

Checklist of the Sucking Lice of Panama (Anoplura)

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Fairchild (1943, p. 581) reported four species of sucking lice from Panama. Since then, five others have been recorded. Eighteen are listed in the present paper, based largely on specimens collected by Lt. Colonel Robert M. Altman, Major Vernon J. Tipton, Charles M. Keenan, and other personnel of the Environmental Health Group, Dr. Conrad E. Yunker, Dr. Charles O. Handley, and personnel of the Gorgas Memorial Laboratory. The junior author, who received this material for identification and study, described two new species in an earlier paper (Johnson, 1962) on the Genus *Fahrenholzia*. Unfortunately, other commitments made it impossible for her to study all of the specimens collected or to prepare a critical review of the Panamanian species. The following treatment is, therefore, incomplete.

Additional species will undoubtedly be obtained through further collecting from both wild and domesticated animals. For example, *Enderleinellus hondurensis* Werneck, which has been taken on various species of *Sciurus* in Colombia, Honduras, and Mexico, will probably be found in Panama. Likewise, *Linognathus pedalis* (Osborn) and *L. setosus* (van Olfers) may occur in Panama on dogs, and *Haematopinus asini* on horses.

The junior author is responsible for identifications of the species preceded by an asterisk (*). The senior author collated the data and information on other species and prepared the manuscript.

Original citations and selected references are given, but one should refer to Ferris (1919-35, 1951) and Johnson (1962) for additional synonymies, references, discussions, and more comprehensive keys.

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Family **Haematopinidae****Haematopinus eurysternus** (Nitsch)

Pediculus eurysternus Nitsch, 1818, Germar's Mag. Ent., 3: 305.

Haematopinus eurysternus Ferris, 1933, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (6), p. 448, figs. 263, 264; 1951, Mem. Pac. Coast Ent. Soc., 1: 88, figs. 39, 40.

Lice from cattle in Coclé Province were identified as *H. eurysternus* by Fairchild (1943, p. 581). They may actually have been *H. quadripertusus* Fahrenholz.

* **Haematopinus suis** (Linnaeus)

Pediculus suis Linnaeus, 1758, Syst. Nat., 10th ed., p. 611.

Haematopinus suis Ferris, 1933, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (6), p. 425, figs. 252A, 253A, 254; 1951, Mem. Pac. Coast Ent. Soc., 1: 91, figs. 41, 42.

From *Sus scrofa*: 1 male, 2 females, Santa Rita, Antón (Coclé), 14 March 1961; 3 males, 3 nymphs, Río Indio, Arraiján (Panamá), 13 June 1960, V. Barria, collector; 2 males, 1 female, and 1 nymph, Guánico (Los Santos), 25 February 1962 (no. 004) and 2 males, 3 females, and 4 nymphs, same data (no. 007).

Family **Hoplopleuridae**
Subfamily Enderleinellinae* **Enderleinellus** sp. (**longiceps** group)

One female from *Sciurus granatensis*, Cacao Plantation, Gamboa (Canal Zone), 26 April 1957, R. M. Altman, collector.

Subfamily Hoplopleurinae

* **Hoplopleura hesperomydis** (Osborn)

Haematopinus hesperomydis Osborn, Bull. Div. Ent., U. S. Dept. Agric., (old series), 7: 26, fig. 14.

Hoplopleura hesperomydis Ferris, 1921, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (2), p. 70, figs. 38, 39; 1951, Mem. Pac. Coast Ent. Soc., 1: 136.

From *Peromyscus nudipes*: 18 males and 4 females, Lava Flow, El Hato (Chiriquí), 5000 feet elevation, 7–9 January, 1961; 13 females, Martinz Dairy, Cerro Punta (Chiriquí), 5800 feet elevation, 7–8 January 1961. From *Scotinomys teguina*, 1 female, Martinz Dairy, 8 January 1961. From *Reithrodontomys* sp., 1 female, Lava Flow, El Hato, 7–9 January 1961. Collected by C. M. Keenan and V. J. Tipton. Additional specimens, probably of this species, from *Scotinomys* and *Peromyscus*, have not yet been studied.

* **Hoplopleura hirsuta** Ferris

Hoplopleura hirsuta Ferris, 1916, Psyche, 23: 122, figs. 8, 9A, 10, 11B; 1921, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (2), p. 117, figs. 75, 76; 1951, Mem. Pac. Coast Ent. Soc., 1: 137.

