

DESCRIPTIONS OF TWO SPECIES OF PEDICULIDAE (ANOPLURA) FROM GREAT APES (PRIMATES, PONGIDAE)

Ke Chung Kim* and K. C. Emerson†

ABSTRACT: The male of *Pediculus schaeffi* Fahrenholz, 1910 is redescribed and illustrated. The adult female of *Pthirus gorillae* Ewing is for the first time described and illustrated.

The taxonomy of the family Pediculidae is in a chaotic state. At present descriptions and knowledge of all the known species of the Pediculidae are insufficient to indicate their taxonomic status, except for *Pediculus humanus* L. and *Pthirus pubis* (L.).

Ferris (1951) recognized four species of *Pediculus*: *P. humanus* L., *P. pseudohumanus* Ewing, *P. mjobergi* Ferris, and *P. schaeffi* Fahrenholz. All other species of *Pediculus* should be reexamined for their validity with additional information. The genus *Pthirus* contains two species, *P. pubis* (L.) and *P. gorillae* Ewing. As late as 1965 two invalid generic names *Phthirus* and *Phthirus* have commonly been used for the genus *Pthirus* Leach. A specific name *Phthirus pubis* has been used for the crab louse *Pthirus pubis* (L.) (Blickenstaff, 1965). *Pthirus* Leach (1815) is the first established name for the genus, and *Phthirus* Burmeister (1835) and *Phthirus* Leach (1817) are invalidly emended names. The generic name *Pthirus* was decided as an available name for this taxon by the International Commission on Zoological Nomenclature (Opinion 104, 1928) (Hemming, 1958). The other names *Phthirus* Burmeister and *Phthirus* Leach have been placed in the Official Index of Rejected and Invalid Generic Names in Zoology (Direction 63, 1957) and became unavailable (Hemming, 1958). The generic name *Pthirus* should only be used for this taxon.

Through the efforts of U. S. mammalogists,

Received for publication 13 May 1968.

* Department of Entomology, Fisheries, and Wildlife, University of Minnesota, St. Paul, Minnesota.

† 2704 North Kensington Street, Arlington, Virginia.

Paper No. 6553, Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul, Minnesota 55101.

in the Division of Mammals, Department of Vertebrate Zoology, U. S. National Museum, Smithsonian Institution and Dr. U. Rahm, Director General, Institut Pour La Recherche Scientifique en Afrique Centrale, a bulk of new material of the sucking lice has become available for study in recent years. One male of *Pediculus schaeffi* Fahrenholz and two female specimens of *Pthirus gorillae* Ewing collected from the Congo (formerly Belgian Congo) have been made available to us for study.

The male of *Pediculus schaeffi* has been poorly described, and has not been illustrated. Since Ewing (1927) described it, *Pthirus gorillae* has not been reported subsequently. Ewing (1927) described only the nymph 1, but the adult stage of *P. gorillae* has never been described and illustrated. Hence, the male of *Pediculus schaeffi* is redescribed and illustrated here, and the female of *Pthirus gorillae* is described and illustrated for the first time. Morphological terminology of Kim (1966) is used in the following descriptions.

