

FAMILY ISCHNOPSYLLIDAE WAHLGREN

- 1907 Ischnopsyllidae Wahlgren, Ent. Tidsk., 28: 89.
 1905 Ceratopsyllidae Baker, Proc. United States Nat. Mus., 29: 124.
 1909 Ischnopsyllidae Oudemans, Nov. Zool., 16: 155.
 1915 Ischnopsyllidae Rothschild, Ent. Mo. Mag., 51: 84.
 1926 Ischnopsyllidae Dampf, Ent. Mitt., 15: 385.
 1929 Ischnopsyllidae Ewing, Manual External Parasites, p. 176.
 1936 Ischnopsyllidae Wagner, Tierwelt Mitteleuropas, Bd. 6, Abt. 17, s. 17.

The American members of this family may be readily distinguished from other species of fleas by the presence of a pair of highly sclerotized preoral plates on each side of the head. These flaps, which vary in size and shape, represent modified genal ctenidial spines. Some of the genera are further characterized by one to several abdominal combs, which consist of either long teeth (true ctenidia) or thickened dorsal bristles (false combs). In the eastern genera the eyes are rudimentary or absent. The fifth tarsal joint of each leg is armed with four pairs of lateral plantar bristles and a basal submedian pair. In addition, the fifth tarsal joint may bear an apical pair of small bristles. So far as is known, all the members of this family are normally parasitic on bats, occurring only accidentally on other mammals. In the East but three genera have been found, and these may be separated by the following key:

Key to the Genera of Eastern Ischnopsyllidae

1. Maxilla truncate *Myodopsylla*, p. 104
 Maxilla acuminate 2
2. Abdomen with a comb on tergite VII *Eptesopsylla*, p. 107
 Abdomen without a comb on tergite VII *Sternopsylla*, p. 108

MYODOPSYLLA JORDAN AND ROTHSCILD

Myodopsylla Jordan and Rothschild, 1911, Nov. Zool., 18: 88.

Genotype: *Ceratopsylla insignis* Rothschild

Maxilla truncate. Gena with a long stout bristle at the anterior border of the antennal groove near the vestigial eye. Pronotum with a true ctenidium consisting of long slender spines. Metanotum and abdominal tergites I to VII with a false

ctenidium formed by the thickening of the dorsal bristles. One antepygidial bristle present on a side.

This genus is represented in the East by a single species, which is our commonest bat flea.

***Myodopsylla insignis* (Rothschild)**

(Plate XXIX)

1903 *Ceratopsylla insignis* Rothschild, Nov. Zool., 10:319, Pl. 9, figs. 8-12.

1919 *Myodopsylla subulata* Chapin, Bull. Brooklyn Ent. Soc., 14:55.

1921 *Myodopsylla insignis* Jordan and Rothschild, Ectoparasites, 1:151, figs. 129, 130.

1928 *Myodopsylla insignis* Stewart, Cornell Univ. Agric. Exp. Sta., Mem. 101, p. 869.

1928 *Myodopsylla insignis* Jordan, Nov. Zool., 34:188.

1929 *Myodopsylla insignis* Jordan, Nov. Zool., 35:177.

1933 *Myodopsylla insignis* Stewart, Jour. New York Ent. Soc., 41:259.

1937 *Myodopsylla insignis* Jordan, Nov. Zool., 40:285.

FEMALE. Frons with a wide clear area taking up most of the anterior region of the head. Dorsal region of this clear area with three unequal bristles. A series of four or five stout bristles near the anterior border of the antennal groove; gena with a number of small setae. Spines of the genal ctenidium broad, the posterior somewhat wider and extending more distad than the anterior. Genal process pointed. Labial palpus short, reaching to about one-fifth the length of the fore coxa. First segment of the antenna with about five small setae apically; second antennal segment with about five short bristles. Along the posterior edge of the antennal groove is a series of about eleven small setae. Postantennal bristles arranged in four rows; first row with two bristles, second and third with about five each, fourth or marginal row with about six. Pronotum with a ctenidium consisting of eighteen to twenty-one spines on a side. Each segment of the thorax armed with three irregular rows of bristles. Sternite VII without a sinus. Head of the receptaculum seminis about as wide as long, rounded dorsally. For further details concerning the structure of the female genitalia, see Plate XXIX, fig. 151.

MALE. Chaetotaxy of the head slightly different from that of the female, the postantennal bristles being less regularly arranged (Plate XXIX, fig. 152). **MODIFIED SEGMENTS:** Clasper forming a lobe whose apex bears five to seven bristles. Movable finger more or less trapezoidal in shape with a corner produced into a terminally rounded process which bears a number of small setae (Plate XXIX, fig. 156). Paramere of the penis

forked, the upper process more or less in the form of pincers, the lower process dilated apically and roughly in the form of a hook (Plate XXIX, fig. 155). Penis broad and bladelike, its spring long, completing at least one turn (Plate XXIX, fig. 153). Sternite IX with a narrow ventral process which bears a stout bristle; apically the sternite bears another much more robust bristle (Plate XXIX, fig. 154).

