

# The *Menacanthus* (Mallophaga: Menoponidae) of the Piciformes (Aves)<sup>1</sup>

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## ABSTRACT

Six species of *Menacanthus* are recognized from the Piciformes, 5 of which are described and illustrated. These include 1 new species, *M. campephili*, off *Campephilus magellanicus* from Argentina. There are 19 new

synonymies, including 14 of *M. pici* (Denny), 1 of *M. cxsanguis* (Paine and Mann), and 4 of *M. balfouri* Waterston. A key to the species is given.

Twenty-six specific and subspecific names of the mallophagan genus *Menacanthus* Neumann have been applied to lice having as their type-host woodpeckers and their allies (Aves: Piciformes). Of these, 16 were proposed by Carriker (1961, in Carriker and Diaz-Ungria; 1967), and neither these nor the earlier names were treated adequately enough to enable recognition or differentiation from others. Therefore, since there has actually been no critical review of these lice, we have made this study to determine the status of the existing names, to redescribe the recognized species, to describe any new species, and to provide a key for their identification.

In the following descriptions, morphological terminology and numbers applied to certain setae are much as given by Clay (1969). Measurements are in millimeters. For *M. pici* (Denny), ranges are given to encompass all material examined; parenthetical values following these are for type-host specimens. Illustrations, unless stated to the contrary, are for lice from the type-host. The host nomenclature follows that of Peters (1948).

The species described here all share the following features and these will not be repeated under the individual descriptions.

**Head.**—With preocular slit; nodi moderately developed, associated carinae weak. Alveoli of marginal temple setae 26 and 27 closely associated, with seta 26 finer and shorter than 27; long occipital setae 21, 22, and 23, with alveoli in straight line; long to very long marginal temple setae 24, 27, 29, and 31; preocular setae 10 and 11 long, 9 very long, with adjacent seta 8 much shorter and finer; dorsal seta 16 mediad to setae 14 and 15 and sensillum *c*; no evidence of sensillum *d*; inner middorsal seta 17 somewhat longer than minute outer middorsal seta 18. Antenna with slightly expanded pedicel, and undivided terminal segment, mostly concealed beneath head. Gular plate rounded posteriorly, uniformly pigmented, with or without small central transparent area; several widely-spaced subocular setae preceding comb row (Fig. 5); hypopharyngeal sclerites weakly developed. With ventral spinous process each side arising near base of maxillary palpus.

**Thorax.**—Outer central pronotal seta 1 somewhat heavier and subequal to inner seta 2; prosternal plate

moderately developed, without setae other than usual 1 + 1 anterior to it (Fig. 2). Normal vertically oblong postnotum. Mesothorax not as sclerotized ring; 4 medioanterior mesonotal setae, alveoli of pair close together each side; mesosternal plate with 9–16 setae. Metanotum with 2 medioanterior setae. Ventral femur III with sparse brush.

**Abdomen.**—Tergites I and II with short seta lateral to postspiracular seta; postspiracular setae very long on II–VIII, somewhat shorter on I; tergites I–VIII of equal lengths, undivided, and without anterior setae. Pleurites without prolonged ventroposterior corners or internal thickenings. Weakly developed lateral brushes variably on sternites III–VI. Sternite I present, with setae. Anus of female essentially oval, without inner setae; sternites VII and VIII not fused; without evident genital chamber structure. Male genitalia essentially symmetrical, with broad expanded basal apodeme and spiculate sac with significantly variable associated sclerites.

## *Menacanthus pici* (Denny)

(Fig. 1–5)

- Menopon pici* Denny, 1842: 200. Type-host: *Picus viridis* L.  
*Menopon praecursor* Kellogg, 1899: 46. Type-host: *Melanerpes uropygialis* = *Melanerpes hypopolius uropygialis* (Baird). New Synonymy.  
*Menopon colaptis* Durrant, 1908: 355. Type-host: *Colaptes auratus* (L.). New Synonymy.  
*Picacanthus dryobates* Eichler, 1953: 181. Type-host: *Dendrocopos major major* (L.). New Synonymy.  
*Picacanthus picorum* Eichler, 1953: 181. Type-host: *Picus canus canus* Gmelin. New Synonymy.  
*Menacanthus punensis* Carriker, 1967: 10. Type-host: *Colaptes rupicola puna* Cabanis. New Synonymy.  
*Menacanthus benii* Carriker, 1967: 11. Type-host: *Colaptes campestris* (Vieillot). New Synonymy.  
*Menacanthus pitius* Carriker, 1967: 11. Type-host: *Colaptes pitius pitius* (Molina). New Synonymy.  
*Menacanthus ceophloeus ceophloeus* Carriker, 1967: 12. Type-host: *Dryocopus lineatus mesorhynchus* (Cabanis and Heine). New Synonymy.  
*Menacanthus ceophloeus chocoanus* Carriker, 1967: 12. Type-host: *Dryocopus lineatus nuperus* (Peters). New Synonymy.  
*Menacanthus korcae* Carriker, 1967: 18. Type-host: *Picus canus jessoensis* Stejneger. New Synonymy.  
*Menacanthus bruneri* Carriker, 1967: 18. Type-host: *Dendrocopos villosus villosus* (L.). New Synonymy.  
*Menacanthus caquactae* Carriker, 1967: 19. Type-host: *Melanerpes cruentatus extensus* (Todd). New Synonymy.  
*Menacanthus hoffmanni* Carriker, 1967: 20. Type-host:

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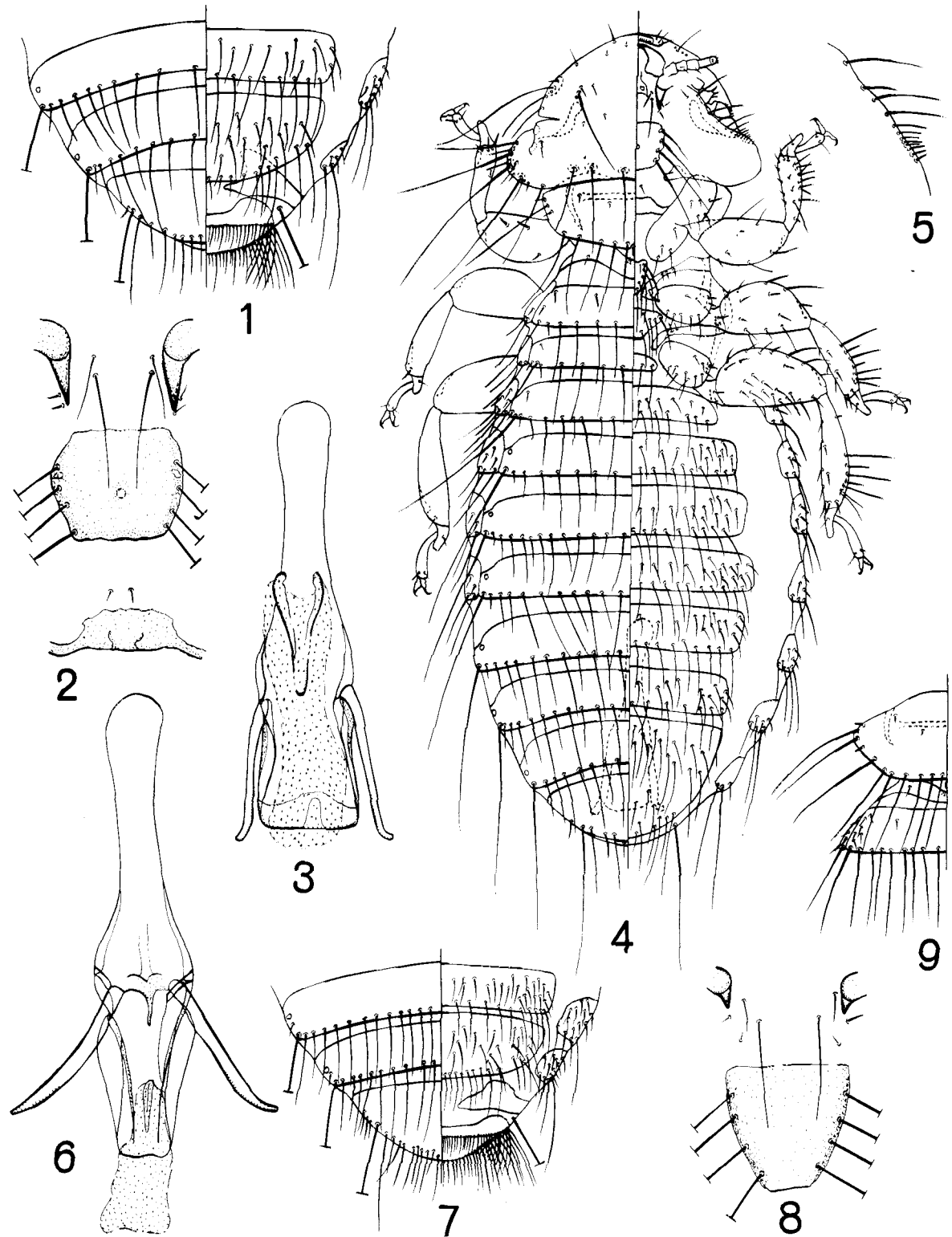


FIG. 1-5.—*M. pici*. 1, female terminalia; 2, medioventral head and prothorax; 3, male genitalia; 4, male; 5, subocular setae and comb row.  
 FIG. 6-9.—*M. exsanguis*. 6, male genitalia; 7, female terminalia; 8, medioventral head; 9, dorsal thorax.

