THE MENACANTHUS (MALLOPHAGA: MENOPONIDAE) OF THE PASSERIFORMES (AVES)¹

By Roger D. Price²

Abstract: Twenty-eight species of Menacanthus are recognized, discussed, and keyed. These include 7 new species with the following type-hosts: M. sternellae from Sturnella magna, M. quisali from Quiscalus quiscula, M. tyranni from Tyrannus verticalis, M. obsoleti from Salpinetes obsoletus, M. aerdenis from Troglydtes aerden, M. dendroicae from Dendroica discolor, and M. geothybis from Geothlypis trichas. There are 23 new synonyms and 6 names listed as nomina dubia. Neotypes are erected for Pediculus capucinae Schrank and Menopon pusillum Nitzsch; lectotypes are designated for Colpocephalum chrysophanum Kellogg and Menopon distinctum Kellogg & Chapman.

To date, 94 specific and subspecific names of the genus Menacanthus Neumann have been applied to lice whose type-host is within the perching-bird order Passeriformes. Since there has been no critical review of these lice, other than that by Price (1975) of those in the M. eurysternus complex, I have studied these Menacanthus to determine the status of the existing names, to redescribe as necessary 21 previously recognized species, to describe 7 new species, and to provide a key for the identification of these 28 species.

In the following descriptions, morphological terminology and numbers of certain head and prothoracic setae are essentially as given by Clay (1969). Measurements are in millimeters. Unless stated to the contrary, reference to tergites, pleurites, and sternites pertains to the abdomen and illustrations are prepared from type-host material. Abbreviations for dimensions are POW (preocular width), TW (temple width), PW (prothorax width), MW (metathorax width), TL (total length), GL (genitalia length), GW (genitalia width), and GSL (genital sac sclerite length). Descriptive features

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for the male are restricted only to those differing from the female. The host nomenclature for the most part follows that of J. L. Peters’ *Check-list of the Birds of the World* for the volumes issued to date, and other sources for portions not covered therein.

The species treated here share the following characteristics and these will not be repeated for the individual descriptions.

**Head.** Widest across temples, with rounded anterior margin; with precocular 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 (FIG. 11); long occipital setae 21, 22, and 23, with alveoli in straight line; long to very long marginal temple setae 24, 27, 29, and 31; dorsal seta 16 medio to medioanterior to setae 14 and 15 and sensillum e; inner middorsal seta 17 slightly longer than and medioanterior to minute outer middorsal seta 18. Antenna with slightly expanded pedicel, and undivided terminal segment, mostly concealed beneath head. Several widely spaced subocular setae preceding comb row (FIG. 16); hypopharyngeal sclerites weakly developed, with variable “holes” (FIG. 9, 10). Each side with ventral spinous process, usually sharply pointed, arising near base of maxillary palpus. Thorax. Pronotal margin typically with 12 long, 4 short setae; prosternal plate moderately developed, usually without setae other than 1 + 1 anterior to it. Normal vertically oblong postnotum. Mesothorax not as sclerotized ring; 4 medioanterior mesonotal setae, alveoli of pair close together on each side. Metanotum with 2 medioanterior setae. Ventral femur III with sparse brush. *Abdomen.* Tergites I–II with short seta lateral to postspiracular seta; postspiracular seta very long on II–VIII, somewhat shorter on 1; tergites I–VIII of equal lengths, undivided, and usually without anterior setae. Pleurites without prolonged ventroposterior corners or internal thickenings. Anus of *♀* essentially oval, without inner setae; sternites VII–VIII not fused; without evident genital chamber structure. *♂* genitilia essentially symmetrical, with broad expanded basal apodeme and spicate sac with variably variable associated sclerites.

Price (1975, 1976) has treated 4 species—*M. eurysternus* (Burmeister), *M. merisowi* Eichler, *M. nelsoni* Price, and *M. elbeli* Price—and the reader is referred to those papers for descriptions, synonymies, and a host listing. With 39 names placed in synonymy with *M. eurysternus,* this group of 4 species accounts for 43 total names. The present paper deals with the status of the remaining 51 names.

**Menacanthus menura** (LeSouëf & Bullen)  
**FIG. 1**


*♂.* Ventral spinous head process 0.06–0.07 long (length=ξ; FIG. 25). Metanotum with 4–5 lateroanterior setae (LS: FIG. 2) on each side and 12 marginal setae; meso- and metathoracic plates with 11–13 setae. Tergal setae: I, 16–18; II, 18–23; III–VII, 20–26; VIII, 14–16; IX (last tergite), 21–24. Pleurites with anterior setae. Sternal setae: I, 2–4; II, 26–35; III, 45–60; IV–V, 66–48; VI, 55–68; VII, 45–56; subgenital plate, 36–47, with smooth medioposterior margin. Ventral and dorsal anal fringes of 63–76 setae. Dimensions: POW 0.45–0.46; TW 0.61–0.63; PW 0.47–0.51; MW 0.58–0.63; TL 1.94–2.25.

♀. Last tergite (IX) with 16–19 setae. Sternite VIII with 26–28 setae, subgenital plate with 20. Genitalia (FIG. 1) long, slender, with relatively straight pointed parameres, evenly rounded endomeral plate, and 2 long, slender sclerites associated with sac. Dimensions: GL 0.56–0.63; GW 0.07–0.10; GSL 0.15–0.16.

Material examined: 8 ♀, 15 ♂, ex *M. novaehollandiae* Latham, New South Wales.

**Menacanthus gonophaeus** (Burmeister)  
**FIG. 2–4**


**New synonymy.**


**New synonymy.**


**New synonymy.**


**New synonymy.**


**New synonymy.**

♀. Tergal setae: I, 17–24; II–VII, 19–33; VIII, 15–20; IX, 15–18. Sternal setae: I, 3–7; II, 37–44; III–VI, 52–97; VII, 39–60; VIII, 20–33; subgenital plate, 21–27. Terminalia as in FIG. 4; genitalia as in FIG. 3. Dimensions: POW 0.47–0.54; TW 0.59–0.69; PW 0.45–0.52; MW 0.52–0.60; TL 1.79–2.23; GL 0.54–0.64; GW 0.10–0.13; GSL 0.16–0.21.

