

A NEW GENUS AND FOUR NEW SPECIES OF MENOPONIDAE (Mallophaga) FROM SOUTH PACIFIC PARROTS (Psittaciformes)¹

By Roger D. Price

DEPT. OF ENTOMOLOGY, FISHERIES, AND WILDLIFE, UNIVERSITY OF MINNESOTA, ST. PAUL

Abstract: *Pacifimenopon*, a newly described genus closely related to *Eomenopon*, includes 4 species, all new: *nelsoni*, the type-species, from *Chalcopsitta cardinalis*, *gressitti* from *Domicella lory*, *shanahani* from *Charmosyna papou*, and *fuscatae* from *Pseudeos fuscata*.

Among lice recently collected by the B. P. Bishop Museum (BBM)² from New Guinea and Solomon Is. parrots are a number of specimens with affinities to *Eomenopon* Harrison, but demonstrating a sufficient number of differences to consider them as representing a new genus. Members of the 10 species currently recognized within *Eomenopon* by Price (1966) possess some important characters in common with the specimens considered here, but the collective differences between the 2 groups best indicate separation at the generic rather than the subgeneric level. To follow the latter course would preserve the presumed close relationship of members of *Eomenopon* and the new genus, but would alter the *Eomenopon* concept to such an extent as to make such action seem inappropriate at this time. Thus, it is the purpose of this paper to describe the new genus *Pacifimenopon* and the 4 included species, all of which are new.

I thank Dr Nixon Wilson, Bishop Museum, Dr Theresa Clay, British Museum (Nat. Hist.), and Dr K. C. Emerson, Arlington, Virginia for making these lice available to me for study and for otherwise contributing to this work. Material used here has for the most part been collected for the Bishop Museum by H. Clissold and P. Shanahan.

Genus ***Pacifimenopon*** Price, n. gen.

Type-species: *Pacifimenopon nelsoni* Price.

Members of this genus resemble *Eomenopon* in the following features. Little sexual dimorphism. Head: narrow preocular slit; 3 very long lateral temple setae on each side; both pairs of occipital setae long; scattered dorsal minute alveoli; sitophore sclerite of hypopharynx much as in fig. 5; dorsal setae anterior to preocular nodus having single seta mediad to medioposterior of setal complex; antennae usually entirely concealed beneath head; terminal segment undivided, approximately as long as wide; no antennal segments

1. Paper No. 6018, Scientific Journal Series, Minnesota Agricultural Experiment Station, St. Paul, Minnesota 55101.
2. Results of fieldwork supported by a grant to the Bishop Museum from the U. S. Army Medical Research and Development Command (G-65).

with pronounced lateral expansion; nodi and carinae weakly developed; subocular comb row of spiniform setae preceded anteriorly by single long seta within several shorter widely-spaced setae.

Thorax: scattered minute alveoli on pronotum; broadly trapezoidal metasternal plate with at least 18-20 setae; coxae I-III with scattered short setae; venter of femur III without comb rows of spiniform setae, but with patch of short scattered setae.

Abdomen: all tergites undivided, with I-VIII of approximately equal lengths; marginal tergal setae of long among shorter setae; postspiracular setae long to very long on I-VIII; vulval shape and chaetotaxy essentially similar; internal structure of ♀ genital chamber (fig. 4) of same general type and shape; ♂ genital plate (figs. 3, 7-9) and asymmetrical genitalia (figs. 2, 11-13) essentially similar.

Members of *Pacifimenopon* differ from those of *Eomenopon* in the following features. Head: either without any indication of lateroanterior ventral spinous process, or with only short blunt process, not approaching more than half distance to base of mandible (fig. 6); gula evenly pigmented, unsculptured; short inner pair of middorsal setae, without evident outer middorsal setae (*Eomenopon* either lacks outer middorsal setae, or has minute ones).

Thorax: at least 25, usually over 30, mixed short and long marginal pronotal setae; prosternal plate not conspicuously well developed, without sculpturing, but always with small number of medium setae in addition to usual short pair; mesosternal plate cordate, with at least 6 longer posterior setae.

Abdomen: most to all of tergites I-VIII with anterior setae and/or minute alveoli; sternite I with anterior setae, not divided medially, and not more darkly pigmented than other sternites; anterior setae on sternites II-VII scattered, not in single well defined row; sternite III with irregularly distributed short spiniform setae lateroposteriorly, not typically arranged in compact comb row; anus of ♀ shaped differently, with dorsal margin evenly rounded and without clear junction with ventral margin.