*Melanerpes aurifrons hoffmannii* (Cabanis). New Synonymy.

*Menacanthus quercus* Carriker, 1967: 20. Type-host: *Melanerpes formicivorus flavigula* (Malherbe). New Synonymy.

**Male.**—As in Fig. 4. Ocular seta 19 0.04–0.06 long; inner middorsal seta 17 slightly anterior to outer seta 18; ventral spinous head processes 0.07–0.10 long (Fig. 2); postmental setae each side with medium and long medial and 2 short lateral setae (Fig. 2); gular plate usually with small median transparent area and 4 + 4 setae (Fig. 2). Pronotal margin with 12 long, 4 short setae. Metanotal margin with 10 long, 2 short setae; metasternal plate with 10–12 setae. Tergal setae: I, 14–15; II–III, 16–22 (17–22); IV–VI, 17–25 (19–24); VII, 16–23 (18–22); VIII, 12–17 (14–17). Last tergite with 12–19 (12–15) short to very long marginal setae. Pleurites with long marginal and usually few short anterior setae. Sternal setae: I, 2–5 (2–3); II, 20–30 (22–28); III, 32–51 (42–48); IV–V, 37–62 (50–59); VI, 33–54 (40–47); VII, 22–39 (30–39); VIII, 13–27 (17–23); sternites VIII and IX fused, with portion of subgenital plate posterior to VIII with 13–22 (15–22) setae. Genitalia (Fig. 3) 0.36–0.49 (0.44–0.46) long, 0.08–0.10 (0.08–0.09) wide, with parameres distally flexed outward and extending slightly beyond endomeral plate; sclerite of genital sac 0.11–0.15 long, with irregular thickened margin and shape as shown.

**Female.**—Head and thorax as for male. Tergal setae: I, 13–16 (14–15); II, 17–24 (17–22); III–VII, 18–28 (18–26); VIII, 12–22 (14–18). Last tergite (Fig. 1) with 18–26 (21–22) short to very long setae. Pleurites as for male. Sternal setae: I, 2–5 (2–4); II, 21–32 (21–31); III, 40–59 (45–54); IV–V, 50–74 (54–66); VI, 43–60 (47–56); VII, 32–51 (34–44). Subgenital plate (Fig. 1) with 35–55 (43–45) setae. Anus with 43–57 (43–54) ventral, 50–65 (50–58) dorsal fringe setae.

**Dimensions.**—Preocular width, male 0.38–0.46 (0.42–0.46), female 0.42–0.52 (0.44–0.48); temple width, male 0.47–0.59 (0.53–0.59), female 0.53–0.63; prothorax width, male 0.35–0.44 (0.37–0.44), female 0.40–0.49 (0.44–0.48); metathorax width, male 0.43–0.53 (0.47–0.53), female 0.49–0.61 (0.55–0.58); total length, male 1.48–1.91 (1.71–1.91), female 1.69–2.15 (1.91–2.14).

**Remarks.**—This species is best recognized by its large ventral spinous head processes in combination with 4+4 gular setae, the area of gular pigmentation, the absence of stout marginal pleural setae, the smooth medioposterior margin of the female subgenital plate, and details of the male genitalia. *M. pici* has a very broad range of hosts, with 6 genera being in the Picidae and only 1, *Megalaima*, in the Capitonidae. The number of junior synonyms is attributable in large part to Carriker (1967); we could not find any characters held to be specifically or subspecifically distinct by him to be anything more than the result of individual variation or a function of the mounting technique.