From *Sigmodon hispidus*: 1 nymph, probably this species, Camp Piña (Canal Zone), 30 August 1960; 2 males, 1 female, Curundu (Canal Zone), 9 December 1959; 1 male, 2 females, and 4 nymphs, Almirante (Bocas del

Toro), 26 and 29 January, 1960, collected by C. M. Keenan and V. J. Tipton; 1 male, 1 female, Cocoli (Canal Zone), 10 January 1957, by R. M. Altman.

* **Hoplopleura oryzomydis** Pratt and Lane

Hoplopleura oryzomydis Pratt and Lane, 1951, Jour. Parasit., 37: 141, figs. 1-3, 5.
Ferris, 1951, Mem. Pac. Coast Ent. Soc., 1: 139.

From *Oryzomys caliginosus*, 1 male, 1 female, El Valle (Coclé), March 1957, R. M. Altman, collector.

* **Hoplopleura nesoryzomydis** Ferris

Hoplopleura nesoryzomydis Ferris, 1921, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (2), p. 90, fig. 53A; 1951, Mem. Pac. Coast Ent. Soc., 1: 138.

From "rat" (Altman K-14), Barro Colorado Island (Canal Zone), 4 November 1956, C. Koford, collector.

* **Pterophthirus audax** (Ferris)

Hoplopleura audax Ferris, 1921, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2 (2), p. 125, figs. 82, 83.

Pterophthirus audax (Ferris), 1951, Mem. Pac. Coast Ent. Soc., 1: 147.

From *Hoplomys gymnurus*, 1 male and 1 female, Cerro Azul (Panamá), 29 January 1958, R. M. Altman, collector.

Subfamily Polyplacinae

* **Fahrenholzia fairchildi** Johnson

Fahrenholzia fairchildi Johnson, 1962, Ann. Ent. Soc. Amer., 55, (4), p. 419, figs. 18-21, 32, 39.

The original description of this species was based on specimens from Panama and Guatemala. The holotype, allotype, and 18 paratypes are from *Heteromys desmarestianus*, Santa Fé (Veraguas). Other paratypes from the same host in Panama are from Fort Kobbe and Summit Road (Canal Zone). Numerous additional specimens were collected from the type host at Cerro Punta (Chiriquí) and from *Liomys adpersus* at Guánico (Los Santos).

* **Fahrenholzia hertigi** Johnson

Fahrenholzia hertigi Johnson, loc. cit., p. 421, figs. 22, 23, 34, 40.

The holotype female and 6 paratype females of this species are from *Heteromys desmarestianus*, Cerro Azul (Panamá). An additional female paratype was taken on *Zygodontomys microtinus* (= *cherriei*), Camp Piña (Canal Zone).

* **Neohaematopinus** sp. (*sciurinus* group)

From *Sciurus granatensis*: 1 male, 7 January 1961, and 2 females, 2 May 1961, and 2 males, 26 April, 1961, Martinz Dairy, near Cerro Punta (Chiriquí); 2 males, 10 females, and 4 nymphs, Cerro Hoya (Los Santos), 10 February 1962. From *S. variegatoides*: 5 males, 13 females, Guánico (Los Santos), February 1962.

* **Polyplax spinulosa** (Burmeister)

Pediculus spinulosus Burmeister, 1839, Gen. Insect., Rhynchota, no. 8.

Polyplax spinulosa Ferris, 1923, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (4), p. 187, figs. 119, 120A, D, F, H; 1951, Mem. Pac. Coast Ent., Soc., 1: 211, figs. 90, 91.

From *Rattus rattus*, 6 males, 6 females, and 5 nymphs, Guánico (Los Santos), 5 February 1961, C. O. Handley, collector.

Family **Linognathidae****Solenopotes binipilosus** (Fahrenholz)

Linognathus binipilosus Fahrenholz, 1916, Arch. Naturg., A, 81, Heft 11, p. 11, plate, figs. 11–13.

Solenopotes binipilosus Ferris, 1932, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (5), p. 131, figs. 245, 246; 1951, Mem. Pac. Coast Ent. Soc., 1: 252. Johnson, 1958, Proc. U. S. Nat. Mus., 108: 49.