RECORDS. CONNECTICUT—Hamden, September, 1915, on *Myotis subulatus subulatus* (Say), two females, male (E. A. Chapin). DISTRICT OF COLUMBIA—Washington, August, 1924, on "bat," female (P. Bartsch). ILLINOIS—Chicago, July 31, 1936, on "*Myotis lucifugus*," two females (R. Komarek). IOWA—Dubuque, March 19, 1938, on *Myotis lucifugus lucifugus* (LeConte), four females (T. Scott). KENTUCKY—Mammoth Cave, July 30, 1929, on "bat," male; August 6, 1929, on "*Neotoma* species," three females (L. Giovannoli); Colossal Cave, November, 1929, on "*Myotis lucifugus*," female (V. Bailey). MAINE—Mount Katahdin, September 7, 1928, on *Myotis lucifugus lucifugus* (LeConte), female (Harper and Hamilton). MARYLAND—Baltimore, June 20, 1922, on "*Myotis lucifugus*," male and female (F. M. Root); Plummer Island, August 1, 1923, on "bat," three males, two females. OHIO—Put-in-Bay, August 18, 1937, on "*Myotis* species," male (C. O. Mohr).

EASTERN HOSTS. Little Brown Bat (*Myotis lucifugus lucifugus* (LeConte) and *Myotis subulatus subulatus* (Say)), Wood Rat ("*Neotoma* species").

EASTERN LOCALITIES. Connecticut, District of Columbia, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, New York, Pennsylvania, Vermont, (Canada).

TYPE MATERIAL. Three males and nine females from Waterloo, Ontario, Canada, on *Myotis lucifugus* (LeConte) in the N. C. Rothschild Collection (British Museum).

A species of bat flea from Missouri was described by Baker (1905, p. 137) under the name of *Ceratopsylla crosbyi* which apparently belongs in this genus. The description of this species is very inadequate and applies just as well to *M. insignis* (Rothschild). Its status has already been questioned by Rothschild (1906, p. 187) who doubts that it is distinct. At the present state of our knowledge, it is not possible to determine the status of this name either as representing a good species or as a synonym of *M. insignis*.

EPTESCOPSYLLA, NEW GENUS

Maxilla acuminate. Ocular bristle absent. Remains of the vestigial eyes distinct, more or less oval. In addition to the genal ctenidium, two other combs are present, the pronotal ctenidium consisting of long slender spines, and a false comb on the seventh abdominal tergite consisting of thickened dorsal bristles. Metanotum and abdominal tergites I to III with two or three short, stout teeth on a side. Antepygidial bristles absent.

Genotype: *Nycteridopsylla chapini* Jordan

This genus is most closely allied to *Nycteridopsylla* Oudemans, from which it differs by the absence of false ctenidia on the anterior abdominal tergites (I to III). It may be readily separated from the other eastern genera by the absence of an ocular bristle. It is represented in the East by a single species.

Eptescopsylla chapini (Jordan)

(Plate XXX)

1929 *Nycteridopsylla chapini* Jordan, Nov. Zool., 35:39, Pl. II, figs. 30, 31.

MALE. Preantennal region of the head with six bristles, two of which are located near the genal spines, two near the antennal groove, and two in the middle region of the frons. Spines of the genal ctenidium oblique, the posterior almost twice as long as the anterior. Genal process not heavily sclerotized, rounded behind. Labial palpus about one-half as long as the anterior coxa. First segment of the antenna with four or five small setae; second antennal segment with four or five long bristles. Postantennal region with three rows of irregularly arranged bristles (Plate XXX, fig. 160). Pronotum with a single row of bristles and a ctenidium of about fifteen pointed spines on a side. Meso- and metathorax richly supplied with more or less irregularly arranged bristles. False comb of abdominal tergite VII consisting of eight or nine robust bristles on a side. MODIFIED SEGMENTS: Clasper divided into two well-separated processes, of which the dorsal is somewhat longer than the ventral. Dorsal process with a long bristle arising medially near the base; ventral process with a long, stout bristle situated apically. Movable finger bifurcate, dorsal branch curved, truncate, and without long bristles, ventral branch much longer and wider, with a fringe of five or six long bristles

apically. Sternite IX elbowed, the posterior process long and lobular. Penis broad and bladeliike, its spring long. For further details concerning the structure of the male genitalia, see Plate XXX, fig. 157.

FEMALE. Frons with a series of four to six thickened, almost spiniform bristles along the dorsal margin to the antennal groove. A longer bristle located below this series, and two more situated near the dorsal margin above the genal spines (Plate XXX, fig. 159). Sternite VII rounded, without a deep sinus. Head of the receptaculum seminis more or less oval in outline, about three-fourths as wide as long. For further details concerning the structure of the female genitalia, see Plate XXX, figs. 158, 161.

RECORDS. KENTUCKY—Colossal Cave, November 17, 1929, on "*Myotis sodalis*," male, five females (V. Bailey). MARYLAND—Glen Echo, March 31, 1916, on "*Eptesicus fuscus*," male and female (R. C. Shannon).