Material examined: 1 ♀, 1 ♂, ex *C. corax,* Morocco; 6 ♀, 4 ♂, ex *C. albus,* Liberia, Mozambique; 4 ♀, 4 ♂, ex *C. coronoides* Vigors & Horsfield, Australia; 2 ♀, 2 ♂, ex *C. frugilegus,* England; 2 ♀, 1 ♂, ex *C. macrorhynchos,* Taiwan, Thailand; 40 ♀, 15 ♂, ex *Pyrhocorax pyrrhocorax* (Linnaeus), Nepal.

The following 12 species have (1) only 2 lateroanterior setae on each side of the metanotum; (2)
FIG. 1–14. *Menacanthus menura*: (1) ♂ genitalia. *M. gonophaeus* (ex *Pyrrhocorax pyrrhocorax*): (2) ♀; (3) ♂ genitalia; (4) ♂ terminalia. *M. distinctus*: (5) ♂ medioventral head; (6) ♂ genitalia. *M. camelinus*: (7) ♂ genital sac sclerite (ex *Lanius collurioideus*); (8) ♀ ventral spinous head process (ex *L. collurio*); (9) ♀ hypopharyngeal sclerites (ex *L. collurio*). *M. alaudae*: (10) ♀ hypopharyngeal sclerites; (11) ♀ left temple margin; (12) ♂; (13) ♂ genitalia, sac extruded; (14) ♂ genitalia (ex *Eremophila alpestris*).
pleurites typically with several anterior setae distributed over the surface of the plate; (3) subgenital plate with smooth medioposterior margin (SGP: fig. 19); and (4) genitalia with apical portion of parameres gently curved outwardly and endosomal plate bluntly rounded (fig. 6, 13, 14, 21, 22, 30). Most species close to fig. 6 unless stated to the contrary.

**Menacanthus camelinus** (Nitzsch) FIG. 7–9


*Menopon setosum* Piaget, 1885, *Pediculinae Suppl.*: 103. Type-host: *Cocothraustes vulgaris* = *C. cocciothraustes* (Linnaeus)—probably error. Most likely *Lanius*. **New synonymy.**


♀. With small, blunt ventral spinous head process (fig. 8), only 0.03–0.04 long. Ocular seta 19 (fig. 2) slender, 0.03–0.04 long. Metanotum with 10 marginal setae; mesosternal plate with 11–15 setae; metasternal plate with 8–13. Tergal setae: I, 11–13; II–III, 12–16; IV, 12–18; V–VII, 13–17; VIII, 8–12; IX, 12–18. Sternal setae: I–II, 2–3; II, 11–12; III, 13–14; IV–V, 34–47; VI, 29–42; VII, 20–27; subgenital plate, 19–26. Ventral anal fringe of 30–43 setae, dorsal of 25–32. Dimensions: POW 0.41–0.43; TW 0.50–0.56; PW 0.35–0.41; MW 0.41–0.49; TL 1.59–1.90.

♂. Tergal setae: II–VII, 11–14; VIII, 8–10; IX, 10–11. Sternal setae: III, 18–29; IV–V, 23–35; VI, 19–29; VII, 11–18; VIII, 9–14; subgenital plate, 4–9. Genitalia much as in fig. 13 or 14, except sac sclerite as in fig. 7. Dimensions: POW 0.38–0.41; TW 0.45–0.50; PW 0.32–0.35; MW 0.35–0.40; TL 1.33–1.54; GL 0.35–0.41; GW 0.08–0.09; GSSL 0.10.

Material examined: 2 ♂, 1 ♀, 9 ♀, ex *L. excubitor*, India; 7 ♂, 3 ♀, ex *L. collurio*, Egypt; 23 ♂, 9 ♀, ex *L. collurio*ides Lesson, Thailand; 47 ♂, 13 ♀, ex *L. cristatus* Linnaeus, India, Philippines, Taiwan, Thailand; 52 ♂, 31 ♀, ex *L. ludovicianus* Linnaeus, Canada, Mexico, U.S.A.; 3 ♂, 3 ♀, ex *L. minor*, Fair Isle, Roumania; 2 ♂, 3 ♀, ex *L. rubicic Lichtenstein, Israel; 14 ♂, 12 ♀, ex *L. schach* Linnaeus, India, Nepal, Taiwan, Thailand; 1 ♂, 1 ♀, ex *L. senator* Linnaeus, Spain; 1 ♀, ex *L. viitatus* Valentie, India; 1 ♂, type of *M. guldum*, India; 2 ♀, lectotype and paratype of *M. setosum*, Piaget collection.

**Menacanthus alaudae** (Schranksk) FIG. 10–19


*Menopon carduelis* Denny, 1842, *Monogr. Anopl.* Br.: 201, 228. Type-host: *Fringilla carduelis* = *Carduelis carduelis* britannicus (Hartert). **New synonymy.**


*Menopon perforatum* Piaget, 1880, *Pediculinae*: 454. Type-host: *Eremophila chrysolema* = *E. alpensis chrysolema* (Wagler). **New synonymy.**

*Menopon alaskensis* Kellogg & Chapman, 1902, *J. N. Y. Entomol. Soc.* 10: 27. Type-host: *Cinclus mexicanus* & *Picoletinae neonucator* = *C. m. unicolor* Bonaparte & *P. e. flammea* Homeyer. **New synonymy.**

♀. As in fig. 15. Ventral spinous head process sharply pointed, 0.035–0.06 long (fig. 17). Ocular seta 19 slender, 0.02–0.05 long. Gular plate weakly pigmented (fig. 17). Metanotum with 11–12 marginal setae; mesosternal and metasternal plates with 7–14 setae. Tergal setae: I, 12–17; II–III, 13–23; IV–V, 16–24; VI–VII, 14–22; VIII, 10–16; IX, 14–19. Sternal setae: I, 2–5; II, 13–24; III–VI, 26–41; VII, 17–27; subgenital plate, 24–31. Ventral anal fringe of 31–45 setae, dorsal of 19–33. Dimensions: POW 0.34–0.38; TW 0.40–0.47; PW 0.31–0.36; MW 0.39–0.44; TL 1.51–1.65.

