

## THREE NEW SPECIES AND TWO NEW SUBGENERA OF *PSITTACONIRMUS* (MALLOPHAGA: PHILOPTERIDAE) FROM NEW GUINEA PARROTS (PSITTACIFORMES)<sup>1</sup>

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*Abstract.* Three new species of *Psittaconirmus* are described: *opopsittae* (type-host *Opopsitta diophthalma*) in the nominate subgenus *Psittaconirmus*; *micropsittae* (type-host *Micropsitta bruijnii*) in the new subgenus *Parapsittaconirmus*; and *kulmani* (type-host *Charmosyna papou*) in the new subgenus *Xenopsittaconirmus*. Host-parasite relationships are discussed.

In a review of the mallophagan genus *Psittaconirmus* Harrison, Price & Clayton (1983) recognized 11 louse species, 10 of which are from parrot species in the family Loriidae and 1 from a parrot species in the Psittacidae. All of these taxa represent a homogeneous morphological assemblage demonstrating the characters enumerated in Price & Clayton (1983). Herein, we describe an additional 3 species of *Psittaconirmus*, 2 from parrots in the Psittacidae and 1 from a parrot in the Loriidae. One of these species is a typical *Psittaconirmus*; the other 2, while showing certain features allying them with this genus, diverge in a number of important respects from *Psittaconirmus* sensu stricto and from one another. We considered 3 options in the treatment of these 2 species: (1) describe them as *Psittaconirmus* sensu lato, altering the generic description sufficiently to accommodate the new species; (2) describe each of the 2 divergent new species in its own new genus, retaining *Psittaconirmus* as presently defined; or (3) describe each of the 2 divergent new species in its own new subgenus. We have chosen the 3rd option. In so doing, we describe the uniqueness of the 2 new monotypic subgenera, while emphasizing their proximity to the nominate subgenus consisting of 11 previously described and 1 new species.

All measurements are in millimetres. Host identifications and data have been confirmed by Bishop Museum personnel; the use of "probably" is as described by Price & Clayton (1983: 57). For specimens examined, BBM-NG refers to Bernice P. Bishop Museum collections from New Guinea and BPBM indicates the Bishop Museum as the depository institute. Numbers following these abbreviations are host catalog numbers. Because of the small number of lice in each series, paratype distributions will be restricted to the Bishop Museum, U.S. National Museum of Natural History, and University of Minnesota. Taxonomic decisions for lice were made in absence of

1. Published as Paper No. 13,518 of the Scientific Journal Series of the Minnesota Agricultural Experiment Station on research conducted under Minnesota Agricultural Experiment Station Projects No. Min-17-015 and Min-17-016.
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a working knowledge of host relationships, which were examined after the classification of their lice was completed. Host-parasite relationships are considered in the discussion.

### Genus *Psittaconirmus* Harrison

*Psittaconirmus* Harrison, 1915: 402. Type-species: *P. australis* Harrison.

Elongate, relatively slender lice. Head somewhat variable in size and shape (Fig. 4-9), but medioanterior margin with oval indentation and dorsoanterior plate weakly (Fig. 4-5, 9) to clearly (Fig. 6-8) demarcated. Pronotum with pair of short posterior setae; each side of metanotum with 2 lateroposterior setae and 5-7 medium to long posterior setae often clustered into 2 groups; small mesosternal and large metasternal plate, each with pair of setae. Male abdomen with tergite II (1st apparent segment) divided at midline, tergites III-IX entire; tergite IX with lobed posterior margin; tergites II-VIII with lateroposterior seta on each side; sternites II-VI with 4-6 short to medium length setae. Female abdomen with tergites II-VIII divided at midline, tergite IX entire; tergites II-VIII with 1-2 lateroposterior setae; each side of IX with 1 short and 1 long seta; sterna II-VI with 4-6 setae; sternum VII with large median plate with pair of posteriorly-directed lobes and associated setae. Male genitalia with variable structures medially and with prominent parameres, each bearing minute apical seta.