Additionally, late instar nymphs of *Pacifimenopon* have smooth gular and prosternal plates, not distinctly spinose as for *Eomenopon*.

Such features as the prominent lateroanterior ventral spinous head process, the sculptured gular and prosternal plates (the latter without setae) with the adults, the spinose gular and prosternal plates with the late instar nymphs, the darker divided sternite I without anterior setae, the single well developed comb row on each side of sternite III, as well as other features, are so essential to the current concept of *Eomenopon* that to modify them to include *Pacifimenopon* is not considered advisable. It is preferable at our present stage of knowledge to recognize *Pacifimenopon* as a genus related to but clearly separable from *Eomenopon* and perhaps have it later become a subgenus than to so alter the *Eomenopon* concept now and perhaps eventually have to restrict it again to its original limits. Of further interest is the fact that 13 of the 20 host individuals from which the specimens of *Pacifimenopon* were obtained also yielded *Eomenopon*. This sympatric association leads one to ponder as to the niches occupied by each and the possible interactions of such closely related forms.

For brevity, none of the foregoing characters will be repeated in the following descriptions. A value in parentheses following a statement of range is the mean; all measure-

ments are given in millimeters. Reference to tergites, pleura, or sternites, unless stated to the contrary, pertains to the abdomen. Host nomenclature follows that of Peters (1937). The holotypes of all of the species have been deposited in the Bishop Museum.

Pacifimenopon nelsoni Price, n. sp. Figs. 1-6.

Type-host: *Chalcopsitta cardinalis* (G. R. Gray).

♀. As in fig. 1. Head with short blunt lateroanterior ventral spinous process (fig 6). Pronotal margin with 31-34 (33.0) setae, including 12-13 long, 19-22 short setae; prosternal plate with 4-8 (5.6) longer setae. Metanotum marginally with 18-20 short to long setae, anteriorly with over 50 short setae in area of median two-thirds; mesosternal plate with 7-10 (8.4) setae, metasternal plate with 23-27 (25.2). Marginal tergal setae, including postspiracular setae: I, 42-49 (45.6); II, 45-51 (48.6); III, 48-55 (52.2); IV-VI, 53-59 (56.1); VII, 45-53 (48.6); VIII, 26-33 (29.6). Numerous short anterior tergal setae: I, 27-39 (33.8); II, 45-60 (53.0); III, 58-70 (65.0); IV-VI, 80-101 (90.1); VII, 60-75 (67.2); VIII, 26-35 (30.0). Last segment with 2 very long marginal setae, 2 long inner posterior setae, 8-9 long setae lateroanterior to very long setae, and few anterior minute alveoli. Sternal setae: I, 30-36 (32.6); II, 57-66 (62.0); III-VII, 76-96 (86.7). Fused sternites VIII-IX (vulva) marginally with 18-21 (19.0) setae, anteriorly over 100. Ventral anal fringe of 24-29 (26.6) setae, dorsal fringe of 29-33 (31.0). Internal structure of genital chamber as in fig. 4.

♂. Much as for ♀. Pronotal margin with 34-37 (35.5) setae. Mesosternal plate with 7-12 (10.2) setae, metasternal plate with 28-34 (30.6). Marginal tergal setae as for ♀, except more on VIII, 32-38 (35.2). More anterior tergal setae: I, 34-53 (46.2); II, 61-79 (69.0); III, 79-103 (92.6); IV-VII, over 100; VIII, 62-89 (71.0). Terminalia (fig 3) with last segment having 4 very long marginal setae, otherwise much as for ♀. Tendency for more sternal setae: I, 30-34 (32.2); II, 62-76 (68.4); III-VII, 82-138 (106.8); VIII, 54-60 (57.8). Sternite IX (genital plate) marginally with 25-33 (29.2) setae, anteriorly 8-12 (9.8). Genitalia (fig. 2) with apically expanded basal plate, evenly curved left paramere.

Dimensions: preocular width, ♀ 0.37-0.38, ♂ 0.40-0.42; temple width, ♀ 0.47-0.49, ♂ 0.52-0.56; head length, ♀ 0.28-0.32, ♂ 0.28-0.30; prothorax width, ♀ 0.38-0.39, ♂ 0.40-0.41; metathorax width, ♀ 0.53-0.56, ♂ 0.50-0.53; total length, ♀ 2.25-2.43, ♂ 2.23-2.35; ♂ genitalia length, 0.73-0.95.