Recorded by Ferris (1932) from *Odocoileus chiriquiensis* (sic!) from the Canal Zone, L. H. Dunn, collector. Ferris (loc. cit.) regarded *Linognathus panamensis* Ewing as a synonym.

Solenopotes panamensis (Ewing)

Linognathus panamensis Ewing, 1927, Proc. Ent. Soc. Wash., 29: 119.

Solenopotes panamensis Johnson, 1958, loc. cit., pp. 48–49.

Ferris (1932, p. 131) placed *L. panamensis* Ewing as a synonym of *S. bipinilosus* (Fahrenholz). Johnson (loc. cit.), after re-examining the types of *panamensis*, concluded that they represented a distinct species and gave characters for separating the females from those of *bipinilosus*. The male of *panamensis* is unknown. Johnson also pointed out that there is some doubt about the true host of *panamensis*, since the type specimens were "from *Odocoileus chiriquiensis* [*Odocoileus virginianus chiriquiensis*] (origin, Panama) which died at the National Zoological Park. . . ." [Washington, D.C.], and "it is highly possible that the occurrence of *panamensis* on *Odocoileus virginianus chiriquiensis* was accidental, the true host being some other ungulate with which the deer had come in contact while in the zoo."

Family **Pediculidae****Pediculus atelophilus** Ewing

Pediculus (*Parapediculus*) *atelophilus* Ewing, 1926, Proc. U. S. Nat. Mus., 68: 9, figs. 4A, 5; 1938, Jour. Parasit., 24: 26, figs. 2, 5b, 6b. Johnson, 1958, Proc. U. S. Nat. Mus., 108: 44.

Pediculus atelophilus Ferris, 1951, Mem. Pac. Coast Ent. Soc., 1: 273.

Pediculus mjobergi Ferris (part.), 1935, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2: (8), pp. 588–598, figs. 318E, 319E, 322F, 323I, 328–332.

Reported by Ewing (1938) from *Ateles dariensis* from Panama and by Hinman (1931, p. 488) from material determined by Ewing from *Ateles geoffroyi* from Panama.

The nomenclatorial status of *P. atelophilus*, *P. chapini* (see below) and *P. lobatus* Fahrenholz, 1916, is still in doubt. In 1935, Ferris placed these

names as synonyms of *P. mjobergi* Ferris, 1916 (= *P. affinis* Mjöberg, 1910 nec Burmeister, 1839). However, in 1951, though he still presumed them to be conspecific, he treated them separately and assigned to *atelophilus* specimens "from *Ateles dariensis*, *Cebus capuchinus*, and *Alouatta palliata*, all from Panama from monkeys in captivity." He left the question of synonymy open until the types of *affinis* Mjöberg could be examined, though in his key he employed the name *mjobergi* to cover all of the forms involved.

***Pediculus chapini* Ewing**

Pediculus (Parapediculus) chapini Ewing, 1926, Proc. U. S. Nat. Mus., 68: 13, figs. 2, 4b, 5 and pl. 1, figs. 3, 4; 1938, Jour. Parasit., 24: 28, figs. 4a, 5c, 6c. Johnson, 1958, loc. cit., p. 44.

Pediculus mjobergi Ferris (part.), 1935, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (8), pp. 588–598.

Ewing (1938) reported this species from Panama from *Cebus capuchinus*. Ferris (see above) considered *chapini* to be a synonym of *mjobergi* Ferris. Johnson (loc. cit.), considered that *chapini* "probably is the same as *Pediculus atelophilus* Ewing, 1926.

***Pediculus humanus* Linnaeus**

Pediculus humanus Linnaeus, 1758, Syst. Nat., 10th ed., p. 610. Ferris, 1935, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (8), pp. 17–62, plates 1–3, text figs. 306–327; 1951, Mem. Pac. Coast Ent. Soc., 1: 261–271, figs. 116, 117, 118, 119.

***Phthirus pubis* (Linnaeus)**

Pediculus pubis Linnaeus, 1758, loc. cit., p. 611.

Phthirus pubis Ferris, 1935, Stanford Univ. Publ., Univ. Ser., Biol. Sci., 2, (8), p. 603, figs. 335–337; 1951, Mem. Pac. Coast Ent. Soc., 1: 281, figs. 122–124.

Fairchild (loc. cit.) reported that physicians had observed head, body, and crab lice on humans in Panama.

Because the lice of Panama are incompletely known, the following key should be used with caution, preferably in conjunction with the works cited above.