**Material Examined.**—26 ♂, 54 ♀, *Picus viridis*,

England, Estonia, Sweden; 2 ♂, 8 ♀ (including ♀ holotype of *M. koreae*), *P. canus*, Korea, Nepal; 9 ♂, 9 ♀, *P. flavinucha* Gould, India; 1 ♂, 6 ♀, *P. vailantii* (Malherbe), Morocco; 2 ♂, *Asyndesmus lewis* (G. R. Gray), U.S.A.; 32 ♂, 31 ♀, *Colaptes auratus*, Canada, U.S.A.; 15 ♂, 17 ♀, *C. cafer* (Gmelin), U.S.A.; 5 ♀ (including ♀ holotype, 2 ♀ paratypes of *M. benii*), *C. campestris*, Bolivia, Paraguay; 1 ♂, 1 ♀, *C. chrysoides* (Malherbe), U.S.A.; 2 ♂, 1 ♀ (all paratypes of *M. pitius*), *C. pitius*, Chile; 4 ♂, 6 ♀ (including ♀ holotype and 1 ♂, 2 ♀ paratypes of *M. punensis*), *C. rupicola* d'Orbigny, Peru; 2 ♂, 5 ♀, *Dendrocopos albolarvatus* (Cassin), U.S.A.; 5 ♂, 5 ♀, *D. major*, Estonia, Sweden, Yugoslavia; 5 ♂, 11 ♀, *D. pubescens* (L.), Canada, U.S.A.; 5 ♂, 13 ♀ (including ♀ holotype of *M. bruneri*), *D. villosus*, U.S.A.; 1 ♂, 7 ♀ (including ♀ holotype, 2 ♀ paratypes of *M. c. ceophloeus*; ♀ holotype and 1 ♂, 3 ♀ paratypes of *M. c. chocoanus*), *Dryocopus lineatus*, Colombia, Costa Rica; 28 ♂, 43 ♀, *D. pileatus* (L.), Canada, U.S.A.; 12 ♂, 13 ♀, *Megalaima oorti* (S. Müller), Taiwan; 2 ♂, 7 ♀, *M. virens* (Boddaert), Thailand; 9 ♂, 8 ♀, *M. zeylanica* (Gmelin), India; 3 ♂ (including ♂ holotype, 1 ♂ paratype of *M. hoffmanni*), *Melanerpes aurifrons* (Wagler), Costa Rica, U.S.A.; 3 ♂, 7 ♀, *M. carolinus* (L.), Cuba, U.S.A.; 1 ♀ (holotype of *M. caquetae*), *M. cruentatus* (Boddaert), Colombia; 4 ♂, 20 ♀, *M. erythrocephalus* (L.), U.S.A.; 3 ♂ (including ♂ holotype of *M. quercus*), 6 ♀, *M. formicivorus* (Swainson), Colombia, U.S.A.; 1 ♂, 4 ♀ (including 3 ♀ of type-series of *M. praecursor*), *M. hypopolius* (Wagler), U.S.A.; 3 ♀, *Sphyrapicus varius* (L.), U.S.A.

Questionable record: 3 ♂, 9 ♀, *Zoothera dauma* (Latham) (Passeriformes: Muscicapidae), Nepal.

*Menacanthus exsanguis* (Paine and Mann)  
(Fig. 6–9)

*Menopon exsanguis* Paine and Mann, 1913: 19. Type-host: *Campophilis melanoleucus* = *Phloeocastes melanoleucus melanoleucus* (Gmelin).

*Menacanthus exsanguis matherbi* Carriker, 1967: 16. Type-host: *Phloeocastes melanoleucus matherbi* (G. R. Gray). New Synonymy.

**Male.**—Much as for *M. pici* (Fig. 4), with the following differences. Ocular seta 19 0.03 long; ventral spinous head processes only 0.03–0.04 long (Fig. 8); gular plate slightly tapered posteriorly, uniformly pigmented (Fig. 8). Pronotal margin (Fig. 9) with 22–23 setae, including 18–20 long, 2–5 short setae. Metanotal margin with 16–18 setae, all long. Tergal setae: I, 19–22; II–VII, 24–33; VIII, 19–20. Last tergite with about 28 setae. Sternal setae: III–VII, 61–79; portion of subgenital plate posterior to VIII with ca. 45 setae. Genitalia (Fig. 6) 0.65–0.68 long, 0.12–0.13 wide, with endomeral plate somewhat narrowed posteriorly, and parameres not constricted medially.

**Female.**—Head and thorax as for male. Abdomen as for *M. pici*, except as follows. Tergal setae: I–VII, 25–32; VIII, 18–22. Last tergite with 28–34

setae. Sternal setae: III-VII, 67-82. Subgenital plate (Fig. 7) with 19-23 marginal, ca. 50 anterior setae. Anus with 63-70 ventral, 44-56 dorsal fringe setae.