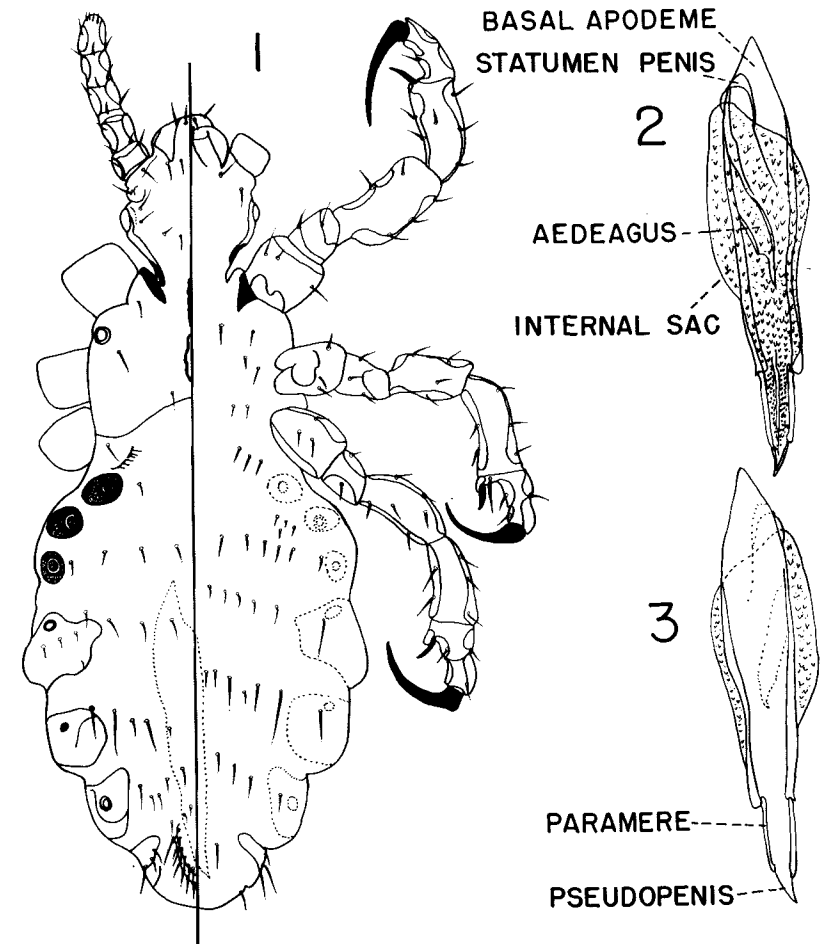
Pediculus schaeffi Fahrenholz, 1910 (Figs. 1-3)

Pediculus schaeffi Fahrenholz, 1910a: 57, figs. 1, 2; Pl. 1, figs. 1-3; Pl. 3, figs. 1, 2, 4, 5; Pl. 4, figs. 2, 6; Fahrenholz 1910b: 714; Fahrenholz 1916: 1; Ferris 1916: 137; Ferris 1935: 599, fig. 322H, 333, 334; Ferris 1951: 277, fig. 121; Benoit 1961: 231.

Pediculus humanus schaeffi Fahrenholz, Nuttall 1919: 336; Nuttall 1920: 142.

Pediculus (Paenipediculus) simiae Ewing, 1932: 117; Ewing 1933: 168, fig. 2c; Johnson 1958: 45 (as junior synonym).

This species was originally described on the basis of male and female specimens off the chimpanzee, *Pan troglodytes* (as *Simia troglodytes*), from the Zoological Gardens in Hamburg, Germany. Ewing (1932) reported *P. schaeffi* from the same host from the London Zoological Gardens, England. Recently, Benoit



FIGURES 1-3. *Pediculus schaeffi* Fahrenholz, male. 1. Dorsal and ventral views. 2. Dorsal view of genitalia. 3. Ventral view of genitalia.

(1961) recorded four females and one nymph from the pygmy chimpanzee, *Pan paniscus*, in Central Africa.

The type specimen of *P. schaeffi* was not available for study, and the repository of the type is unknown to us. The female of *P. schaeffi* has been well described and illustrated by Ferris (1935) in addition to the original description. However, the male of this species has not been adequately described and illustrated, since Fahrenholz described it

in 1910. The male of *P. schaeffi* is herewith described and illustrated.