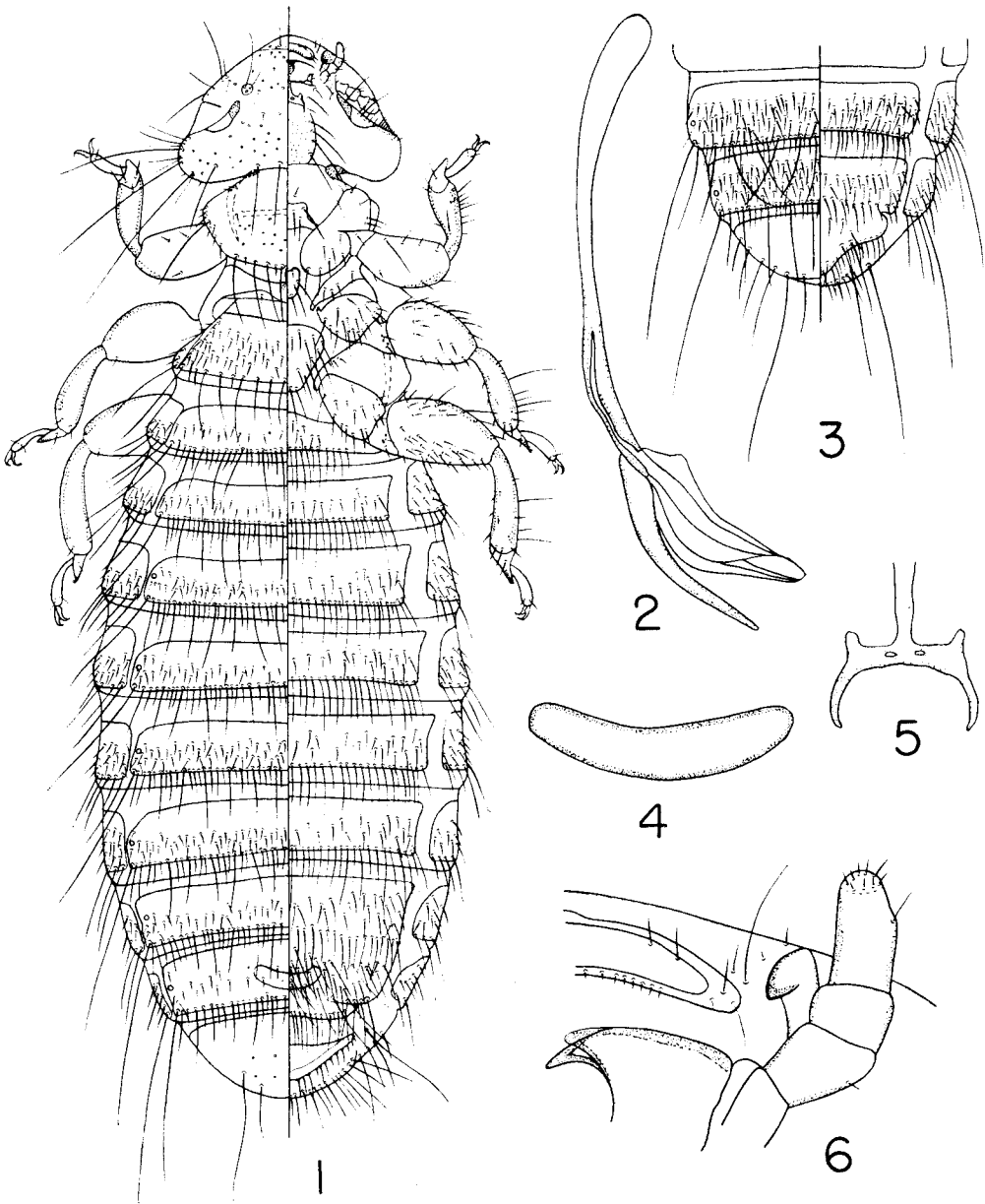
Holotype ♂ (BISHOP 7003), *Eos cardinalis* (BBM-SI 24232), Boala, Santa Ysabel Is., Solomon Is., 17.VIII.1964, P. Shanahan. Paratypes: 21♀♀, 16♂♂, *E. cardinalis* (BBM-SI 23243, 23523-23525, 23572, 23928, 24100, 24232, 24462, BM 1932-305), Solomon Is.

This species is named for Mr Richard Clay Nelson, who collaborated with me in a study of the falconiform *Laemobothrion*.