♂. As in fig. 12. Tergal setae: II–VII, 12–19; VIII, 9–13; IX, 10–19. Terminalia as in fig. 18. Sternal setae: VII, 10–23; VIII, 9–15; subgenital plate, 12–28. Genitalia as in fig. 13 or 14. Dimensions: POW 0.32–0.36; TW 0.38–0.44; PW 0.28–0.33; MW 0.34–0.40; TL 1.18–1.52; GL 0.39–0.83; GSSL 0.07–0.10; GSSL 0.09–0.13.

Material examined: 1 ♂, 1 ♀ (neoparatypes of *P. alaudae*), ex *Alaude arvensis*, England; 1 ♀ (type of *M. alaskensis*), ex *Picoletinae neonucator* (Linnaeus), Kodiak Is.; 12 ♀, 4 ♀, ex *Acanthis flammata* (Linnaeus), Alaska, Canada; 10 ♀, 7 ♀, ex *Carduelis pinus* (Wilson), U.S.A.; 10 ♀, 2 ♀, ex *C. tristis* (Linnaeus), Canada, U.S.A.; 1 ♂, 1 ♀, ex *C. carduelis* (Linnaeus), England; 3 ♀, 1 ♀, ex *Cardpodaus roseus* (Pallas), Korea; 2 ♀, ex *C. mexicanus* (Muller), U.S.A.; 1 ♂, 1 ♀, ex *C. erythinus* (Pallas), Nepal; 1 ♂, 1 ♀, ex *Emberiza fuca Pallas*, Korea; 9 ♀, 1 ♂, ex *Eremophila alpensis* (Bonaparte), U.S.A.; 5 ♀, 2 ♀, ex *Galerida cristata* (Linnaeus), Egypt, Hungary, Korea; 16 ♀, 7 ♀, ex *Leucosticte arcta*
FIG. 15–27. *Menacanthus alaudae*: (15) ♀; (16) ♀ subocular setae; (17) ♀ medioventral head; (18) ♂ terminalia; (19) ♀ ventral terminalia. *M. sternellae*: (20) ♂ genital sac sclerite; (21) ♂ genitalia. *M. quisculi*: (22) ♂ genitalia; (23) ♂ medioventral head. *M. eurytremus*: (24) ♀ gular plate. *M. curucæ*: (25) ♀ medioventral head; (26) ♂ genitalia (ex *Syloia borin*); (27) ♀.
(Pallas), U.S.A.; 3 ♂♂, 3 ♀♀, ex Plectophenax nivalis (Linnaeus), England, U.S.A.; 1 ♀, 2 ♂♂, ex Plocepasser mahali Smith, Mozambique; 1 ♀, 3 ♂♂, ex Sternella neglecta Audubon, U.S.A.; 1 ♀, 1 ♂, ex S. magna (Linnaeus), U.S.A.

**Menacanthus exilis** (Nitzsch)


♀. As for *M. alaudae*, except for short ventral spiny head process, 0.025 mm, with blunt tip, much as in FIG. 8.

♂. Unavailable.

**Material examined**: 4 ♀♀, ex O. oenanthe, Morocco.

**Menacanthus sturnellae** Price, n. sp.

FIG. 20, 21

Type-host: *Sternella magna* (Linnaeus).

♀. Ventral spiny head process 0.04–0.05 long. Occular seta 19 slender, about 0.05 mm. Weak gular plate without evident pigmentation. Metanotum with 12 marginal setae; meso- and metapleural plate with 11–13 setae, metasternal with 6–10. Tergal setae: I, 12–13; II, 15–18; III, 17–19; IV–VI, 18–22; VII, 16–19; VIII, 13–14; IX, 18–21. Sternal setae: I, 2–4; II, 18–26; III–VI, 34–55; VII, 27–43; subgenital plate, 34–42. Ventral anal fringe of 45–52 setae, dorsal of 34–45. Dimensions: POW 0.40–0.43; TW 0.53–0.57; MW 0.40–0.44; MW 0.51–0.56; TL 1.93–2.05.

♂. Tergal setae: III, 15–17; IV–V, 16–19; VI, 15–18; VII, 12–16; VIII, 9–12; IX, 13–15. Sternal setae: V, 33–45; VI, 28–36; VII, 10–24; VIII, 10–16; subgenital plate, 13–17. Genitalia (FIG. 21) with prominent, large, well-pigmented sac sclerite, in lateral view much as in FIG. 21, front view as in FIG. 20. Dimensions: POW 0.39–0.41; TW 0.50–0.53; MW 0.37–0.40; MW 0.45–0.48; TL 1.68–1.82; GL 0.44–0.51; MW 0.09–0.11; GSSL 0.14–0.15.

**Material examined**: Holotype ♂, ex Meadow Lark (*S. magna*), Alachua Co., Florida, U.S.A., 22.II.1954, F. W. Mead, 543-96348; in collection of the U.S. National Museum of Natural History. Paratypes (all from *S. magna*): 69 ♀♀, 25 ♂♂, U.S.A.—Florida, Georgia, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas. Other material: 18 ♀♀, 14 ♂♂, ex S. neglecta, U.S.A.

**Menacanthus quiscali** Price, n. sp.

FIG. 22, 23

Type-host: *Quiscalus quiscula* (Linnaeus).

♀. Close to *M. sturnellae*, except as follows. Gular plate pigmented, with large, lighter, completely enclosed central area (FIG. 23). Tergal setae: I, 16–22; II–VI, 18–27; VII, 16–24; VIII, 13–18; IX, 18–24. Sternal setae: I, 18–34; III–VI, 37–72; VII, 35–56; subgenital plate, 34–48. Ventral anal fringe of 38–50 setae, dorsal of 28–40. Dimensions: POW 0.40–0.42; TW 0.50–0.56; MW 0.39–0.44; MW 0.48–0.57; TL 1.75–2.26.