Diagnosis: Closely allied to *P. humanus* L. and *P. mjobergi* Ferris, but distinguished from them by lacking lateral lobes and definitive paratergites of the abdominal segments 3 to 5 which bear the first three spiracles. The female of *schaeffi* is further distinguishable from *humanus* and *mjobergi* by the relatively long abdomen which is about as wide as or slightly wider than the thorax at its anterior one-half, first three abdominal spiracles devoid of paratergites, and gonopods rounded at apex. The male of *schaeffi* is separable

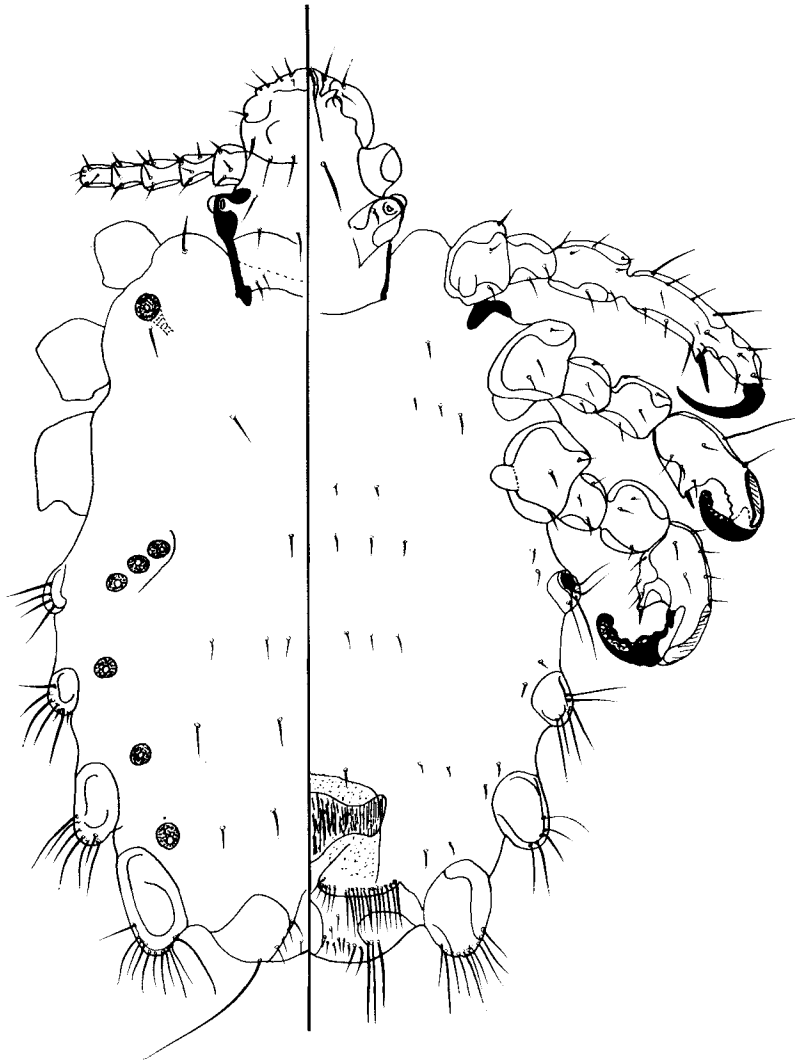


FIGURE 4. *Pthirus gorillae* Ewing, female; dorsal and ventral views.

from that of *humanus* and *mjöbergi* by lack of tergal plates; *schaeffi* differs from *humanus* by having only 4 or 5 rows of abdominal setae, and is further separable from *mjöbergi* by having the third abdominal spiracle not borne on a large paratergal plate and spiracular sclerite smaller than that of first two spiracles. *P. humanus* is a parasite of *Homo sapiens*; *P. schaeffi* is a parasite of

the gorilla, *Pan*; while *P. mjöbergi* is a parasite of New World monkeys, namely *Ateles*.

