

A NEW *POLYPLAX* AND RECORDS OF SUCKING LICE (ANOPLURA) FROM MADAGASCAR^{1,2}

By **Ke Chung Kim³** and **K. C. Emerson⁴**

Abstract: A new species, *Polyplax brachyuromyis* Kim & Emerson, from *Brachyuromys* is described and illustrated, and records of 5 species of Anoplura are reported from Madagascar rodents, insectivores, and domestic cattle: *Hoplopleura captiosa* on *Mus musculus*, *H. pacifica* on *Rattus rattus*, *Polyplax reclinata* on *Suncus murinus*, *P. spinulosa* on *Rattus rattus*, and *Haematopinus quadripertusus* on cow.

The Madagascar fauna of Anoplura is not well known. Gretillat (1957) described *Haematopinus palpebrae* from zebu, and Beaucournu & Houin (1967) reported *Polyplax reclinata* (Nitzsch, 1864). Several other species of sucking lice have been described from Madagascar lemurs and rodents (Ward 1951, Paulian 1958, 1960, 1961). *Eulinognathus hypogeomydis* Paulian, *Lemurpediculus verruculosus* (Ward), *Phthirpediculus avahidis* Paulian, *Polyplax nesomydis* Paulian, and *Polyplax brachyuromyis*, n. sp. described in this paper are restricted exclusively to Madagascar mammals.

This paper reports a new species of *Polyplax* from *Brachyuromys* and records of sucking lice found on Madagascar rodents, insectivores, and domestic cow: *Hoplopleura captiosa* Johnson, 1960 on *Mus musculus*, *H. pacifica* Ewing, 1924 on *Rattus rattus*, *Polyplax reclinata* (Nitzsch, 1864) on *Suncus murinus*, *P. spinulosa* (Burmeister) on *Rattus rattus* and *Haematopinus quadripertusus* Fahrenholz on cow. The major

part of the collections studied in this report was made by Henry W. Setzer, K.I. Lange (KIL), and J. H. Shaw (JHS), Division of Mammals, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. The identification of the Madagascar mammals was provided by Dr Setzer. Morphological terminology of Kim (1965, 1966a, b) is followed here.

***Polyplax brachyuromyis*, n. sp.** FIG. 1-12

Type data: ♀ Holotype and ♂ allotype, ex *Brachyuromys betsiloensis* (Bartlett, 1879), Didy, Tamatave Province, Madagascar, 1.X.1962, K. I. Lange (KIL-87). Paratypes: Four ♂♂ and 4 ♀♀, data same as those of holotype and allotype; 75 ♂♂, 307 ♀♀, 3 nymph I, 9 nymph II, 18 nymph III, Didy, Tamatave Province, 1-2.X.1962, K. I. Lange (KIL-87, 89); 19 ♂♂, 17 ♀♀, and 3 nymph III, Fianarantsoa Province, 2-4.XI.1962, K. I. Lange (KIL-185, 187, 190, and 200). Holotype, allotype, and a large portion of paratype series are deposited in the collection of the National Museum of Natural History, Smithsonian Institution, and other paratypes deposited in the collections of the Frost Entomological Museum, The Pennsylvania State University, and the K. C. Emerson Entomological Museum, Oklahoma State University.

Diagnosis: This species is allied to *Polyplax jonesi* Kellogg & Ferris, *P. kaiseri* Johnson, *P. plesia* Johnson, and *P. nesomydis* Paulian. *P. brachyuromyis*, n. sp. is easily separable from allied species by having the head with sensoria on antennal segments 4 and 5 small and broadly separated, 3 sutural head setae (SHS) on each side, the thoracic sternal plate subtriangular with lightly sclerotized anterior process, the abdomen with several setae laterally off the abdominal plates, and paratergites on the abdominal segment 4 with dorsal apical seta as