### Subgenus *Psittaconirmus* Harrison

Anterior portion of head rounded, with relatively narrow hyaline margin (Fig. 4-7); temple margin with single long seta on each side (Fig. 1); antenna with pronounced sexual dimorphism, ♀ with 5 relatively similar segments, ♂ with segment I enlarged and distinctly longer than segments II-III combined, and with process on segment III (Fig. 4-7). Male and ♀ abdominal tergites II-VIII having 4, 4, 4, 4, 6, 6, and 4 medioposterior setae, respectively, including very long outermost seta on each side of VI-VII; ♀ with innermost pair of setae on tergites II-VIII long; ♀ abdomen with pair of small lateral sternal plates on III-VII.

### *Psittaconirmus* (*Psittaconirmus*) *opopsittae* Price & Clayton, new species

Fig. 1-3, 7

Type-host: *Opopsitta diophthalma* (Hombron & Jacquinot).

♂. As in Fig. 1. Medioposterior abdominal tergal setae on II-VIII with innermost pair very long; short adjacent seta on II-VI, longer on VII-VIII; tergite IX (Fig. 2) with 5-6 setae associated with each lobe, including 1 very long seta. Genitalia (Fig. 3) with narrow elongate median sclerite having small central hole, and with outwardly curved pointed parameres.

♀. Unknown.

*Dimensions of ♂.* Temple width (TW) 0.40-0.41; prothorax width (PW) 0.26-0.29; metathorax width (MW) 0.41-0.43; abdomen width (AW) 0.50-0.55; head length (HL) 0.44-0.46; total length (TL) 1.51-1.53; genitalia width (GW) 0.12.

*Holotype ♂, ex O. diophthalma*, PAPUA NEW GUINEA: Morobe Prov. Wau: Nakata Ridge (BBM-NG 27801), 14.V.1963 (P. Shanahan) (BPBM 13,045). Paratypes, ex *O. diophthalma*: 1♂, same data as holotype; 1♂, same, except BBM-NG 27802.

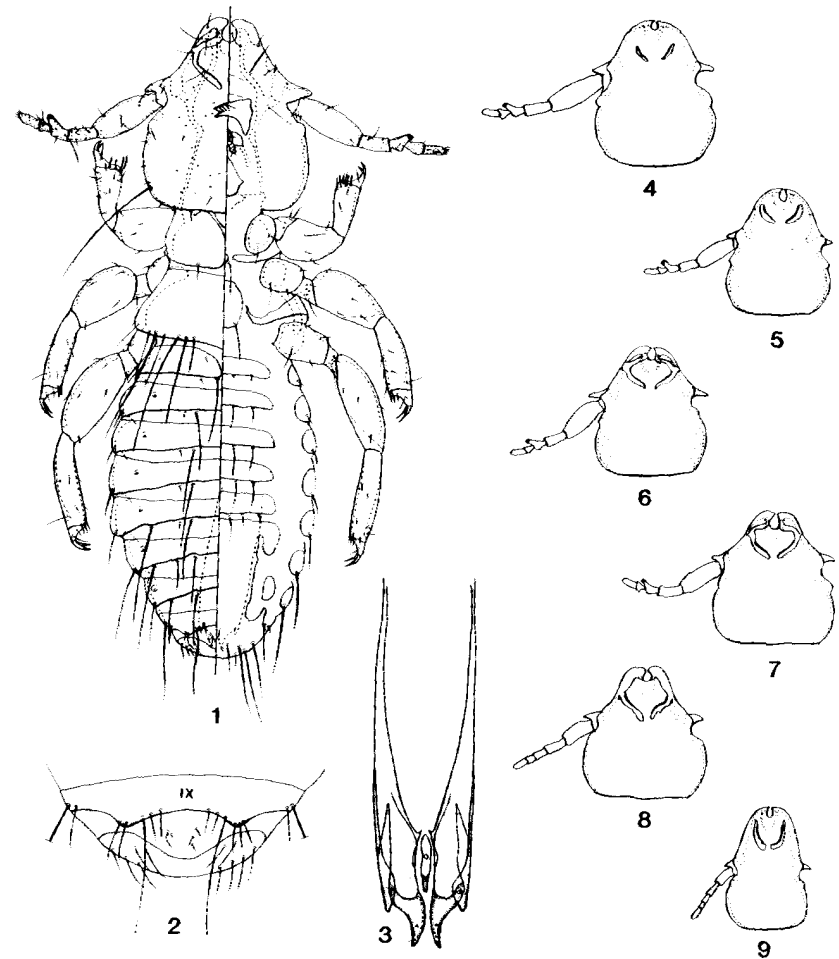


FIG. 1-9. 1-3, *Psittaconirmus opopsittae*: 1, ♂ dorsal-ventral view; 2, ♂ dorsal terminalia; 3, ♂ genitalia. 4-9, ♂ dorsal head outlines: 4, *P. cardinalis*; 5, *P. launceloti*; 6, *P. hellenthali*; 7, *P. opopsittae*; 8, *P. micropsittae*; 9, *P. kulmani*.