Description: FEMALE: see FETIS (1935). MALE (Figs. 1-3): Total body length 2.25 mm. **Head** longer than wide and constricted into short neck; definite eyes with lenses present externally on lateral lobes; AS, CS, and OS present; 2 MHS present; DPHS minute; PCHS distinct; ACHS,

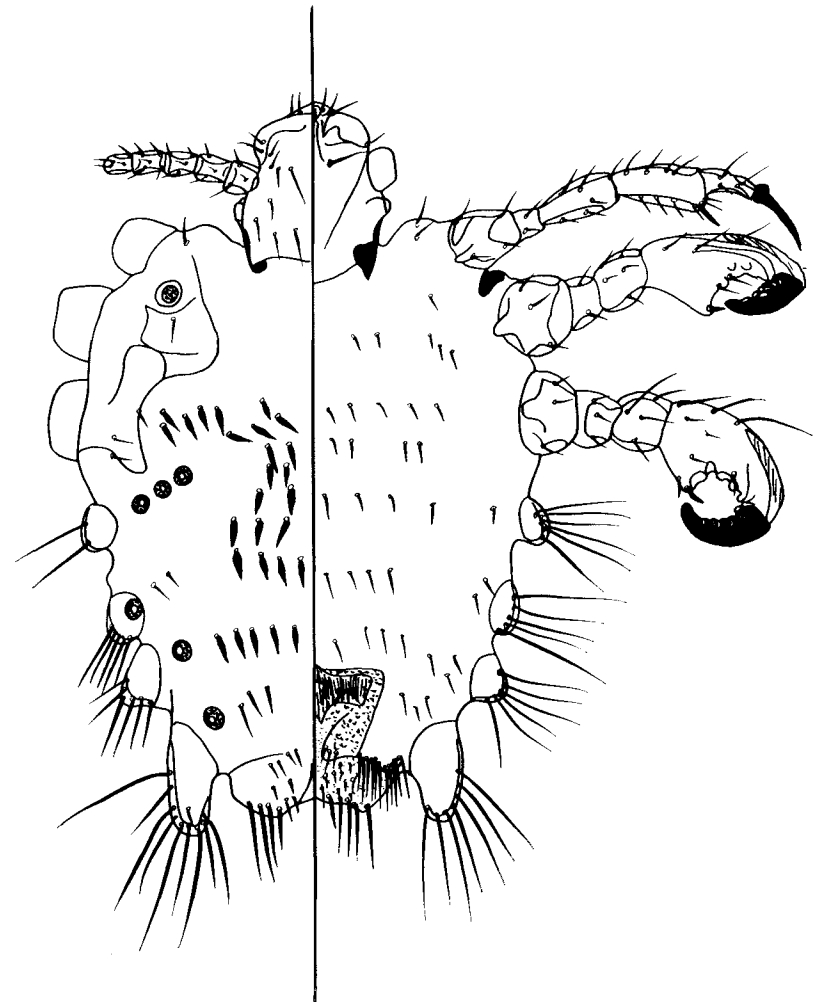


FIGURE 5. *Pthirus pubis* (Linnaeus), female; dorsal and ventral views.

SHS, and ADHS absent; VCHS short, reaching slightly beyond the base of antennal segment 1; no unusual sculpturing present on the ventral surface; antennae 5-segmented. **Thorax** much wider than head; notal pit small, longitudinal; DPTS minute; ADTS present near coxa 3; DPtS minute or absent; DMtS distinct; no sternal plate present; mesothoracic spiracle large. **Legs.** All legs similar in shape and size and each leg with long acuminate claw. **Abdomen.** Tergal and sternal plates not developed; 5 rows of dorsal abdominal setae, each row with 8 to 10 setae; 1 seta placed mesal to

spiracle of segment 3 (or first abdominal spiracle); 4 rows of ventral abdominal setae, each row with 1-6-1 or 1-5-1 setae; 3 setae placed posterior to coxa 3; 6 spiracles present; each of first three spiracles placed within a spiracular sclerite; last three spiracles (spiracles of segments 6 to 8) borne on paratergites; paratergite of segment 9 (last visible paratergite) without spiracle, bearing 2 or 3 posterior setae; anal segment rounded. **Genitalia** (Figs. 2, 3). Basal apodeme long and pointed anteriorly; statumen penis distinct; aedeagus forming a sclerotized tube connected to internal sac

which bears conspicuous teeth; paramere articulated to apex of basal apodeme pseudopenis short and pointed.

