencer); Burrard Inlet, 15.ix.1938 (J. Poole); Vancouver, 15.ix.1938, 4.ix.1940 (J. B. Poole); Vancouver, University of B.C., 6.xi.1938 (G. J. Spencer); Vancouver, 9.xii.1939, 28.v.1958, 5.iv.1959 (G. J. Spencer), 6.xii.1957 (H. B. Mitchell).
ex. *Rattus rattus rattus* (Linnaeus), Vancouver, 15.x.1946 (J. Y., G. J. Spencer), 29.ix.1955 (G. J. Spencer), 21.ii.1955.

ex. *Rattus*, Vancouver, 9.iii.1935 (K. Jacob), 5.x.1939 (G. J. Spencer). ex. White Rat, Vancouver, University of B.C., in captivity, 5.x.1939 (G. J. Spencer).

Described from *Rattus norvegicus* in Europe. Known from *R. rattus* and *R. norvegicus* in many parts of the world. Recorded also from other *Rattus* species in the Philippines and Malaya, *Bandicota* in Burma and *Thalpomys* in South Africa.

Family LINOGNATHIDAE

Linognathus pedalis (Osborn)

ex. Domestic sheep, Vancouver, University of B.C., v.1925 (G. J. Spencer).

First described from domestic sheep in the U.S.A. and now known from South America, New Zealand, Australia and South Africa.

L. setosus (von Olfers)

ex. Dog, Vancouver, i.1931, 5.v.1943, ix.1945, 26.xi.1955 (G. J. Spencer), 3.i.1962 (G. Armstrong); Kamloops, 5.vii.1936 (G. J. Spencer); Victoria xii.1942 (W. Downes).

Originally described from domestic dog in Europe: now known throughout the world. Also recorded from *Alopec lagopus* in Canada and Alaska, fox in Manchuria, *Canis lupus* in Croatia, coyote in the U.S.A., and the ferret and rabbit.

L. stenopsis (Burmeister)

ex. Angora Goat, ALTA.: Suffield, 27.xi.1945 (student).

Described originally from the domestic goat in Europe. Known from this host in many parts of the world. Also recorded from *Capra ibex* and *Rupicapra rupicapra*.

L. vituli (Linnaeus)

ex. Cattle, Cariboo, Canim Lake, 14.iii.1944; Milner, 26.xii.1944 (G. J. Spencer).

Described from domestic cattle in Europe. Since reported from this host in many parts of the world.

Solenopotes capillatus Enderlein

ex. Cattle, Kamloops, 20.vii.1949 (G. B. Rich).

First recorded from domestic cattle in Germany. Now known from cattle in Europe and North America.

S. ferrisi (Fahrenholz)

ex. *Odocoileus hemionus columbianus* (Richardson), Comox, Vancouver Is., 9.xi.1930 (G. J. Spencer); Hardy Is., 3.iv.1943 (G. J. Spencer); Pender Is., 4.i.1945 (G. J. Spencer).

ex. *Cervus canadensis* (Erxleben), ALTA.: Jasper Park, 20.xii.1944 (I. McT. Cowan).

ex. *Tamiasciurus hudsonicus columbiensis* Howell, Clinton, (J. & W. Hooke): adventitive.

Originally described from *Odocoileus columbianus* in California.

Family PEDICULIDAE

Pediculus humanus capitis DeGeer.

ex. Man, Salmon Arm, 1928 (H. Leech); ex. North American Indian, Alexis Creek, iii.1939 (Dr. Hallows).

P. humanus corporis DeGeer. ex. Man, Essondale, 25.vii.1936 (W.T.);
 ex. Man, Vancouver, 7.xii.1944 (G. J. Vancouver, ix.1940 (W. McK. McCal-
 Spencer), 16.iv.1950 (E. Fridell). lum).
Phthirus pubis (Linnaeus)

Host list of Anoplura recorded in this paper:

- Order INSECTIVORA
 Family SORICIDAE
Sorex cinereus cinereus
Hoplopleura acanthopus
- Order PRIMATES
 Family CERCOPITHECIDAE
Macaca mulatta (Rhesus Mon-
 key)
Pedicinus eurygaster
P. obtusus
- Family HOMINIDAE
Homo sapiens (Man)
Pediculus humanus
Phthirus pubis
- Order LAGOMORPHA
 Family OCHOTONIDAE
Ochotona princeps fenisei
Hoplopleura acanthopus
- Family LEPORIDAE
Oryctolagus cuniculus (Domes-
 tic rabbit)
Haemodipsus ventricosus
- Order RODENTIA
 Family SCIURIDAE
Marmota monax petrensis
Neohaematopinus marmotae
M. flaviventris avara
N. marmotae
M. caligata nivalis
N. marmotae
M. caligata okanagana
N. marmotae
*Cynomys ludovicianus ludovi-
 cianus*
N. marmotae
*Spermophilus columbianus co-
 lumbianus*
N. laeviusculus
S. undulatus
N. laeviusculus
Eutamias amoenus affinis
Hoplopleura arboricola
E. amoenus luteiventris
H. arboricola
- E. amoenus septentrionalis*
H. arboricola
*Sciurus carolinensis pennsyl-
 vanicus*
Neohaematopinus sciurus
*Tamiasciurus hudsonicus co-
 lumbiensis*
N. sciurus
T. hudsonicus lanuginosus
N. sciurus
T. hudsonicus streator
N. sciurus
Hoplopleura sciuricola
T. douglasi mollipilosus
H. sciuricola
Glaucomys sabrinus alpinus
N. sciuropteri
G. sabrinus columbiensis
H. trispinosa
N. sciuropteri
G. sabrinus oregonensis
H. trispinosa
N. sciuropteri
Microphthirus uncinatus
- Family GEOMYIDAE
Thomomys talpoides fuscus
H. acanthopus
- Family HETEROMYIDAE
Perognathus parvus lordi
Fahrenholzia pinnata
- Family CRICETIDAE
*Peromyscus maniculatus arte-
 misiae*
H. hesperomydis
P. maniculatus austerus
H. hesperomydis
P. maniculatus borealis
Polyplax auricularis
P. maniculatus oreas
H. hesperomydis
P. sitkensis prevostensis
H. hesperomydis
Neotoma cinerea occidentalis
N. inornatus
Synaptomys borealis chapmani
H. acanthopus
*Lemmus trimucronatus trimu-
 cronatus*

- H. acanthopus*
Clethrionomys gapperi saturatus
H. acanthopus
Microtus oregoni serpens
H. acanthopus
Polyplax spinulosa
M. pennsylvanicus drummondi
H. acanthopus
M. montanus canescens
H. acanthopus
M. townsendi
H. acanthopus
M. longicaudus mordax
H. acanthopus
M. longicaudus vellerosus
H. acanthopus
- Family MURIDAE
Rattus rattus rattus
P. spinulosa
Rattus norvegicus
H. acanthopus
H. oenomydis
P. spinulosa
- Order CARNIVORA
 Family CANIDAE
Canis (Domestic dog)
Linognathus setosus
- Family MUSTELIDAE
Mustela frenata nevadensis
N. marmotae
- Order PINNIPEDIA
 Family OTARIIDAE
Callorhinus ursinus cyanocephalus
Proechinophthirus fluctus
Eumetopias jubata
Antarctophthirus microchir
- Family ODOBENIDAE
Odobenus rosmarus divergens
Antarctophthirus trichechi
O. rosmarus rosmarus
A. trichechi
- Family PHOCIDAE
Phoca vitulina concolor
Echinophthirus horridus
P. vitulina richardi
E. horridus
Pusa hispida
E. horridus
- Order PERISSODACTYLA
 Family EQUIDAE
Equus caballus (domestic horse)
Haematopinus asini
- Order ARTIODACTYLA
 Family SUIDAE
Sus scropha (Domestic swine)
H. suis
- Family CERVIDAE
Cervus canadensis
Solenopotes ferrisi
Odocoileus hemionus columbianus
S. ferrisi
- Family BOVIDAE
Bos taurus (Domestic cattle)
Haematopinus eurysternus
Linognathus vituli
Solenopotes capillatus
Capra (Domestic goat)
Linognathus stenopsis
Ovis aries (Domestic sheep)
L. pedalis

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