*Remarks.* The male of *P. opopsittae* identifies closest to *P. hellenthali* Price & Clayton in couplet 8 of the key provided by Price & Clayton (1983). These 2 species form a pair distinguished from the other 10 species of the subgenus by their dimensions, dorsal abdominal chaetotaxy, gross genitalic details, head shape, and delineation of

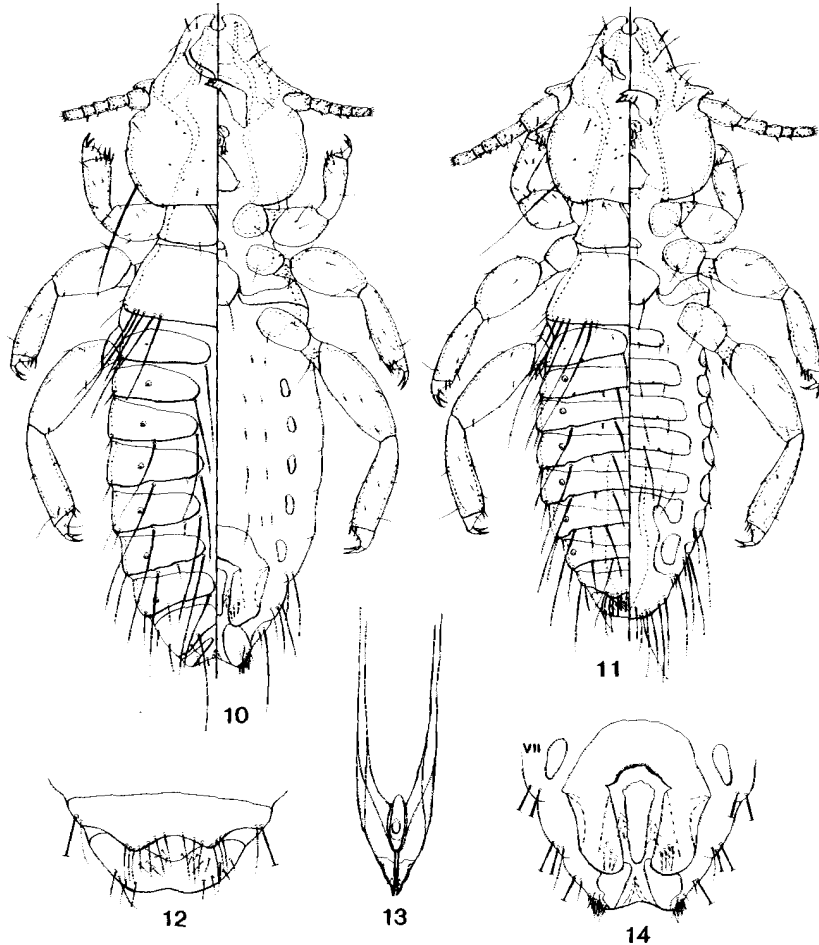


FIG. 10-14. *Psittaconirmus micropsittae*: 10, ♀ dorsal-ventral view; 11, ♂ dorsal-ventral view; 12, ♂ dorsal terminalia; 13, ♂ genitalia; 14, ♀ ventral terminalia.

the dorsoanterior head plate (Fig. 6-7). However, *P. opopsittae* may be separated from *P. hellenthalii* in having a longer innermost medioposterior pair of tergal setae on VII (Fig. 1) and genitalia with outwardly-flexed parameres and a uniquely-shaped median sclerite (Fig. 3).

### *Parapsittaconirmus* Price & Clayton, new subgenus

Type-species: *P. (P.) micropsittae* Price & Clayton, n. sp.