KEY TO PANAMANIAN ANOPLURA

[Largely adapted from Ferris, 1951]

1. Paratergal plates absent, abdomen entirely membranous except for plates associated with terminal and genital segments and rarely tergal plates in male (Linognathidae)2
- Paratergal plates on at least some abdominal segments.....3
2. Apical lobes of female abdomen with a short, slender terminal portion.....*Solenopotes panamensis* (Ewing)
- Apical lobes of female abdomen gradually constricted into long, tapering lobes.....*Solenopotes binipilosus* (Fahrenholz)
3. Venter of abdominal segment II with a pair of small, strongly sclerotized plates.....*Enderleinellus* Fahrenholz
- Without such plates.....4

4. Paratergal plates free, at least in part, from the body and not simply forming a cap over the lateral lobes of the abdomen (*Hoplopleuridae*)5
Paratergal plates never with any part free from the body wall12
5. Second abdominal segment with its sternal plate extended laterally on each side to articulate with the corresponding paratergal plate (*Hoplopleurinae*)6
Second abdominal segment with its sternal plate never thus extended laterally (*Polyplacinae*)10
6. Paratergal plates of second abdominal segment each prolonged into a blade-like process which projects from the body wall*Pterophthirus audax* (Ferris)
Paratergal plates not thus (*Hoplopleura*)7
7. Ventral lobe of paratergal plates of third abdominal segment divided into two apically rounded, equal lobes8
Not thus9
8. Ventral lobe of paratergal plates of sixth abdominal segment divided into two equal lobes*Hoplopleura oryzomydis* Pratt and Lane
Ventral lobe of paratergal plates of sixth abdominal segment forming a single, acute point*Hoplopleura nesoryzomydis* Ferris
9. Posterior apex of thoracic sternal plate sharply pointed, no setae laterally off the tergal and sternal abdominal plates*Hoplopleura hesperomydis* (Osborn)
Posterior apex of thoracic sternal plate rounded, many setae present laterally off the abdominal plates*Hoplopleura hirsuta* Ferris
At least one of the lobes apically acute*Hoplopleura hirsuta* Ferris
10. Paratergal plates of second abdominal segment definitely divided longitudinally into two plates, one of which is flat on the dorsum and one on the venter, the ventral portion with a flat, raised apical free point (*Fahrenholzia*)11
Paratergal plates of second abdominal segment not thus divided
.....*Polyplax spinulosa* (Burmeister)
11. Antennal segments 3-5 completely coalesced; thorax not broader than head; thoracic sternal plate with a small detached portion ..*Fahrenholzia hertigi* Johnson
Antennal segments not completely coalesced; thorax obviously broader than head; sternal plate of thorax without a detached apical portion
.....*Fahrenholzia fairchildi* Johnson
12. Eyes conspicuous as a pair of distinct lenses accompanied by pigmentation (visible in uncleared specimens) ; derm of dorsum of abdomen not wrinkled (*Pediculidae*) 14
Eyes not visible, though represented by vestiges; derm of dorsum of abdomen wrinkled (*Haematopinidae*)13
13. Head very short and broad, length only very slightly shorter than width; penis of male strongly asymmetrical, strongly sclerotized and forming a large hook or barb at its base*Haematopinus eurysternus* (Nitsch)
Head elongate, about as long as broad; penis V- or Y-shaped
.....*Haematopinus suis* (Linnaeus)
14. All legs of essentially the same size, claws slender; thorax with a distinct notal pit, sternal plate sclerotized, though its margins are not free from body; abdomen narrower at base than at middle; spiracle enclosed within borders of paratergal plates (*Pediculus*)15
Anterior legs slender, with slender claws, middle and posterior legs very large and stout, with stout claws; thorax very wide occupying the greater part of the body, without notal pit or sternal plate; abdomen widest basally, tapering apically, with prominent segmentally arranged sclerotized lateral tubercles, the spiracles borne slightly removed from the base of the tubercles
.....*Phthirus pubis* (Linnaeus)
15. Paratergal plates throughout clearly without evidence of lateral lobes
.....*Pediculus humanus* Linnaeus
Paratergal plates of fifth to sixth abdominal segments bearing strong lateral lobes, both dorsally and ventrally*Pediculus mjobergi* Ferris
(? = *P. atelophilus* Ewing, *P. chapini* Ewing)

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