Dimensions: POW 0.37–0.39; TW 0.45–0.49; MW 0.38–0.42; TL 1.43–1.54; GL 0.38–0.48; GW 0.08–0.09; GSSL 0.12–0.14.


**Menacanthus tyranni** Price, n. sp.

Type-host: *Tyranus verticalis* Say.

♀. Ventral spiny head process 0.04–0.05 long. Occular seta 19 slender, 0.04–0.06 long. Gular plate weakly pigmented. Metanotum with 12 marginal setae; mesosternal plate with 13–19 setae, metasternal with 9–17. Tergal setae: I, 16–18; II–VI, 21–28; VII, 19–24; VIII, 15–19; IX, 17–21. Sternal setae: I, 3–6; II, 29–39; III–IV, 50–85; V–VI, 46–76; VII, 38–57; subgenital plate, 34–55. Ventral anal fringe of 48–58 setae, dorsal of 44–53. Dimensions: POW 0.38–0.43; TW 0.40–0.54; MW 0.35–0.41; MW 0.46–0.52; TL 1.55–1.81.

♂. Tergal setae: II–VI, 17–25; VIII, 15; IX, 16–19. Sternal setae: III, 46–60; V–VI, 43–63; VII, 32–43; VIII, 16–20; subgenital plate, 17–21. Dimensions: POW 0.36–0.39; TW 0.46–0.49; MW 0.32–0.36; MW 0.38–0.43; TL 1.37–1.51; GL 0.41–0.47; GW 0.07–0.08; GSSL 0.13–0.15.

**Material examined**: Holotype ♂, ex *T. verticalis*, Delta, Manitoba, Canada, 2.VIII.1961, D. Olson, 127; in collection of the University of Minnesota. Paratypes: 13 ♀♀, 3 ♂♂, same data as holotype. Other material: 2 ♀♀, 1 ♂, ex *T. tyranni* (Linnaeus), U.S.A.; 4 ♀♀, ex *T. dominicensis* (Gmelin), Puerto Rico, West Indies.

**Menacanthus chrysophaeus** (Kellogg)


♀. Ventral spiny head process 0.03–0.04 long. Occular seta 19 slender, 0.02–0.03 long. Gular plate weak to pigmented along lateral margins. Metanotum with 10–11 marginal setae; mesosternal and metasternal plates with 8–10 setae. Tergal setae: I, 12–15; II–VI, 15–21; VII, 10–15; IX, 15–16, with both short and long inner posterior setae, much as in FIG. 27. Sternal setae: I, 2–3; II, 19–24; III–VI, 28–39; VII, 20–31; subgenital plate, 25–30. Ventral anal fringe of 36–40 setae, dorsal of 25–32. Dimensions: POW 0.37–0.38; TW 0.46–0.49; MW 0.33–0.35; MW 0.42–0.45; TL 1.46–1.58.

♂. Tergal setae: II–VI, 13–17; VIII, 9–11; IX, 12–13. Sternal setae: II, 17–18; III–VI, 20–30; VII, 14–18; VIII, 9–13; subgenital plate, 9–11. Dimensions: POW 0.33–0.35; TW 0.42–0.43; MW 0.29–0.30; MW 0.34–0.36; TL 1.09–1.18; GL 0.32–0.34; GW 0.07–0.08; GSSL 0.10.
A ♀ from the type-series of *C. chrysophaeum* (ex *M. f. samuelis*, Palo Alto, Calif., V.L.K., Stanford, 1896, 364A, N.M. II) has been designated as lectotype and is in the collection of the University of California, Berkeley.

**Material examined:** 55 ♀♀, 13 ♂♂ (including lectotype ♀ and 2 ♀, 1 ♂ paralecotypes of *C. chrysophaeum*), ex Z. melodia (Wilson), U.S.A.; 6 ♀♀, 1 ♂, ex Z. georgiana (Latham), U.S.A.; 1 ♀, ex Z. iliaca (Merrem), U.S.A.; 3 ♀♀, 3 ♂♂, ex Spizella pusilla (Wilson), U.S.A.; 1 ♀, 1 ♂, ex *S. arborea* (Wilson), U.S.A.

**Menacanthus nogoama** Uchida


♀. Ventral spinous head process 0.02–0.03 long. Ocular seta 19 slender, 0.02 long. Gular plate pigmented, with lighter central “hole.” Metanotum with 10–11 marginal setae; mesosternal plate with 11–12 setae, metasternal plate with 3–8. Tergal setae: I, 12–13; II–VI, 13–17; VII, 12–14; VIII, 9–12; IX, 14–15, with inner posterior setae (IPS: FIG. 34) all subequal long. Sternal setae: I, 1–2; II, 14–18; III–VI, 23–31; VII, 18–24; subgenital plate, 23–30. Ventral anal fringe of 37–44 setae, dorsal of 23–28. Dimensions: POW 0.39–0.35; TW 0.41–0.43; PW 0.29–0.31; MW 0.36–0.39; TL 1.39–1.48.

♂. Tergal setae: II–VI, 12–16; VII, 10–11; VIII, 9–10; IX, 10–12. Sternal setae: II, 11–18; III–VI, 18–29; VII, 12–17; VIII, 9–10; subgenital plate: 6–11. Dimensions: POW 0.30– 0.33; TW 0.38–0.40; PW 0.27–0.29; MW 0.31–0.34; TL 1.14–1.22; GL 0.33–0.35; GW 0.07–0.08; GSL 0.10.

**Material examined:** 11 ♀♀, 7 ♂♂, ex *E. calliope*, Hong Kong, Philippine Is, Thailand; 6 ♀♀, 2 ♂♂, ex *E. cyanus* (Pallas), Malaya; 2 ♂♂, ex *E. cyanurus* (Pallas), Formosa; 5 ♀♀, 6 ♂♂, ex *E. johnstoniae* (Ogilvie-Grant), Formosa; 1 ♀, ex *Cincidium leucurum* (Hodgson), Thailand; 3 ♀♀, 1 ♂, ex *Motacilla alba* Linnaeus, Formosa.