*Dimensions*.—Preocular width, male 0.48-0.51, female 0.49-0.52; temple width, male 0.63, female 0.65-0.67; prothorax width, male 0.50-0.52, female 0.52-0.53; metathorax width, male 0.56-0.60, female 0.59-0.61; total length, male 1.84-2.00, female 1.99-2.17.

*Remarks*.—Although with many features as for *M. pici*, *M. exsanguis* is easily recognizable by its much smaller ventral spinous head processes, the larger number of long marginal pronotal and metanotal setae, more numerous tergal and sternal setae, and the larger distinctive male genitalia.

*Material Examined*.—3 ♂, 4 ♀ (including ♀ holotype, 1 ♂ paratype of *M. e. malherbi*), *Phloeocastes melanoleucos*, Colombia, Peru, Trinidad.

*Menacanthus extraneus* Carriker  
(Fig. 10)

*Menacanthus extraneus* Carriker, 1967: 16. Type-host: *Phloeocastes rubricollis trachelopyrus* (Malherbe).

*Male*.—Essentially as for *M. exsanguis*, except for genitalic differences. Genitalia (Fig. 10) 0.66-0.74 long, 0.10-0.11 wide, with endomeral plate much more narrowed posteriorly, and parameres constricted medially.

*Female*.—Also much as for *M. exsanguis*, except for tendency for more tergal setae on IV-VII, 27-38; VIII, 24; and for 35 marginal setae on subgenital plate.

*Remarks*.—Although we originally suspected that *M. extraneus* was conspecific with *M. exsanguis*, a study of the type-materials of *M. extraneus* has convinced us that the differences in the male genitalia are actual, rather than a function of mounting, and that the female supports this separation by having more numerous marginal subgenital plate setae.

*Material Examined*.—3 ♂, 2 ♀ (including ♀ holotype and 3 ♂, 1 ♀ paratypes of *M. extraneus*), *Phloeocastes rubricollis* (Boddaert), Bolivia.

*Menacanthus campephili*, n. sp.  
(Fig. 11-14)

Type-host: *Campephilus magellanicus* (King).

*Male*.—Much as for *M. pici* (Fig. 4), except for the following. Ventral spinous head processes 0.04-0.05 long (Fig. 13); gular plate tapering posteriorly, uniformly pigmented. Metanotal margin with 13-15 long, 2 short setae. Tergal setae: I, 13-19; II-VII, 18-23; VIII, 17-19. Last tergite (Fig. 12) with 19-20 setae. Sternal setae on VIII, 28-35; subgenital plate apparently separate from VIII, with 22-27 setae. Genitalia (Fig. 14) 0.59-0.62 long, 0.12 wide, with sclerite of genital sac variably "U"-shaped, 0.02-0.05 long.

*Female*.—Head and thorax as for male, except pronotal margin with 16-18 setae, including 12-14 long, 4 short setae. Abdomen as for *M. pici*, except as follows. Tergal setae: I, 16-18; II-VII, 22-24;

VIII, 17-19. Terminalia as in Fig. 11; subgenital plate with 55-60 setae. Anus with 22-25 dorsal fringe setae.

*Dimensions*.—Preocular width, male 0.46-0.47, female 0.48-0.49; temple width, male 0.57-0.58, female 0.58-0.59; prothorax width, male 0.45-0.46, female 0.47-0.48; metathorax width, male 0.50-0.53, female 0.54-0.55; total length, male 2.00-2.05, female 2.08-2.10.

*Remarks*.—*M. campephili* is separable from *M. pici*, *M. exsanguis*, and *M. extraneus* by the shape of the male genital sac sclerite and the much fewer and heavier setae in the female dorsal anal fringe. Its area of gular pigmentation and smaller ventral head processes further aid the separation of *M. campephili* from *M. pici*; some additional differences from *M. exsanguis* and *M. extraneus* involve smaller dimensions, fewer abdominal setae, and gross male genitalia features for *M. campephili*. It is interesting that *Phloeocastes* and *Campephilus*, the last 2 genera listed by Peters (1948) in the Picidae, each has its own distinctive *Menacanthus* quite different from *M. pici*, a species broadly distributed among a number of other genera of this family.

*Material Examined*.—Holotype male, *Campephilus magellanicus*, Ba. Buen Suceso, Staten Island, Argentina, 23 Apr. 1971, 187273; in collection of U. S. National Museum. Paratypes: 31 ♂, 20 ♀, same data as holotype.

*Menacanthus balfouri* Waterston  
(Fig. 15-19)

*Menacanthus balfouri* Waterston, 1915: 15. Type-host: "Yellow and black-billed Toucan" = *Ramphastos ambiguus brevis* de Schauensee.