Anterior portion of head somewhat narrowed, with wide hyaline margin (Fig. 8); temple margin with single long seta on each side; antenna with moderate sexual dimorphism, ♀ with 5 relatively similar segments, ♂ with segment I enlarged but slightly shorter than segments II-III combined, and without process on segment III (Fig. 11). Male and ♀ abdominal tergites II-VIII (Fig. 10, 11) having 2, 2-4, 4-6, 6, 6, 6, and 4 medioposterior setae, respectively, including very long outermost seta on each side of IV-VII and variable occurrence of short setae on III-IV; ♀ with innermost pair of setae on tergites II-VIII long; ♀ abdomen (Fig. 10) with pair of small lateral sternal plates on III-VII.

### *Psittaconirmus* (*Parapsittaconirmus*) *micropsittae* Price & Clayton, new species

Fig. 8, 10-14

Type-host: *Micropsitta bruijnii* (Salvadori).

♂. As in Fig. 11. Innermost medioposterior setae long on abdominal tergites II-VIII, outermost very long on IV-VII; tergite IX (Fig. 12) with 5-7 subequally long setae along each posterior lobe. Genitalia (Fig. 13) with evenly-rounded oblong median sclerite with conspicuous central hole, and with parallel median paramere margins.

♀. As in Fig. 10. Innermost medioposterior setae very long on abdominal tergites II-VIII, outermost very long on IV-VII. Ventral terminalia as in Fig. 14; plate on segment VII with well-defined concave posterior margin, distinctly separated from medial plate.

*Dimensions.* TW, ♂ 0.41, ♀ 0.43-0.47; PW, ♂ 0.26-0.27, ♀ 0.26-0.29; MW, ♂ 0.41-0.42, ♀ 0.44-0.46; AW, ♂ 0.43-0.45, ♀ 0.55; HL, ♂ 0.44-0.45, ♀ 0.47-0.49; TL, ♂ 1.38-1.43, ♀ 1.55-1.59; ♂ GW, 0.10-0.11.

*Holotype* ♂, ex *M. bruijnii*, PAPUA NEW GUINEA: Morobe Prov: vicinity Wau: Mt Kaindi (BBM-NG 27583), 1.IV.1963 (H. Clissold) (BPM 13,046). *Paratypes*, ex *M. bruijnii*: 2♂, 4♀, same data as holotype.

*Remarks.* Since *P. micropsittae* is the only known member of the subgenus *Parapsittaconirmus*, it is readily recognizable by the subgeneric characterization. The most useful characters distinguishing *P. micropsittae* from its congeners include head shape, wide hyaline margin, male antennae lacking process on segment III, distribution of very long tergal setae of both sexes, and details of the male genitalia.

### *Xenopsittaconirmus* Price & Clayton, new subgenus

Type-species: *P. (X.) kulmani* Price & Clayton, n. sp.

Head narrow, preantennal portion somewhat tapered and rounded, with narrow hyaline margin (Fig. 9); temple margin without long seta; antenna without marked sexual dimorphism, limited to slightly enlarged ♂ segment I. Male and ♀ abdominal tergites II-VIII (Fig. 15, 19) having 2, 4, 4, 4, 4, 6, and 4 medioposterior setae, respectively, with outermost seta very long on each side of VII; ♀ abdomen (Fig. 15) without evident lateral sternal plates and with long innermost pair of setae only on II-VI.