**Menacanthus pusillus** (Nitzsch)

*Menopon pusillus* Nitzsch, 1866, Z. Gesammtent Naturwiss. 27: 120. Type-host: *Motacilla alba* Linnaeus.


♀. Ventral spinous head process 0.05–0.07 long. Ocular seta 19 slender, 0.02–0.03 long. Gular plate weak. Metanotum with 10 marginal setae; mesosternal plate with 10–12 setae, metasternal plate with 7–9. Tergal setae: I, 13–18; II–V, 17–22; VI–VII, 15–22; VIII, 10–14; IX, 14–15, with inner posterior setae subequal long. Sternal setae: I, 2–3; II, 19–27; III–VI, 29–60; VII, 27–35; subgenital plate, 21–28. Ventral anal fringe of 36–45 setae, dorsal of 21–27. Dimensions: POW 0.33–0.38; TW 0.43–0.48; PW 0.33–0.38; MW 0.40–0.46; TL 1.57–1.51.

♂. Tergal setae: I, 12; II–VI, 12–18; VII, 12–15; VIII, 8–10; IX, 12. Sternal setae: II, 14–20; III–VI, 19–39; VII, 8–16; VIII, 6–8; subgenital plate, 6–11. Dimensions: POW 0.34–0.35; TW 0.42–0.45; PW 0.31–0.35; MW 0.38–0.41; TL 1.28–1.30; GL 0.37–0.38; GW 0.06–0.07; GSL 0.07–0.08.

With the type of *Menopon pusillus* lost and with the apparent presence of 2 species of *Menacanthus* on *Motacilla alba*, it is advisable to erect a neotype to stabilize the identity of *M. pusillus*. I have selected as neotype the ♂ off *M. alba* from Switzerland; the European material with the long ventral spinous head process is most likely representative of that on which Nitzsch based his description, rather than the Asiatic species, *M. nogoama*, with the much shorter ventral spinous head process.

**Material examined:** Neotype ♂, ex *M. alba*, Meiringen, Switzerland, 20.V.1955, W. Böttiker, 1089, Br. Mus. 1966–575; in collection of the British Museum (Natural History). Neoparatypes (all from *M. alba*): 6 ♀♀, 2 ♂♂, England, Switzerland. Other material: 5 ♀♀, 2 ♂♂, ex *M. flavula* Linnaeus, Egypt, Spain; 2 ♀♀, 4 ♂♂, ex *M. aguimp* Dumont, Mozambique; 8 ♀♀, 3 ♂♂, ex *Anthus trivialis*, Egypt; 9 ♀♀, 3 ♂♂, ex *A. hodgsoni* Richmond, India, Korea, Thailand; 6 ♀♀, 3 ♂♂, ex *A. novaeselandiae* (Gmelin), South Africa, Thailand; 1 ♀, 1 ♂, ex *A. pratensis* (Linnaeus), England; 4 ♀♀, 3 ♂♂, ex *A. spinolleta* (Linnaeus), Canada, U.S.A.

**Menacanthus distinctus** (Kellogg & Chapman)

**FIG. 5, 6**


♀. Ventral spinous head process very small, 0.015–0.025 long. Ocular seta 19 slender, 0.04–0.05 long. Gular plate with dark pigmentation laterally and anteriorly, as inverted "L" (FIG. 5). Metanotum with 11–12 marginal setae; mesosternal plate with 11–14 setae, metasternal plate with 9–10. Tergal setae: I, 13–16; II–IV, 16–22; V–VI, 21–25; VII, 18–22; VIII, 14–15; IX, 18–21. Sternal setae: I, 2–3; II, 20–24; III–VI, 31–48; VII, 26–34; subgenital plate, 27–30. Ventral anal fringe of 41–47 setae, dorsal of 36–44. Dimensions: POW 0.34–0.35; TW 0.44–0.45; PW 0.31–0.32; MW 0.38–0.41; TL 1.36–1.48.

♂. Tergal setae: I, 12–14; II–VII, 16–20; VIII–IX, 12–15. Sternal setae: VII, 23–28; VIII, 10–14; subgenital plate, 15–18. Genitalia as in FIG. 6. Dimensions: POW 0.33–0.35; TW 0.42–0.43; PW 0.29–0.30; MW 0.32–0.37; TL 1.22–1.33; GL 0.37–0.39; GW 0.07–0.08; GSL 0.10–0.11.

A ♀ from the type-series of *Menopon distinctum* (ex *Miarychus cinerascus*, Palo Alto, Stanford 97, B.C., 665c, N.M. III) has been designated as lectotype and is in the collection of the University of California, Berkeley. This thereby establishes *M. cinerascus* as the type-host.

**Material examined:** 22 ♀♀ (including lectotype ♀}
FIG. 28–40. *Menacanthus auruscens*: (28) ♂; (29) ♀ ventral terminalia. *M. assemi*: (30) ♂ genitalia. *M. takayamae*: (31) ♀ medioventral head (ex *Phyllocoptes* sp.); (32) ♀ ventral terminalia (ex *Achoroecidus ochotensis*); (33) ♀ ventral terminalia (ex *Phyllocoptes* sp.). *M. aurapillus*: (34) ♀ terminalia; (35) ♂ medioventral head, prothorax; (36) ♂ genitalia; (37) ♂. *M. agilis* (ex *Phyllocoptes trochilis*): (38) ♀ ocular seta; (39) ♀ central pronotal setae; (40) ♀ gular plate.
and 4 ♀ paralectotypes of M. distinctum), 17 ♂♂, ex M. cinerascens, U.S.A.; 1 ♀, ex M. tuberculifer (Lafrènaye & D’Orbigny), U.S.A.; 3 ♀♀, 3 ♂♂, ex M. tyrannulus (Müller), Cuba, U.S.A.; 1 ♀, ex M. laurenzis (Giraud), Costa Rica; 1 ♀, ex M. ferox (Gmelin), Peru; 1 ♀, ex Nuttallorius borealis (Swainson), U.S.A.

Menacanthus obsoleti Price, n. sp.  
Type-host: *Salpinctes obsoletus* (Say).