*Menacanthus balfouri waterstoni* Carriker, 1961 (in Carriker and Diaz-Ungria): 29. Type-host: *Ramphastos swainsonii* Gould. New Synonymy.

*Menacanthus balfouri cuvieri* Carriker, 1961 (in Carriker and Diaz-Ungria): 31. Type-host: *Ramphastos cuvieri* Wagler. New Synonymy.

*Menacanthus balfouri cauae* Carriker, 1961 (in Carriker and Diaz-Ungria): 31. Type-host: *Ramphastos citreolaemus* Gould. New Synonymy.

*Menacanthus balfouri prolongus* Carriker, 1961 (in Carriker and Diaz-Ungria): 33. Type-host: *Ramphastos sulfuratus brevicarinatus* Gould. New Synonymy.

*Male*.—Much as for *M. pici* (Fig. 4), with the following differences. Inner middorsal head setae slightly posterior to outer setae (Fig. 16); latero-posterior postmental setae somewhat longer (Fig. 15); gular plate (Fig. 15) evenly pigmented except clearer around setal bases, rounded, with 2 + 2 setae. Pronotal margin with 15-21 setae, including 12-14 long, 3-7 short setae. Metasternal plate with 12-17 setae. Tergal setae: I, 12-14; II-IV, 15-19; V-VI, 15-22; VII, 13-17; VIII, 9-10. Terminal segments as in Fig. 19; portion of subgenital plate posterior to VIII with 17-22 setae. Genitalia (Fig. 17) 0.52-0.60 long, 0.07-0.09 wide, with very long relatively straight pointed parameres, narrow endomeral plate, and genital sac without evident sclerites.