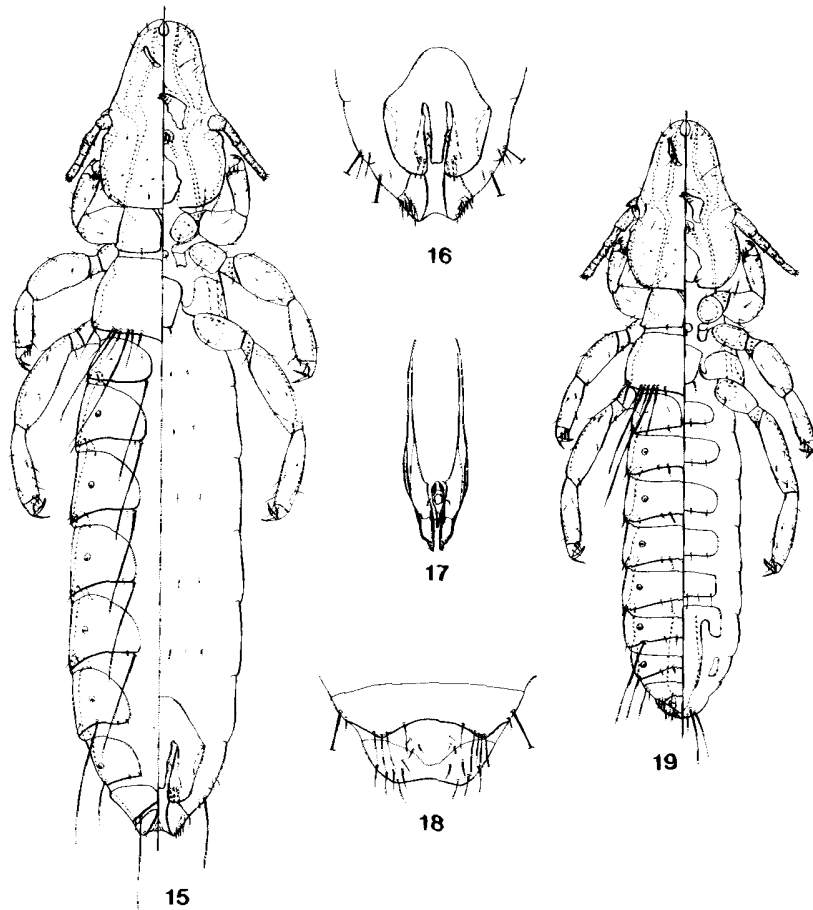


FIG. 15-19. *Psittaconirmus kulmani*: 15, ♀ dorsal-ventral view; 16, ♀ ventral terminalia; 17, ♂ genitalia; 18, ♂ dorsal terminalia; 19, ♂ dorsal-ventral view.

***Psittaconirmus* (*Xenopsittaconirmus*) *kulmani* Price & Clayton, new species**

Fig. 9, 15-19

Type-host: *Charmosyna papou* (Scopoli).

♂. As in Fig. 19. All medioposterior tergal setae short except for very long seta on each side of VII; tergite IX (Fig. 18) with 3-5 subequally long setae along each posterior lobe.

TABLE 1. Summary of *Psittaconirmus* and *Fomenopon* distributions (hosts according to Morony et al. 1975).

PSITTACIFORM HOST SPECIES	MALLOPHAGA GENERA	
	<i>Psittaconirmus</i> (SUBGENUS) SPECIES	<i>Fomenopon</i> (GROUP) SPECIES
Loriidae		
6 genera, 14 species	( <i>Psittaconirmus</i> )—9 species	( <i>spinimentum</i> )—10 species
<i>Charmosyna wilhelminae</i>		( <i>clissoldi</i> ) <i>mirzai</i>
<i>placentis</i>	( <i>Xenopsittaconirmus</i> ) <i>kulmani</i> , n. sp.	( <i>clissoldi</i> ) <i>placentis</i>
<i>pulchella</i>	{ ( <i>Xenopsittaconirmus</i> ) <i>kulmani</i> , n. sp. ( <i>Psittaconirmus</i> ) <i>charmossynae</i>	( <i>clissoldi</i> ) <i>pulchellae</i>
<i>papou</i>		( <i>clissoldi</i> ) <i>clissoldi</i>
Psittacidae		
Micropsittinae		
<i>Micropsitta bruijii</i>	( <i>Parapsittaconirmus</i> ) <i>micropsittae</i> , n. sp.	
Psittacinae		
<i>Opopsitta diophthalma</i>	( <i>Psittaconirmus</i> ) <i>opopsittae</i> , n. sp.	
<i>Psittaculirostris edwardsii</i>	( <i>Psittaconirmus</i> ) <i>hellenthali</i>	( <i>spinimentum</i> ) <i>wilsoni</i>

Genitalia (Fig. 17) with elongate median sclerite, tapered posteriorly and with central hole, and parameres bluntly narrowed as shown.

♀. As in Fig. 15. Each of tergites II-VII with 1 very long medioposterior seta on each side, innermost on II-VI and outermost on VII; tergite VIII with only short medioposterior setae. Ventral terminalia as in Fig. 16; without clear demarcation between vaguely-defined medial plate and plate on sternum VII.