♂. Tergal setae on IX, 10–13. Sternal setae: II, 18–21; III–VI, 25–30; VII, 18–24; VIII, 15–16; subgenital plate, 13–15. Dimensions: POW 0.32–0.34; TW 0.40–0.41; PW 0.29–0.30; MW 0.36; TL 1.14; GL 0.36; GW 0.07; GSL 0.10–0.11.


Menacanthus aedonis Price, n. sp.  
Type-host: *Troglocydes aedon* Vieillot.


♂. Tergal setae: I, 12–13; II–VI, 13–15; VII, 11–13; VIII, 8–10; IX, 11–12. Sternal setae: II, 17–20; III–VI, 20–27; VII–VIII, 14–19; subgenital plate, 14–16. Dimensions: POW 0.30–0.32; TW 0.37–0.40; PW 0.28–0.29; MW 0.34–0.37; TL 1.04–1.12; GL 0.35–0.41; GW 0.07; GSL 0.08–0.10.


The following 10 species have (1) at least 3 lateroanterior setae on each side of the metanotum; (2) pleurites either without anterior setae or with 1–3 anterior setae only along the mediointernal margin; (3) ♀ subgenital plate usually with strong serrations, less often with only light spiculation, along the medioposterior margin (SGP: fig. 29); and (4) ♂ genitalia with apical portion of parameres abruptly curved outwardly and endomeral plate with subapical constriction (fig. 26, 36), without much by way of significant differentiating structures for included species.

**Menacanthus curruca** (Schrank)  
**FIG. 25–29**


♀. As in fig. 27. Ventral spinous head process 0.04–0.08 long. Ocular seta 19 slender, 0.015–0.02 long. Gular plate well pigmented, with 1 to several small, lighter central "holes" (fig. 25). Metanotum with 12–13 marginal setae; mesosternal and metasternal plates with 6–12 setae. Tergal setae: I, 15–22; II–VI, 18–27; VII, 13–23; VIII, 9–14; IX, 15–20, including only 1 very long on each side extending beyond ends of anal fringe setae. Without anterior pleural setae. Sternal setae: I 2–3; II, 17–27; III–VI, 25–42; VII, 17–27; subgenital plate, 20–34. Both anal fringes of 25–44 setae. Dimensions: POW 0.36–0.39; TW 0.44–0.49; PW 0.32–0.36; MW 0.38–0.48; TL 1.25–1.66.

♂. As in fig. 28. Tergal setae: I, 14–15; II–VI, 15–20; VII, 13–15; VIII, 9–10; IX, 10–12. Sternal setae: I, 0–3; II, 15–20; III–V, 17–32; VI, 15–26; VII, 9–12; VIII, 6–8; subgenital plate, 10–18. Genitalia as in fig. 26. Dimensions: POW 0.34–0.35; TW 0.40–0.42; PW 0.28–0.30; MW 0.32–0.37; TL 1.01–1.32; GL 0.34–0.42; GW 0.07–0.09; GSL 0.06–0.09.

Clay & Hopkins (1954) called attention to the need for erection of a neotype for *P. curruca* once material becomes available from the type-host. Therefore, I designate as neotype the single ♂ I studied from *S. curruca*.

Material examined: Neotype ♂, ex *S. curruca*, Bahig, Egypt, 20.IX.1966, 854; in collection of the U.S. National Museum of Natural History. Neotype-paratypes: 3 ♀♀, ex *S. curruca*, Egypt. Other material: 3 ♀♀, 1 ♂, ex *S. atricapilla*, Egypt; 13 ♀♀, 2 ♂♂, ex *S. borin*, Egypt, Spain; 9 ♀♀, 1 ♂, ex *S. communis* Latham, Egypt, England; 2 ♀♀, ex *Aerocephalus arundinaceus* (Gmelin), Egypt, Malayia; 24 ♀♀, 12 ♂♂, ex *A. schoenoobaenus* (Linnaeus), Egypt; 10 ♀♀, 1 ♂, ex *Phyllocopus trochilis* (Linnaeus), Egypt; 28 ♀♀, 2 ♂♂, ex *Vireo flavius* Vieillot, U.S.A.; 3 ♀♀, ex *V. griseus* (Boddart), U.S.A.; 5 ♀♀, 4 ♂♂, ex
V. olivaceus (Linnaeus), U.S.A.; 5 ♀, ex V. solitarius (Wilson), Canada, U.S.A.

**Menacanthus takayamai** Uchida  
**FIG. 31–33**  

*Menacanthus cettiae* Blagoveshtchensky, 1940, Mag. Parasitol., Leningr. 8: 35. Type-host: “*Cettia cetti interposita*” = *Cettia cettioides* Hume. **New synonymy.**

♀. Close to *M. curvaceae*, differing as follows. Medioventral head as in **FIG. 31**. Metanotum with 11–13 marginal setae. Tergite I with as few as 14 setae; IX with 20–22, including 2 on each side very long and extending well beyond ends of anal fringe setae (**FIG. 32, 33**). Sternal setae as few as 16 on II, 22 on III–VI, 18 on subgenital plate; subgenital plate variable with few medioposterior setae (**FIG. 32**) to none (**FIG. 33**). Both anal fringes of 38–48 setae. Dimensions slightly smaller: POW 0.35–0.38; TW 0.43–0.48; PW 0.31–0.34; MW 0.37–0.43.

♂. Also close to *M. curvaceae*. Tergal setae up to 16 on VII. Sternal setae as few as 14 on II, up to 13 on VII and 22 on subgenital plate.

**Material examined:** 8 ♀, 1 ♂ (including 2 ♀, 1 ♀ from Uchida collection, identified as *M. takayamai*), ex *C. diphone* (Kittlitz), Japan, Korea, Taiwan; 19 ♀♀, 3 ♂♂, ex *C. canturienus* (Swinhoe), Taiwan; 5 ♀♀, 1 ♀, ex *Acrephus ochoteronis* (Middendorf), Philippine Is.; 3 ♀♀, 4 ♂♂, ex *Locustella fasciolata* (Gray), Korea; 1 ♀, ex *L. lanceolata* (Temminck), Philippine Is.; 7 ♀♀, ex *Phyllocospus* sp., Thailand.