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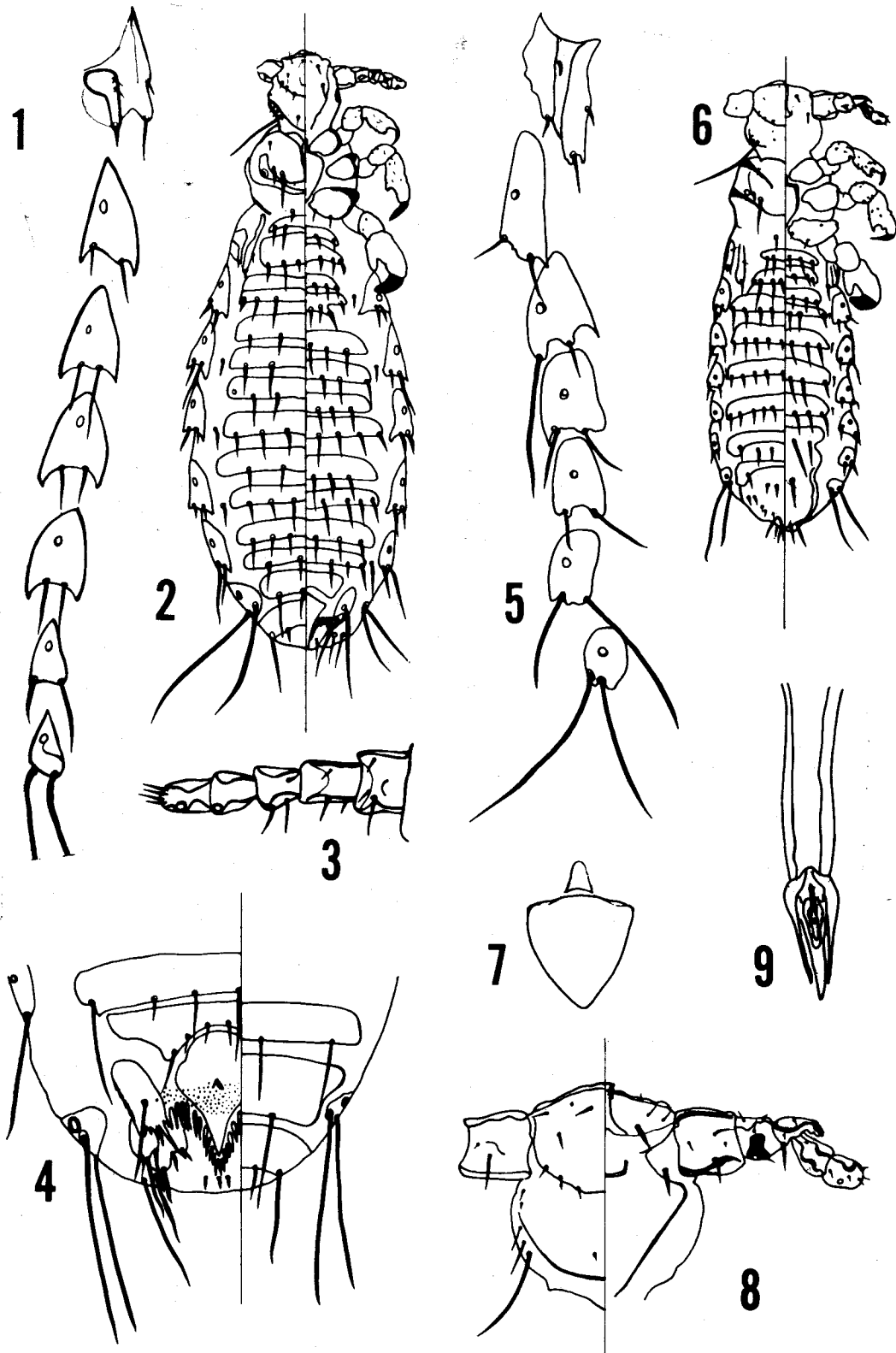


FIG. 1-9. *Polyplax brachyromyis*, n. sp. (1-4) ♀♀, holotype; (5-9) ♂, allotype. (1) Paratergites. (2) ♀; left side: dorsal, right: ventral. (3) ♀ antenna. (4) ♀ terminalia; left side: ventral, right: dorsal. (5) Paratergites. (6) ♂; left side: dorsal, right: ventral. (7) Thoracic sternal plate. (8) Head; left side: dorsal, right: ventral. (9) ♂ genitalia.

long as or longer than the plate.