Dimensions. TW, ♂ 0.27-0.29, ♀ 0.31-0.33; PW, ♂ 0.19-0.20, ♀ 0.22-0.23; MW, ♂ 0.29-0.33, ♀ 0.34-0.37; AW, ♂ 0.28-0.35, ♀ 0.44-0.46; HL, ♂ 0.41-0.42, ♀ 0.42-0.45; TL, ♂ 1.45-1.50, ♀ 1.76-1.97; ♂ CW, 0.07-0.08.

*Holotype* ♂, ex *C. papou*, PAPUA NEW GUINEA: Morobe Prov: Bulldog Road (BBM-NG 28921), 13.VIII.1963 (H. Clissold) (BPBM 13,047). *Paratypes*, ex *C. papou*: 1♂, 1♀, same data as holotype; 1♀, Wau: Nakata Ridge (BBM-NG 28542), 4.VII.1963 (P. Shanahan); 1♂, ex probably *C. papou*, Western Highlands Prov: Murrumbidgee (BBM-NG 28087), 11.VI.1963 (H. Clissold).

*Other specimens*. 1♂, 2♀, ex *C. placentis* (Temminck). PAPUA NEW GUINEA: Western Prov: Oriomo Riv (BBM-NG 29537, 29538, 29539); 1♀, same, except ex probably *C. placentis* (BBM-NG 29540).

*Remarks*. *P. kulmani*, the only known member of the subgenus *Xenopsittaconirmus*, is separated from congeners by its narrow rounded head, absence of long temporal setae and pronounced sexually dimorphic antennae, abdominal tergal chaetotaxy, and details and small size of the male genitalia.

This species is named for Dr Herbert M. Kulman, University of Minnesota, a longtime friend and colleague of R.D.P.

DISCUSSION

Of the 3 new species described herein, only *P. opopsittae* is added to the nominate subgenus, which previously consisted of 11 species (Table 1). Of those 11 species, *P.*

*hellenthali* is quite similar morphologically to *P. opopsittae*. This similarity is of special interest because these 2 species of lice are found on parrots in the Psittacidae (subfamily Psittacinae), whereas the other 10 species of lice in the nominate subgenus are found on parrots in the Loriidae, according to the classification of Morony et al. (1975). However, according to Peters (1937), the hosts of *P. opopsittae* and *P. hellenthali* represent 2 of 3 genera properly grouped with the current species of Loriidae, rather than with members of the Psittacidae. The overall similarity of *P. opopsittae* and *P. hellenthali* to the other 10 species of lice in the nominate subgenus tends to support Peters' classification. This classification is further supported by the similarity of *Eomenopon wilsoni* Price to the other 10 species of lice in the "spinimentum" species group (Table 1).

The 2nd new species, *P. micropsittae*, is the sole member of the new subgenus *Parapsittaconirmus*. Its host, *Micropsitta bruijnii*, is a member of the only genus placed in the subfamily Micropsittinae (Psittacidae) by both Peters (1937) and Morony et al. (1975).

The 3rd new species, *P. kulmani*, is the sole member of the new subgenus *Xenopsittaconirmus* and has been collected from *Charmosyna papou* and *C. placensis*. These hosts and the other 2 species of *Charmosyna* sampled (Table 1) are also host to 4 species of *Eomenopon* Harrison that form a morphologically distinct "dissoldi" species group (Price 1966); these 4 louse species are clearly separable from the other 11 that comprise the "spinimentum" species group. Hence, parrots in the genus *Charmosyna* are host to 2 distinct groups of lice in different genera.

In summary, it appears that our arrangement of the 3 new species of lice into 3 subgenera is consistent both with the relationships of previously described louse taxa and the relationships of the hosts themselves. We suggest that parrot-lice relationships be taken into account in subsequent systematic revisions of the hosts.

*Acknowledgments.* We thank Dr K.C. Emerson, Sanibel, Florida, USA, for his assistance in the preparation of this manuscript; and Drs JoAnn M. Tenorio and Alan C. Ziegler, Bishop Museum, for the loan of specimens and for taking the time to help us clarify our host identifications and collection data.

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