Specimens examined: Ex *Pan troglodytes schweinfurthii*, Congo: Tchibati, 19 February 1963 (No. N-11), 1 male; Kahiwa, 7 December 1962, 2 male, 2 female; and no specific locality data, 1964 (N-16) 1 male, 1 female, 5 nymphs.

***Pthirus gorillae* Ewing, 1927**
(Fig. 4)

Pthirus gorillae Ewing, 1927: 120; Ewing 1933: 170; Ferris 1935: 608; Johnson 1958: 45-46 (for discussion on generic names, see Hemming, 1957 and 1958).

Pthirus gorillae Ewing, Ferris 1951: 281.

Pthirus gorillae Ewing is the second species of the genus *Pthirus*. This species was described on the basis of specimens of nymph 1 and eggs obtained from two skins of *Gorilla gorilla beringei* (as *Gorilla beringeri*) which was collected in the eastern Congo (formerly Belgian Congo). Ewing (1927) described just the nymph 1. Since this species was described in 1927, no subsequent report on *P. gorillae* has been published, nor has any description of the adult been made. The female of *P. gorillae* Ewing is herewith described.

Type data: Lectotype nymph 1 (USNM type 40161), ex young gorilla (*Gorilla gorilla beringei*), Congo (Belgian Congo), 1923, Benj. Burbridge. The other slide of the type series; nymph 1, ex young male gorilla, Congo (Belgian Congo), January 1924, Benj. Burbridge. There are three other slides in the type series. They contain only eggs. The type specimens are deposited in the U. S. National Museum.

Diagnosis: Closely allied to *P. pubis* (L.) but distinguishable from it by having large eyes placed on large lateral protuberances, not more than 20 dorsal abdominal setae which are minute and not spiniform, and last abdominal lateral lobe (paratergites of abdominal segment 8) not particularly prolonged. *P. pubis* (Fig. 5) is much smaller than *P. gorillae*, about 1.80 mm long; eyes small; dorsal setae on abdomen and posterior part of thorax spiniform and quite numerous; last abdominal lateral lobe strongly prolonged.

Description: Nymph 1 was described by Ewing (1927), but other nymphal stages and male are not known. FEMALE (Fig. 4): Total body length 2.20 to 2.25 mm; short and broad sucking lice, with sprawling legs. Head slightly longer than wide, not strongly constricted into a neck; definite eyes present externally as a pair of distinct lenses on large lateral protuberances; AS, OS, CS present; 2 SHS present on each side; 2 MHS present; PCHS present; DPHS, ACHS absent; 2 minute setae present on its posterior margin; oral margin with 2 or 3 tubercles; VPHS present, not reaching the base of antennal segment 2; antennae 5-seg-

mented. Thorax short, broad, and membranous; mesothoracic spiracle large; DPtS and DMtS distinct; DPtS minute; no trace of sternal plate; no notal pit present. Legs. Leg 1 with acuminate claw; legs 2 and 3 similar in shape and size; the tibia and tarsus of legs 2 and 3 completely fused, with a series of strongly sclerotized tubercles on inner surface and thickened claws; coxae of all legs with large tubercle. Abdomen about as wide as or slightly wider than thorax; no tergal and sternal plates developed; 4 lateral lobes (paratergites of segments 5 to 8) present, each bearing 5 to 13 setae; 6 spiracles present, the first three being close together and the first two being displaced toward the meson; last lateral lobe prolonged but not as in *P. pubis*; paratergite of segment 9 with 1 long seta; 4 rows of dorsal setae, the first 0-2-0, 1-4-1, 1-2-1, and the last row 2-2-2; 2 setae present mesal to each of lateral lobes; anal segment rounded. Genitalia. Genital plate transverse, with 6 minute setae; gonopods blunt, with about 13 long posterior setae and about 5 small setae on its apex; genital setae of usual type; spermatheca not visible.

Specimens examined: Ex *Gorilla gorilla* (as jeune Gorille captivité) (de Sorever), Prov. Kahuzi, Congo, 29 November 1962, 2 females.