Description: ♀ (FIG. 1-4): Total body length (\bar{x}) 1.28 mm. **Head** about as long as wide; postantennal and posterolateral angles undeveloped but lateral margin of head strongly convex; preantennal (PAS = PaS of Weisser & Kim 1972), antennal (AS), clypeal (CS), oral setae (OS) and posterior central head setae (PCHS) distinct; 3 SHS present on each side; anterior central head setae (ACHS) lacking; 3 marginal head setae (MHS), accessory dorsal head setae (ADHS) and long dorsal principal head setae (DPHS) arranged in a vertical line along the side; PMHS longer than anterior 2 MHS; ADHS longer than PMHS but much shorter than PDHS; ventrally with ventral principal head seta (VPHS) short, reaching 1/2 of antennal segment 1; antennae (FIG. 3) 5-segmented, unmodified, with 1 sensorium on each of segments 4 and 5 and sensoria distantly separate. **Thorax** with distinct mesothoracic phragma; dorsal prothoracic seta (DPtS) short; dorsal mesothoracic seta (DMsS = DMtS of Kim 1965) distinct, borne on antero-medial edge of mesothoracic spiracle and lateral to dorsal principal thoracic seta (DPTS) on each side; sternal plate (FIG. 7) subtriangular with anterior process lightly sclerotized and separated from the plate by membranous area. **Legs** as in other members of *Polyplax*. **Abdomen** (FIG. 2) with 13 tergites, 10 sternites, genital plate, 7 paratergites and 6 spiracles; segment 1 with 2 dorsal setae on membrane; segment 2 with paratergite divided longitudinally by membranous area and 4 and 6 dorsal setae on tergites respectively; paratergites of segments 3-6 each with posterior angles short, pointed, and a pair of apical setae shorter than the plate bearing them except for segment 4 (FIG. 1); segment 3 with 2 tergal plates fused and

5 dorsal setae on the posterior margin; segment 4 with dorsal paratergal seta as long as or longer than the plate; segments 4-7 each with 5 dorsal setae or anterior tergite, 6 setae on posterior plate, and 1 seta laterally off the posterior plate; segments 8 and 9 each with 3-4 setae; segments 2-6 each with 2 sternites and each plate 5, 6 or 7 ventral setae; posterior sternites of segments 3-6 each with 1 seta laterally off the plate. **Genitalia** (FIG. 4): Genital plate short and wide, with 8 setae on the posterior margin; valvulae heart-shaped, separated from genital plate, and posteriorly elongate and tapering; vulvar fimbriae distinct; gonopods elongate and posteriorly serrated, each with long median seta; genital lobe short, with several long setae and genital seta unmodified.

♂ (FIG. 5-9): Total body length (\bar{x}) 0.974 mm. **Head, thorax, legs, and abdomen** similar to those of ♀, unless described otherwise. **Head** (FIG. 8) with antennae highly modified; basal segment enlarged, and segment 3 elongate apically, with a stout apical seta. **Thorax** with sternal plate as in FIG. 7. **Abdomen** (FIG. 6) with 8 tergites and 7 sternites; segment 2 with 2 tergites bearing 3 and 8 dorsal setae respectively; segments 3-6 each with single tergite bearing 9 to 10 setae; segment 7 with 1 tergite and 6 dorsal setae; segment 8 with 1 tergite and 2 setae; segments 2 and 3 each with 2 sternites bearing 5 or 6 setae on the plate; segments 4-6 each with single sternite bearing 6 or 7 setae on the plate; segments 3-7 each with 1 seta laterally off the plate on each side; sternites of segments 7 and 8 forming subgenital plate; paratergites as in FIG. 5. **Genitalia** (FIG. 9) with parameres basally broad and narrowing apically; pseudopenis extending beyond the tip of parameres; basal apodeme large, articulated posteriorly with parameres.