Pacifimenopon gressitti Price, n. sp. Figs. 7, 11.

Type-host: *Domicella lory* (L.).

♀. Close to *P. nelsoni*, differing in the following. Head lacking indication of lateroanterior ventral spinous process. Pronotal margin with 32-38 (35.7) setae. Fewer anterior metanotal setae, with approximately 30-40 in area of median two-thirds; metasternal plate



Figs. 1-6. *Pacifimenopon nelsoni* n. sp.: 1, ♀ ($\times 62$); 2, ♂ genitalia ($\times 90$); 3, ♂ terminalia ($\times 62$); 4, inner structure of ♀ genital chamber ($\times 200$); 5, sitophore sclerite of hypopharynx ($\times 350$); 6, lateroanterior aspect of ventral head ($\times 350$).

with 30-33 (31.3) setae. Considerably fewer marginal tergal setae: I, 20-23 (22.0); II, 18-20 (19.0); III, 19-23 (21.7); IV-VII, 23-27 (25.4); VIII, 18-20 (19.0). Fewer anterior

tergal setae on: II, 39-42 (40.3); III, 40-41; IV-VI, 35-47 (41.2); VII, 28-33 (30.0); VIII, 18-22 (20.0). Last segment with 14-15 setae lateroanterior to very long setae. Somewhat fewer sternal setae: I, 23-25 (24.0); II, 47-52 (49.0); III-VI, 65-85 (72.1); VII, 55-60 (58.0). Fused sternites VIII-IX marginally with 15-18 (16.3) setae, anteriorly 72-77 (75.0).

♂. Likewise close to *P. nelsoni*, differing in much the same ways as ♀. Head lacking indication of ventral spinous processes, as for ♀. With only 30-40 anterior metanotal setae in median two-thirds area. Considerably fewer marginal tergal setae, with I-VIII each having only 18-30 (24.9). Fewer anterior tergal setae, but slightly more than for ♀: II, 42-52 (47.0); III, 49-61 (53.7); IV-VI, 50-69 (58.8); VII, 45-56 (50.3); VIII, 41-49 (44.0). Terminalia (fig. 7) having last segment with 17-23 (19.7) medium setae lateroanterior to very long setae and with 9-10 medium dorsal anterior setae. Sternal setae: I, 20-27 (23.0); II, 61-67 (64.3); III-VII, 78-100 (86.7); VIII, 65-78 (70.7). Sternite IX anteriorly with more setae, 26-27. Genitalia (fig. 11) without evident apical expansion of basal plate and with perhaps slightly more curved left paramere.

Dimensions: preocular width, ♀ 0.39-0.40, ♂ 0.40-0.41; temple width, ♀ 0.49-0.50, ♂ 0.49-0.52; head length, ♀ 0.29-0.30, ♂ 0.31-0.32; prothorax width, ♀ 0.37-0.38, ♂ 0.38-0.41; metathorax width, ♀ 0.49-0.55, ♂ 0.48-0.53; total length, ♀ 2.37-2.42, ♂ 2.28-2.41; ♂ genitalia length, 0.76-0.78.

Holotype ♂ (BISHOP 7004), *Lorius lory* (BBM-NG 29905), Ahola, New Guinea, H. Clisold. Paratypes: 3♀♀, 2♂♂, *L. lory* (BBM-NG 20864, 29905), New Guinea, New Britain.