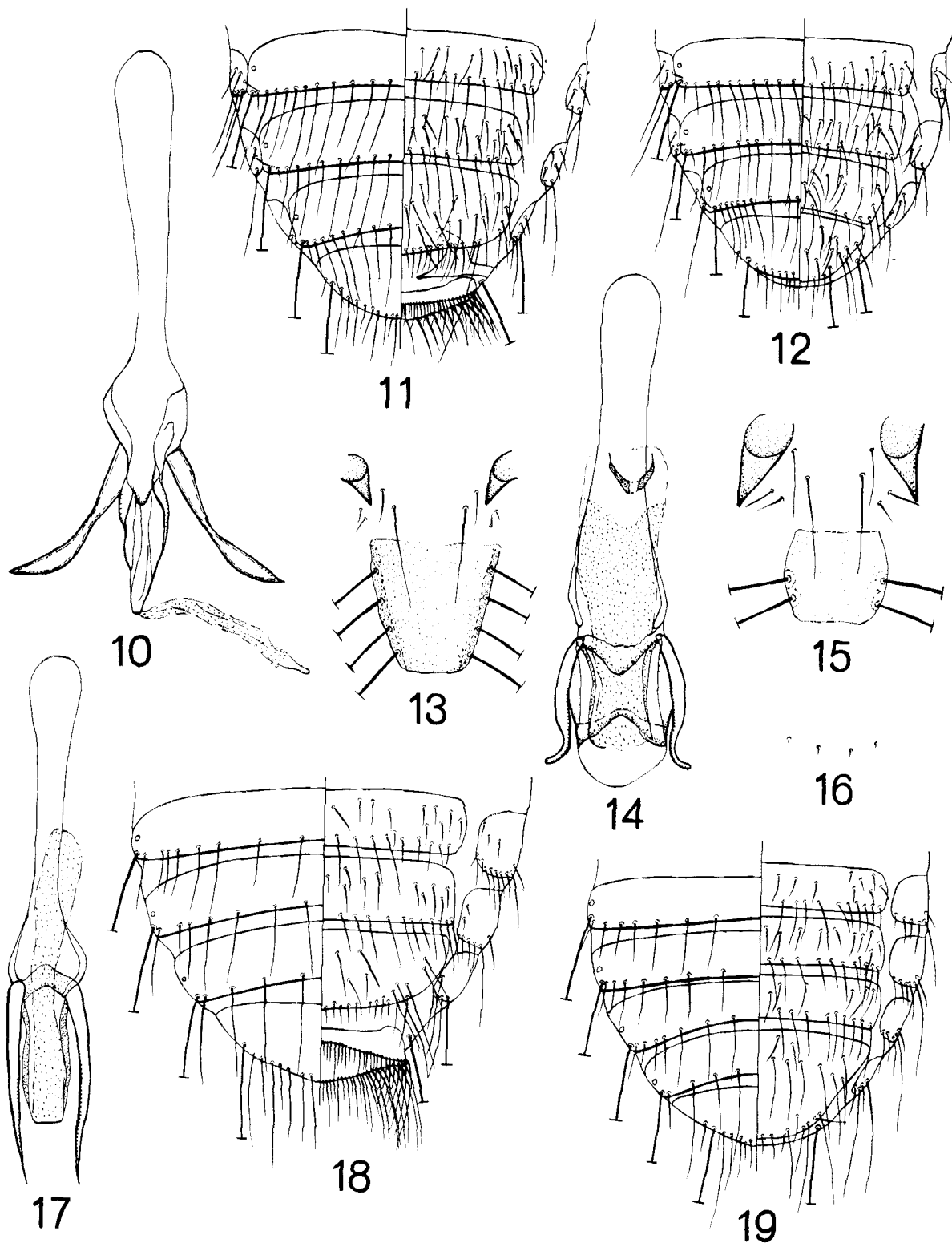


FIG. 10.—*M. extraneus*, male genitalia.  
FIG. 11-14.—*M. campephili*. 11, female terminalia; 12, male terminalia; 13, medioventral head; 14, male genitalia.  
FIG. 15-19.—*M. balfouri* (ex *R. sulfuratus*). 15, medioventral head; 16, middorsal head setae; 17, male genitalia; 18, female terminalia; 19, male terminalia.

*Female*.—Close to male, except terminal segments as in Fig. 18. Sternal setae on VII, 39–48. Subgenital plate with 40–50 setae. Anus with 54–63 ventral, 62–65 dorsal fringe setae.

*Dimensions*.—Preocular width, male 0.47–0.50, female 0.51–0.54; temple width, male 0.60–0.63, female 0.64–0.69; prothorax width, male 0.41–0.47, female 0.48–0.53; metathorax width, male 0.51–0.55, female 0.57–0.62; total length, male 1.83–1.99, female 1.90–2.24.

*Remarks*.—Representing the only known *Menacanthus* on the toucans (Ramphastidae), *M. balfouri* is grossly separable from the other species by having only 2 + 2 gular setae and by the distinctively different male genitalia. Subtler differences in setal position and number further support this. On the basis of material known to date, we can find no morphological evidence for recognizing the subspecific populations named by Carriker (1961, in Carriker and Diaz-Ungria).

*Material Examined*.—1 ♂, 1 ♀, *Ramphastos ambiguus* Swainson, Colombia; 1 ♂ (holotype of *M. b. cauceae*), *R. citreolaemus*, Colombia; 2 ♂, 1 ♀ (holotype ♂ and 1 ♂, 1 ♀ paratypes of *M. b. cuvieri*), *R. cuvieri*, Peru; 3 ♂, 8 ♀, *R. dicolorus* L., Brazil; 4 ♂ (including ♂ holotype of *M. b. waterstoni*), 2 ♀, *R. swainsonii*, Canal Zone, Colombia, Panama; 4 ♂ (including ♂ holotype of *M. b. prolongus*), 5 ♀, *R. sulfuratus* Lesson, Colombia, Costa Rica, Mexico, Nicaragua; 1 ♀, *R. tucanus* L., Venezuela; 2 ♂, 3 ♀, *R. vitellinus* Lichtenstein, Brazil, Guyana.

#### *Menacanthus eurysternus* (Burmeister)

*Menopon eurysternum* Burmeister, 1838: 439. Type-host: *Corvus pica* = *Pica pica pica* (L.).

This widely-distributed species has been discussed by Price (1975), who recorded it from numerous families of the Passeriformes as well as from 3 genera and 5 species of Piciformes. We will not needlessly repeat any of this information other than point out the occasional presence of *M. eurysternus* on piciform hosts and refer the reader to the earlier work for details of morphology, synonymies, and host distribution.

#### *Nomina Dubia*

*Menopon caudatum* Giebel, 1876: 529. Type-host: *Galbula ruficauda* Cuvier.

According to Hopkins and Clay (1952), this species has been referred to the piciform *Menacanthus* with great doubt. A useless description and the absence of any lice from this host prevent us from contributing to its identity.

*Menopon picicola* Packard, 1873: 731. Type-hosts: *Picoides arcticus* (Swainson) and *P. tridactylus dorsalis* Baird.

No type-specimens of *M. picicola* or other representatives from these hosts have been available to us.