**Menacanthus agilis** (Nitzsch)  
**FIG. 38–40**  
*Menopon agile* Nitzsch, 1866, Z. Gesammten Naturwiss. 27: 120. Type-host: “*Silvia tithe*” = *Phoenixurus ochrus gibraltariensis* (Gmelin).


♀. Ventral spinous head process 0.05–0.08 long. Ocular seta 19 stout (**FIG. 38**), 0.015–0.02 long, much like outer central pronotal seta 1 (**FIG. 39**). Gula well pigmented, with lighter deep, open posterior indentation (**FIG. 40**). Metanotum with 12–13 marginal setae; mesosternal plate with 8–12 setae, metasternal with 6–8. Tergal setae: I, 13–15; II–VI, 20–25; VII, 19–20; VIII, 10–11; IX, 16–21. Without anterior pleural setae. Sternal setae: I, 2; II, 20–27; III–V, 25–38; VI, 21–27; VII, 16–21; subgenital plate, 20–25. Both anal fringes of 35–44 setae. Dimensions: POW 0.35; TW 0.41–0.44; PW 0.32–0.33; MW 0.40–0.41; TL 1.46–1.50.

♂. Tergal setae: II–VI, 17–22; VII, 14–15; IX, 10. Sternal setae: II–VI, 11–16; VII–VIII, 7–9; subgenital plate, 13–21. Dimensions: POW 0.31–0.32; TW 0.36–0.37; PW 0.26–0.27; MW 0.30–0.31; TL 1.07–1.10; GL 0.35–0.37; GW 0.06–0.08; GSL 0.07.

**Material examined:** 15 ♀♀, 2 ♂♂, ex *Phoenicusurus phoenicurus* (Linnaeus), Egypt; 9 ♀♀, ex *Phyllocospus collybita* (Vieillot), Egypt, Spain; 3 ♀♀, ex *P. subaffinis* (Grant), Thailand; 56 ♀♀, 3 ♂♂, ex *P. trochilis*, Egypt; 13 ♀♀, ex *Muscia pa striata* (Pallas), Egypt.

**Menacanthus dendoicae** Price, n. sp.  
Type-host: *Dendroica disco!ar* (Vieillot).

♀. Ventral spinous head process 0.04 long. Ocular seta 19 stout, 0.02 long. Gular plate pigmented, with larger, lighter, completely enclosed central area. Metanotum with 11–13 marginal setae; mesosternal plate with 9–12 setae, metasternal with 8–9. Tergal setae: I, 14; II–V, 17–21; VI, 16–18; VII, 13–18; VIII, 10–11; IX, 18–20; most to all of tergites II–VI with series of several spiniform setae mediad of postspiracular setae. Pleurites without anterior setae. Sternal setae: I, 2; II, 18–22; III–VI, 21–30; VII, 17–20; subgenital plate, 21–28, with only weak medioposterior spiculations and with lateroposterior setae heavier than medioposterior ones. Both anal fringes of 32–35 setae. Dimensions: POW 0.33–0.34; TW 0.40–0.42; PW 0.28–0.30; MW 0.34–0.37; TL 1.18–1.26.

♂. Tergal setae: VIII, 8–10; IX, 10. Sternal setae: II, 17; III, 18–19; IV, 20–21; V–VI, 16–18; VII, 10–11; VIII, 8–9; subgenital plate, 15–16. Dimensions: POW 0.31–0.32; TW 0.37–0.38; PW 0.26–0.27; MW 0.29–0.32; TL 1.04–1.09; GL 0.33; GW 0.07; GSL 0.06–0.07.

**Material examined:** Holotype ♀, ex *D. discolor*, Owen Co., Indiana, U.S.A., 4.9.1957, V. Nolan; in collection of the U.S. National Museum of Natural History. Paratypes: 6 ♀♀, same data as holotype. Other material: 11 ♀♀, 2 ♂♂, ex *D. coronata* (Linnaeus), U.S.A.

**Menacanthus geothlypis** Price, n. sp.  
Type-host: *Geothlypis trichas* (Linnaeus).

♀. Close to *M. dendoicae*, differing as follows. Ventral spinous head process 0.03–0.05 long. Fewer tergal setae: II–III, 13–15; IV–VI, 13–17; VII, 11–16; each of tergites II–VI with only single spiniform seta mediad of postspiracular seta. Sternal setae: II, 16–19; III–VI, 21–31; VII, 18–25; subgenital plate with all posterior setae more or less equally slender. Ventral anal fringe of 36–41 setae, dorsal of 35–37. Dimensions: POW 0.31–0.33; TW 0.38–0.41; PW 0.27–0.30; TL 1.07–1.22.

♂. Likewise close to *M. dendoicae*. Fewer tergal setae: II–VI, 12–14; VII, 11; IX, 15. Sternal setae: II, 15; IV, 18; VI, 14; subgenital plate, 10. Dimensions: POW 0.29–0.31; TW 0.34–0.37; PW 0.24–0.28; MW 0.28–0.31; TL 0.82–0.96; GL 0.31–0.32; GW 0.05–0.06.

**Material examined:** Holotype ♀, ex *G. trichas*, Long Island, New York, U.S.A., 1939; in collection of the U.S. National Museum of Natural History. Paratypes (all from *G. trichas*): 5 ♀♀, 1 ♂, U.S.A.—Massachusetts, New York, Ohio. Other material: 1 ♀, 1 ♂, ex *G. agilis* (Wilson), U.S.A.; 1 ♀, ex *G. tolmi!ei* (Townsend), U.S.A.

**Menacanthus auropallaris** Carriker  
**FIG. 34–37**  

♀. Ventral spinous head process 0.03–0.05 long. Ocular
Menacanthus from Passeriformes

Menacanthus oriolii Blagoveshtchensky

Menacanthus oriolii Blagoveshtchensky, 1951, Mag.