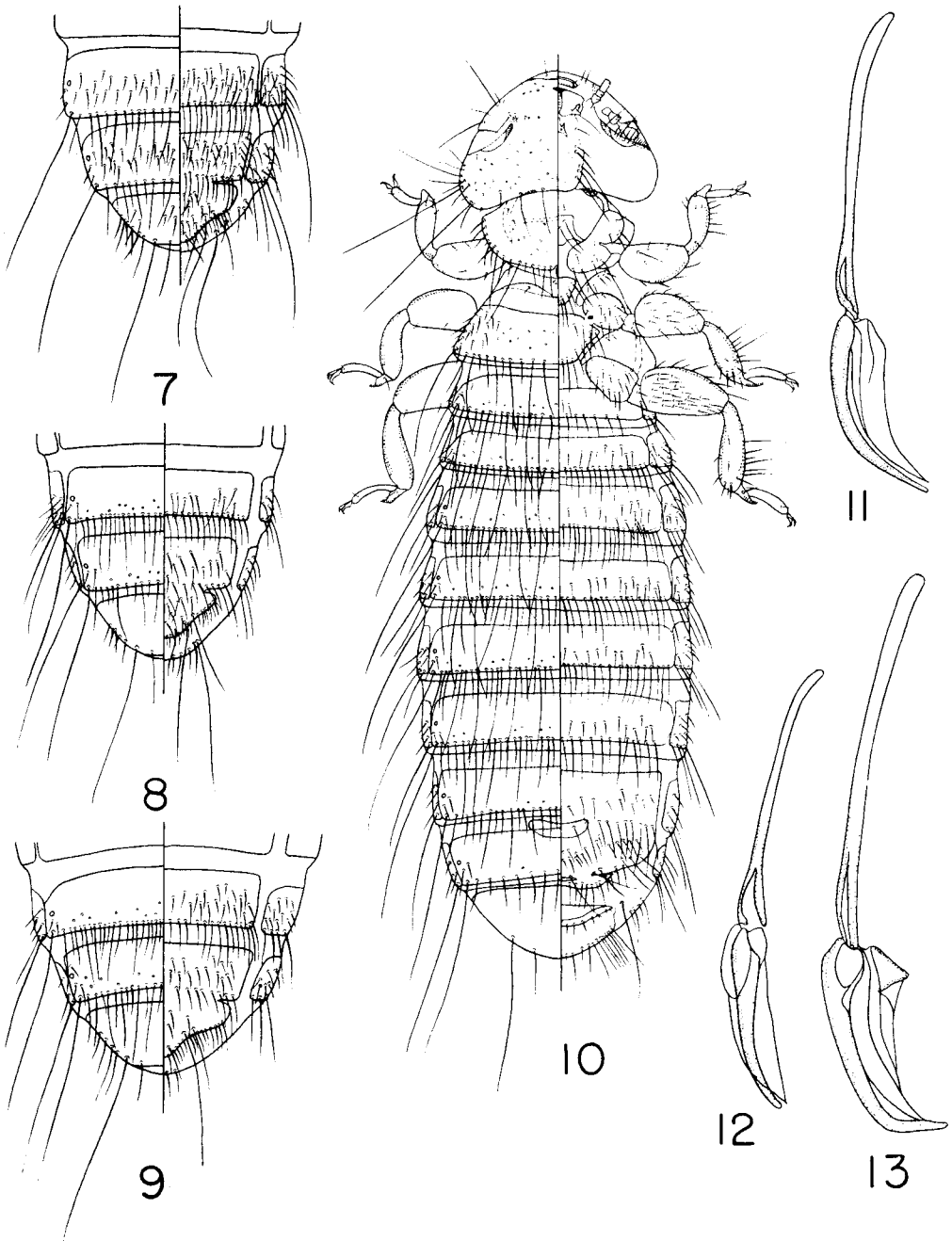
OTHER SPECIMENS: 2♀♀, 1♂, *Domicella chlorocercus* (Gould) (BBM-SI 24163), Solomon Is.

This species, while closer to *P. nelsoni* than to either of the other species, is readily separable from *P. nelsoni* on the basis of its lacking any indication of the lateroanterior spinous head process, the considerably fewer marginal and anterior tergal setae, and the presence of anterior setae on the last tergite of the male, as well as possibly other features of chaetotaxy.

Pacifimenopon shanahani Price, n. sp. Figs. 8, 10, 12.

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

♀. As in fig. 10. Head without indication of lateroanterior ventral spinous process. Pronotal margin with 27-36 (30.5) setae, including 8-11 long, 19-27 short setae; prosternal plate with 2-6 (4.3) longer setae. Metanotum marginally with 20-24 (21.3) short to long setae, anteriorly with scattered minute alveoli but no setae in median two-thirds area; mesosternal plate with 8-11 (9.8) setae, metasternal plate with 20-28 (22.1). Marginal tergal setae: I, 29-37 (33.4); II, 33-40 (36.3); III-V, 36-45 (39.4); VI, 33-40 (36.9); VII, 26-32 (29.2); VIII, 14-21 (18.5). Without anterior tergal setae, except for 2-3 short lateral setae on each side; remainder of area with sparse scattered minute alveoli. Last segment with 2 very long marginal setae, 2 long inner posterior setae, and 10-12 medium setae lateroanterior to very long setae. Sternal setae: I, 14-19 (15.9); II, 42-53 (47.0); III, 64-82 (72.4); IV-VI, 46-67 (56.5); VII, 36-51 (44.5). Fused sternites VIII-IX marginally with 20-25 (22.5) setae, anteriorly 48-59 (53.4). Ventral anal fringe of 14-19 (16.7) setae, dorsal fringe of 22-29 (25.5). Internal structure of genital chamber close to that of *P. nelsoni* (fig. 4), but discernible in only 3 of 12 individuals, preparation of speci-