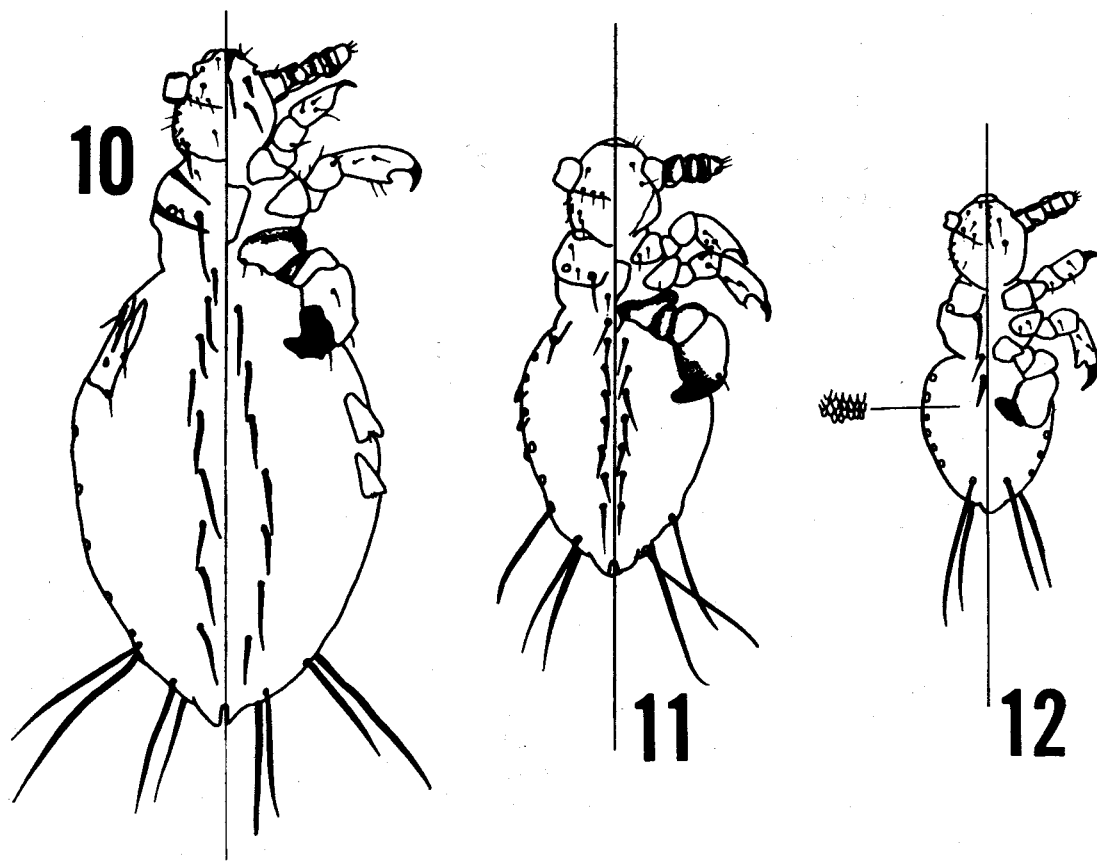


FIG. 10-12. *Polyplax brachyromyis*, n. sp. (10) Nymph III. (11) Nymph II. (12) Nymph I.

NYMPH 1 (FIG. 12): Total body length (\bar{x}) 0.42 mm. *Head* with 2 SHS, AS, PAS, OS, VPHS, 3 MHS and 1 short PDPHS on each side; central head setae (CHS) absent; antennae 5-segmented. *Thorax* without DPtS and DMsS; DPtS distinct; no trace of sternal plate; mesothoracic spiracle distinct. *Legs* as in adults. *Abdomen* scaly, with 6 spiracles, a pair of MAS on each side and 2 dorsal central abdominal setae (DCAS).

NYMPH 2 (FIG. 11): Total body length (\bar{x}) 0.59 mm. *Head* with 3 SHS, 3 MHS, ADHS, long PDPHS, AS, PAS, OS, and VPHS on each side; CAS absent; antennae 5-segmented. *Thorax* with DPtS and DMsS distinct; mesothoracic spiracle distinct; DPtS long; sternal plate distinctly present. *Legs* as in adults. *Abdomen* with traces of paratergites on segments 2-6; 9 DCAS and 7 VCAS present; 2 sets of MAS present on each side, with anterior MAS single.

NYMPH 3 (FIG. 10): Total body length (\bar{x}) 0.86 mm. As in nymph 2, unless described otherwise. *Head* with PCHS and OS distinct. *Abdomen* with anterior MAS paired.

Remarks: *Polyplax jonesi* Kellogg & Ferris and allied species, including *P. brachyuromyis*, n. sp. seem to form a distinct natural group differing from *spinulosa*-group, *praecisa*-group and *otomydis*-group. Members of the *jonesi*-group are found on cricetid rodents except for *P. jonesi*, which is found on murids (*Saccostomus*). The *jonesi*-group is characterized as follows. The sensoria on antennal segments 4 and 5 are very small and broadly separated. The thoracic sternal plate is variously shaped, and has a short anterior process which is lightly or not sclerotized. The paratergites of abdominal segments 3-6 have short, pointed apical lobes and usually 2 short apical setae. Ventrally the abdomen has several setae placed laterally off the sternites. In the male, the antennae are markedly modified, with the basal segment enlarged, segment 3 elongated apically, bearing a short, spiniform seta on an apical projection. The parameres are long, slender, tapering toward apex, and enclose the pseudopenis. The pseudopenis is apically acute and longer than the parameres. This group is closely allied to the *praecisa*-group in that the sensoria are small and broadly separated. The *jonesi*-group is similar to the *otomydis*-group in the male genitalia and the thoracic sternal plate. The modified antennal segment 3 is also found in the *spinulosa*-group and the *praecisa*-group. Included known species are as follows: *P. jonesi* Kellogg & Ferris, found on *Saccostomus campestris* (South Africa), *P. kaiseri* Johnson on *Gerbillus* sp. (Egypt), *P. plesia* Johnson on *Mystromys albicaudatus* (South Africa), *P. nesomydis* Paulian on *Nesomys* sp. (Madagascar), and *P. brachyuromyis*, n. sp. on *Brachyuromys betsiloensis* (Madagascar).