EASTERN HOSTS. Big Brown Bat ("*Eptesicus fuscus*"), Little Brown Bat ("*Myotis sodalis*").

EASTERN LOCALITIES. Maryland, Kentucky.

TYPE MATERIAL. Male and female from Glen Echo, Maryland, on *Eptesicus fuscus* (Beauvois) in the United States National Museum.

STERNOPSYLLA JORDAN AND ROTHSCILD

Sternopsylla Jordan and Rothschild, 1921, Ectoparasites, 1:158.

Genotype: *Ischnopsyllus texanus* C. Fox

Maxilla acuminate. Remains of the eye large and oval. Ocular bristle large and conspicuous. Pronotum with a true ctenidium consisting of long, slender spines. Meso- and metasternum each with a bristle anteriorly above the ventral angle. One long antepygidial bristle situated on a conical protuberance on each side. First segment of the middle and hind tarsus with numerous hairlike setae, particularly in the male.

This genus is represented in the East by a single species which occurs in the southern part of the United States.

Sternopsylla texana (C. Fox)

(Plate XXXI)

1914 *Ischnopsyllus texanus* C. Fox, United States Public Health Ser. Hyg. Lab., Bull. 97:16, Pl. V, figs. 6-8.

1921 *Sternopsylla texanus* Jordan and Rothschild, Ectoparasites, 1:158.

FEMALE. Preantennal region of the head with a conspicuous row of bristles on the frons extending from the base of the genal spines to the antennal groove. Bristles of this row of various sizes, there being two long ones near the antennal groove, three of the middle size, and six very small ones. One large bristle below this row and near the antennal groove; another situated above the second genal spine. Ocular bristle situated above the eye near the second antennal segment. Spines of the genal ctenidium long, pointed, slightly recurved, the posterior much longer than the anterior. Labial palpus five-segmented, very short. Postantennal region of the head with two irregular rows of about fourteen small setae near the posterior margin of the antennal groove, and four or five rows of long bristles irregularly arranged. Particularly outstanding are three long bristles which form a diagonal across the postantennal region of the head. Pronotum armed with two or three irregular rows of bristles and a ctenidium of twelve or thirteen long spines. Meso- and metanotum each with four or five irregular rows of bristles. Each abdominal tergite armed with two or three irregular rows of bristles. In addition, the anterior abdominal tergites armed with one stout dorsal tooth on a side. Margin of sternite VII more or less rounded, without a deep sinus. Head of the receptaculum seminis oval, half again as long as wide. For further details concerning the structure of the female genitalia, see Plate XXXI, figs. 162, 166.

MALE. Chaetotaxy of the head essentially as in the female (Plate XXXI, fig. 165). Hairlike setae on the first tarsal segment of the hind legs much longer and more numerous than in the female. Posterior end of the abdomen armed with four large bristles situated on conical protuberances (Plate XXXI, fig. 163). Sternite IX with a ventral process which is armed with a stout spiniform bristle. Clasper markedly incurved dorsally. Manubrium finger-like. Movable finger somewhat in the shape of a hammer, its posterior margin armed with several bristles. Penis broad and blunt; spring not completing a single turn (Plate XXXI, fig. 164).

RECORDS. FLORIDA—Gainesville, April 25, 1929, on "*Myotis austroriparius*" (= *M. lucifugus* (LeConte)), female (H. B. Sherman); Leon County, August 27, 1934, on "free-tailed bat," female (E. V. Komarek); Tallahassee, May 23, 1936, on *Tadarida cynocephala* (LeConte), male and female (E. V. Komarek). GEORGIA—Thomasville, June 26, 1936, on "free-tailed bat," male and female.

EASTERN HOSTS. Little Brown Bat (*Myotis lucifugus lucifugus* (LeConte)), Free-tailed Bat (*Tadarida cynocephala* (LeConte)).

EASTERN LOCALITIES. Georgia, Florida.

TYPE MATERIAL. Female holotype from Pecos, Texas, on "*Nyctinomus mexicanus*" not located. Male allotype from Thomasville, Georgia, (described above) in the United States National Museum.

SPECIES OF POSSIBLE OCCURRENCE

Ceratophyllus acutus Baker

1928 *Ceratophyllus acutus* Stewart, Cornell Univ. Agric. Exp. Sta., Mem. 101, p. 869.

1929 *Ceratophyllus acutus* Jordan, Nov. Zool., 35:175.

The occurrence of this species in New York, as originally reported, has been seriously questioned by Jordan. The above name is regarded as a synonym of *Diamanus montanus* (Baker).

Peromyscopsylla selenis (Rothschild)

1933 *Ctenopsyllus selenis* Stewart, Jour. New York Ent. Soc., 41:259.

The record of the occurrence of this species in New York was apparently based upon the misidentification of a specimen in the United States National Museum belonging to *P. hesperomys* (Baker).

Myodopsylla crosbyi (Baker)

1905 *Ceratopsyllus crosbyi* Baker, Proc. United States Nat. Mus., 29:137.

1906 *Ceratopsyllus crosbyi* Rothschild, Nov. Zool., 13:187.

The status of this species has already been discussed on p. 106.