Figs. 7-13. 7-9, ♂ terminalia ($\times 59$): 7, *Pacifimenopon gressitti* n. sp.; 8, *P. shanahani* n. sp.; 9, *P. fuscatae* n. sp. 10, *P. shanahani* n. sp., ♀ ($\times 59$). 11-13, ♂ genitalia ($\times 85$): 11, *P. gressitti* n. sp.; 12, *P. shanahani* n. sp.; 13, *P. fuscatae* n. sp.

mens possibly related to this.

♂. Much as for ♀, agreeing qualitatively and quantitatively in all but the terminalia (fig. 8). Tergite VIII with 23-24 marginal setae. Last segment with 4 very long marginal setae, 9-11 medium to long setae lateroanterior to these, and 2-3 long inner posterior setae. Sternite VII with 48-58 setae, VIII with 37-46. Genital plate with 32-35 marginal, 19-27 anterior setae. Genitalia (fig. 12) with slender basal plate and relatively straight left paramere.

Dimensions: preocular width, ♀ 0.37-0.39, ♂ 0.37-0.39; temple width, ♀ 0.45-0.49, ♂ 0.46-0.49; head length, ♀ 0.28-0.29, ♂ 0.28-0.29; prothorax width, ♀ 0.35-0.37, ♂ 0.35-0.38; metathorax width, ♀ 0.47-0.50, ♂ 0.45-0.48; total length, ♀ 2.10-2.31, ♂ 2.09-2.20; ♂ genitalia length, 0.73-0.75.

Holotype ♂ (BISHOP 7005), *Charmosyna papou* (BBM-NG 28148), Kawongu, New Guinea, H. Clissold. Paratypes: 12♀♀, 1♂, *C. papou* (BBM-NG 28537, 28877, 28902), New Guinea.

OTHER SPECIMENS: 2♀♀, 1♂, *Trichoglossus haematod* (L.) (BBM-NG 27953), New Guinea—host probably in error since an *Eomenopon* from the same bird proved to be the same species as found on *Charmosyna papou*.

Both female and male of *P. shanahani* are easily separated from *P. nelsoni* and *P. gressitti* by having only minute anterior alveoli on most of the tergites instead of the short anterior tergal setae.

***Pacifimenopon fuscatae* Price, n. sp. Figs. 9, 13.**

Type-host: *Pseudeos fuscata* (Blyth).

♀. Unknown.

♂. Closest to *P. shanahani*, differing as follows. Head with short blunt lateroanterior process, as in fig. 6. Pronotal margin with 32 setae, with 16-21 of these long, 11-16 short. Somewhat more marginal tergal setae: I-VI, 38-47; VII, 34-44; VIII, 25-27. Only 6-7 medium to long setae lateroanterior to very long setae on last segment; genital plate with 29-31 marginal, 12-13 anterior setae (fig. 9). Genitalia (fig. 13) without expanded apical portion of basal plate and with sharply bent left paramere. Of consistently larger size.

Dimensions of ♂: preocular width, 0.43-0.44; temple width, 0.58-0.59; head length, 0.31; prothorax width, 0.46-0.47; metathorax width, 0.56-0.58; total length, 2.25-2.43; genitalia length, 0.89-0.96.

Holotype ♂ (BISHOP 7006), *Pseudeos fuscata* (BBM-NG 27700), Finschhafen, New Guinea, H. Clissold. Paratopotype: 1♂, same data as holotype.

The presence of minute alveoli anteriorly on most tergites instead of the short anterior setae relates this species to *P. shanahani*. But the presence of the blunt lateroanterior spinous head process, the longer pronotal marginal setae, the pronounced bend in the left paramere of the ♂ genitalia, the larger size, and possibly other features, will differentiate the species.

REFERENCES

- Peters, J. L. 1937 Check-list of birds of the world. Vol. III. Harvard Univ. Press, Cambridge, Mass. xiii+311 pp.
- Price, R. D. 1966 The genus *Eomenopon* Harrison with descriptions of seven new species (Mallophaga: Menoponidae). *Pacific Ins.* 8: 17-28.