ACKNOWLEDGMENT

The authors are indebted to Dr. Edwin F. Cook, Professor, Department of Entomology, Fisheries, and Wildlife, University of Minnesota, St. Paul, Minnesota, for his suggestion and kindness of reading the manuscript; and to Dr. U. Rahm, Director General, Institut Pour La Recherche Scientifique en Afrique Centrale, Bukavu, Republique Democratique du Congo for collecting these specimens and providing them to us for study.

LITERATURE CITED

- BENOIT, P. L. G. 1961. Anoploures de Centre Africain. Rev. Zool. Bot. Afr. 63: 231-241.
- BLICKENSTAFF, C. C. 1965. Common names of insects approved by the Entomological Society of America. Bull. Ent. Soc. Amer. 11: 287-320.
- BURMEISTER, H. 1835. Handbuch der Entomologie. B. 2, 1. Ordnung Rhynggota. 2. Ordnung Gymnognatha. Berlin, 400 p.
- EWING, H. E. 1927. Descriptions of three new species of sucking lice, together with a key to some related species of the genus *Polyplax*. Proc. Ent. Soc. Wash. 29: 118-121.
- . 1932. A new sucking louse from the chimpanzee. Proc. Biol. Soc. Wash. 45: 117-118.
- . 1933. The taxonomy of the Anoplura genus *Pediculus* Linnaeus. Proc. Biol. Soc. Wash. 46: 167-174.
- FAHRENHOLZ, H. 1910a. Neue Läuse. Jahresh. Niedersächs. Zool. Ver. Hannover 1: 57-75.
- . 1910b. Diagnosen neuer Anopluren. Zool. Anz. 35: 714-715.
- . 1916. Weitere Beiträge zur Kenntnis der Anopluren. Arch. Naturgesch. (1915) A, 11: 1-34.
- FERRIS, G. F. 1916. A catalogue and host list of the Anoplura. Proc. Calif. Acad. Sci. 4th ser. 6: 129-213.
- . 1935. Contributions toward a monograph of the sucking lice. Stanford Univ. Publ., Univ. Ser., Biol. Sci. 2 (pt. 8): 529-634.
- . 1951. The sucking lice. Mem. Pac. Coast Ent. Soc. 1: 1-320.
- HEMMINGS, F. 1958a. Official list of generic names in zoology. First instalment: Names 1-1274. London, 200 p.
- . 1958b. Official index of rejected and invalid generic names in zoology. First instalment: Names 1-1169. London, 132 p.
- INTERN. COMM. ZOOL. NOMENCL. 1928. Opinions rendered by the International Commission on Zoological Nomenclature: Opinion 104. Smithson. Misc. Coll. 73: 25-28.
- . 1957. Direction 63: Completion and in certain cases correction of entries relating to the names of genera belonging to the class Insecta made in the "Official List of Generic Names in Zoology" in the period up to the end of 1936. Opinions and Declarations rendered by the Internat. Comm. Zool. Nomencl. 1 (Section E, part E3): 21-60.
- JOHNSON, P. T. 1958. Type specimens of lice (Order Anoplura) in the United States National Museum. Proc. U. S. Nat. Mus. 108: 39-49.
- KIM, KE CHUNG. 1966. The species of *Enderleinellus* (Anoplura, Hoplopleuridae) parasitic on the Sciurini and Tamiascurini. J. Parasit. 52: 988-1024.
- LEACH, W. E. 1815. Entomology. In Brewster's Edinburgh Encyclopaedia, Edinburgh, 4, 9: 57-172.
- . 1817. The Zoological Miscellany, being description of new or interesting animals 3: 64-67.
- NUTTALL, C. H. F. 1919. The systematic position, synonymy and iconography of *Pediculus humanus* and *Pthirus pubis*. Parasitology 11: 329-346.
- . 1920. On Fahrenholz's purported new species, subspecies and varieties of *Pediculus*. A criticism of methods employed in describing Anoplura. Parasitology 12: 136-153.