#### KEY TO SPECIES OF PICIFORM *Menacanthus*

1. Ventral spinous head processes short, less than 0.06 long (Fig. 8, 13); male genitalia as in Fig. 6, 10,

- or 14..... 2
- Ventral spinous head processes long, more than 0.06 long; male genitalia otherwise..... 4
2. Female with fewer than 30 setae in dorsal anal fringe (Fig. 11); male genitalia with parameres, endomerter plate, and genital sac sclerite as in Fig. 14..... *campephili*
- Female with more than 40 setae in dorsal anal fringe (Fig. 7); male genitalia with parameres, endomerter plate, and genital sac sclerite as in Fig. 6 or 10..... 3
3. Male genitalia with endomerter plate and parameres shaped as in Fig. 6; female subgenital plate with fewer than 30 marginal setae..... *crsanguis*
- Male genitalia as in Fig. 10, with narrower endomerter plate and parameres constricted medially; female subgenital plate with more than 30 marginal setae..... *extraneus*
4. Gular plate with 2 + 2 setae (Fig. 15); male genitalia with sharply pointed parameres extending well beyond endomerter plate (Fig. 17)..... *balfouri*
- Gular plate with 4 + 4 setae; male genitalia with shorter blunt parameres extending at most only slightly beyond endomerter plate..... 5
5. Pleurites III–VI with predominantly stout marginal setae and few, if any, anterior setae; gular pigmentation not extending laterally to setal bases; female subgenital plate with strongly serrated medioposterior margin..... *eurysternus*
- Pleurites III–VI with normal fine marginal setae and with scattered anterior setae; gular pigmentation laterally surrounding setal bases; female subgenital plate with essentially smooth medioposterior margin..... *pica*

#### REFERENCES CITED

- Burmeister, H. C. C. 1838. Mallophaga. Handbuch Entomol. 2: 418–43.
- Carriker, M. A., Jr. 1967. Posthumous papers of Melbourne A. Carriker, Jr. I. The mallophagan genus *Menacanthus* (Insecta: Menoponidae) parasitic on the woodpeckers (Aves: Picidae). U. S. Nat. Mus. Bull. No. 248: 1–21.
- Carriker, M. A., Jr., and C. Diaz-Ungria. 1961. New and little known Mallophaga from Venezuelan birds (Part I). Nov. Cient. Ser. Zool. 28: 1–60.
- Clay, T. 1969. A key to the genera of the Menoponidae (Amblycera: Mallophaga: Insecta). Bull. Brit. Mus. (Nat. Hist.) Entomol. 24: 1–26.
- Denny, H. 1842. Monographia Anoplurorum Britanniae. Henry G. Bohn, London. 262 pp.
- Durrant, E. P. 1908. Descriptions of new Mallophaga. III. Ohio Nat. 8: 355–8.
- Eichler, W. 1953. Notulae Mallophagologicae. XII. Neue Menacanthinae. Beitr. Vogelk. 3: 166–83.
- Giebel, C. 1876. Zwei neue Epizoen (*Nirmus sulphureus* und *Menopon caudatum*) von Trogon und *Galbula ruficauda*. Z. Ges. Naturwiss. 47: 528–9.
- Hopkins, G. H. E., and T. Clay. 1952. Check List of the Genera & Species of Mallophaga. Brit. Mus. (Nat. Hist.). London. 362 pp.
- Kellogg, V. L. 1899. New Mallophaga, III. Mallophaga from birds of Panama, Baja California and Alaska. Occ. Pap. Calif. Acad. Sci. 6: 3–52.
- Packard, A. S. 1873. Descriptions of new species of Mallophaga collected by C. H. Merriam while in the government geological survey of the Rocky

- Mountains, Professor F. V. Hayden, United States geologist. Rep. U. S. Geol. Surv. 1872: 731-4.
- Paine, J. H., and W. M. Mann.** 1913. Mallophaga from Brazilian birds. *Psyche* 20: 15-23.
- Peters, J. L.** 1948. Check-list of the birds of the world, vol. 6. Cambridge, Mass. 259 pp.
- Piaget, E.** 1880. Les Pédiculines. Essai monographique. E. J. Brill, Leide. 714 pp.
- Price, R. D.** 1975. The *Menacanthus curysternus* complex (Mallophaga: Menoponidae) of the Passeriformes and Piciformes (Aves). *Ann. Entomol. Soc. Am.* 68: 617-22.
- Waterston, J.** 1915. On two new species of Mallophaga (Menoponidae) *Menacanthus balfouri* n. sp. and *Myrsidea victrix* n. sp. from Colombia. *Entomol. Mon. Mag.* 51: 12-6.

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