Polyplax reclinata (Nitzsch, 1864)

This species was critically reviewed and considered

polytypic by Beaucournu & Houin (1967). *P. reclinata sensu* Johnson (1960) is widely distributed on various taxa of Soricidae throughout the world: *Crocidura*, *Pachyura*, *Scutisorex*, *Suncus*, and *Sorex*. This species has been found on *Suncus murinus* in Madagascar.

Specimens examined: MADAGASCAR: Ex *Suncus murinus*, Ambatosaratra, 4.IX.1962, K. I. Lange, 1 collection (Kil-27).

Polyplax spinulosa (Burmeister, 1839)

This is a cosmopolitan species found on *Rattus rattus*.

Specimens examined: MADAGASCAR: Ex *Rattus rattus*, Ambatosaratra, 3.VIII.1962, K. I. Lange, 1 collection (KIL-2); Finarantsoa Province, 27.X.1962, K. I. Lange, 1 collection (KIL-165); Majunga Province, 26.X.1962, J. H. Shaw, 1 collection (JHS-487); Ex *Rattus* sp., Tamatave Province, 1.IX.1962, K. I. Lange, 78 ♀♀ and 1 nymph (KIL-7).

Hoplopleura captiosa Johnson, 1960

This species is widely distributed throughout the world, and has been reviewed by Johnson (1960) and Kim (1966b).

Specimens examined: MADAGASCAR: Ex *Mus musculus*, Fianarantsoa Province, 23.X.1962, K. I. Lange, 1 collection (KIL-143).

Hoplopleura pacifica Ewing, 1924

Johnson (1972) has discussed the *Hoplopleura pacifica*-group in detail and established the taxonomic status of *H. oenomydis* Ferris, 1921 and *H. pacifica*. However, the morphological differences between *oenomydis* and *pacifica* are not easily recognizable because of considerable variations in those characters. This is a very common species found on *Rattus*, and has a wide distribution as does the host genus.

Specimens examined: MADAGASCAR: Ex *Rattus rattus*, Ambatosaratra, 31.VIII.1962, K. I. Lange, 2 collections (KIL-1; KIL-2); 1.IX.1962, K. I. Lange, 1 collection (KIL-8); Fianarantsoa Province, 6.IX.1962, K. I. Lange, 1 collection (KIL-31); Jeffreville Rain Forest, 4.IV.1963, K. I. Lange, 1 collection (KIL-528); Tamatave Province, 1.V.1963, K. I. Lange, 1 collection (KIL-596).

Haematopinus quadripertusus Fahrenholz, 1916

Specimens examined: MADAGASCAR: Ex cow, Kianjasoa, 9.VI.1966, Dr Uilenberg, 13 ♂♂, 5 ♀♀ and 30 nymphs.

List of known species of the Madagascar Anoplura and their hosts

Family Haematopinidae

Haematopinus palpebrae Gretillat. Ex *Bos indicus* (Zebu) (Gretillat 1957). (= ? *H. eurysternus*)

Haematopinus quadripertusus Fahrenholz. Ex cow

Family Hoplopleuridae

Eulinognathus hypogeomydis Paulian. Ex *Hypogeomys antemena* (Paulian 1961)

Hoplopleura captiosa Johnson. Ex *Mus musculus*

Hoplopleura pacifica Ewing. Ex *Rattus rattus*

Lemurpediculus verruculosus (Ward). Ex "Mouse lemur" (*Microcebus*?) (Paulian 1958)

Lemurpediculus petterorum Paulian. Ex *Lepilemur mustelinus*? (Paulian 1958)

Phthirpediculus avahidis Paulian. Ex *Lichanotus laniger occidentalis* (Paulian 1960)

Polyplax nesomydis Paulian. Ex *Nesomys* sp. (Paulian 1961)

Polyplax reclinata (Nitzsch). Ex *Suncus murinus* (Beaucournu & Houin 1967)

Polyplax spinulosa (Burmeister). Ex *Rattus rattus*

Polyplax brachyuromyis, n. sp. Ex *Brachyuromys betsiloensis*

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