♀. Ventral spinous head process 0.04–0.07 long. Ocular seta 19 slender, 0.02–0.04 long. Gular plate pigmented, with lighter central “hole.” Metanotum with 12–14 marginal setae; mesosternal plate with 9–15 setae, metaseminal with 7–10. Tergal setae: I, 3–15; II–VI, 16–23; VII, 15–22; VIII, 9–12; IX, 19–23. Some pleurites with 1–3 anterior setae near medioventral margin. Sternal setae: I, 2–4; II, 24–38; III–V, 34–54; VI, 29–46; VII, 26–35; subgenital plate, 26–38, with only weak spiculation medioposteriorly. Ventral anal fringe of 37–45 setae, dorsal of 36–50. Dimensions: POW 0.38–0.42; TW 0.47–0.52; PW 0.34–0.37; MW 0.42–0.45; TL 1.39–1.55.

Dimensions: POW 0.32–0.35; TW 0.39–0.41; PW 0.28–0.32; MW 0.31–0.34; TL 1.01–1.09; GL 0.35–0.37; GW 0.07; GSL 0.08–0.09.

Material examined: 5 ♀, ex O. chinensis Linnaeus, Taiwan, Thailand; 1 ♀, ex O. xanthorhynchos (Linnaeus), Thailand; 1 ♀, ex Criniger bres (Lesson), Philippine Is; 83 ♀♂, 38 ♀♂, ex C. ochraceus Moore, North Borneo, Thailand; 1 ♀, ex C. pallidus Swinhoe, Thailand; 1 ♀, ex C. phaeocophalus (Hartlaub), Malaya; 1 ♀, ex Pycnonotus brunneus Blyth, Malaya; 7 ♀♂, 2 ♀♂, ex P. finlaysoni Strickland, Thailand; 1 ♀, ex P. gonaiur (Scopoli), Malaya; 3 ♀♂, 1 ♀, ex P. melanicterus (Gmelin), Thailand.

Menacanthus robustus (Kellogg)

Dimensions: POW 0.33–0.37; TW 0.41–0.45; PW 0.29–0.32; MW 0.35–0.38; TL 1.11–1.29.

♂. Unavailable.

Material examined: 4 ♀♀ (including type of M. robustum), ex P. minimus, U.S.A.

Menacanthus tenuifrons Blagoveshtchensky

Menacanthus tenuifrons Blagoveshtchensky, 1940, Mag. Parasitol., Leningr. 8: 37. Type-host: Troglopytes troglodytes hircanus Zarudny & Loudon.

Dimensions: POW 0.42–0.43; TW 0.54–0.55; PW 0.39–0.41; MW 0.51–0.53; TL 1.43–1.60.

Dimensions: POW 0.38–0.39; TW 0.46–0.48; PW 0.32–0.34; MW 0.39–0.42; TL 1.14–1.21; GL 0.36–0.41; GW 0.09–0.10; GSL 0.09–0.10.

Material examined: 1 ♀, 1 ♂, ex T. troglodytes (Linnaeus), Shetland; 2 ♂♂, ex Cistotheirus palastris (Wilson), U.S.A.; 2 ♀♂, ex C. platensis (Latham), U.S.A.

Menacanthus sinuatus (Burmeister)
Menopon sinuatum Burmeister, 1838, Handb. Entomol.: 440. Type-host: Parus major Linnaeus.
Menopon minutum Giebel, 1874, Insecta epizoa: 286. Type-host: Parus major.

Dimensions: POW 0.40–0.43; TW 0.50–0.54; PW 0.35–0.39; MW 0.45–0.49; TL 1.36–1.66.
Likewise near *M. tenfrens*. Tergal setae: II–VI, 14–17; VII, 14–16; IX, 12. Sternal setae: II, 19–21; III–IV, 26–29; V, 24–26; VI, 19–21; VII, 12–14; VIII, 9; subgential plate, 11–12. Dimensions: POW 0.37–0.39; TW 0.45–0.47; PW 0.31–0.32; MW 0.36–0.39; TL 1.23–1.26.

**Material examined:** 6 ♂♂, 5 ♀♀, ex *P. major*, England, Korea; 1 ♀, 1 ♂, ex *P. caeruleus* Linnaeus, England; 1 ♂, ex *P. ater*, Korea; 14 ♀♀, 2 ♀♂, ex *P. atricollis* Linnaeus, U.S.A.; 1 ♀, 1 ♂, ex *P. bicolor* Linnaeus, U.S.A.; 5 ♀♀, ex *P. gambeli* Ridgway, U.S.A.; 2 ♀♀, 2 ♀♂, ex *P. rufescens* Townsend, U.S.A.

**Nomina dubia**

For various reasons, such as grossly inadequate descriptions, absence of type material or specimens from the type-host (or, in some cases, even from the family or genus of type-host), or poor condition of available specimens, the following 6 names are currently unplaceable.


*Menacanthus remiziae* Blagoveshchensky, 1940, Mag. Parasitol., Leningr. 8: 34. Type-host: *Remiza pendulina pendulina* (Linnaeus)—Remizidae.


**Key to passerine *Menacanthus***

1. Sternite I without setae; postmentum with 2 short spiniform setae; from Artamidinae (*Artamus*)........2
2. Sternite I with at least 1 seta, usually 2 or more; postmental setae (PMS: FIG. 5) all fine........3
3. Metanotum with only up to 12 marginal setae........elbeli
   Metanotum with at least 14 marginal setae........nelsoni
4. with over 60 setae in each anal fringe and prothorax width over 0.45; ♀ genitalia as in FIG. 1; from *Menuridae* (*Menura*) ..................menura
   ♀ with under 60 setae in at least 1 anal fringe, usually both, or prothorax width under 0.45; ♀ genitalia otherwise..................4
5. Marginal temple seta at least 0.30 long (FIG. 2); ♀ precocular width at least 0.49, prothorax width at least 0.48; from Corvidae (*Corys, Pyrrhocorax*) ..................gonophaeus
   Marginal temple seta under 0.30 long; ♀ precocular width not over 0.48, prothorax width not over 0.47........5
6. Each side of metanotum with only 2 lateroanterior setae; ♀ subgenital plate mediodiagonally smooth (SGP: FIG. 19) to lightly spicate, without strong serrations; ♀ genitalia with parameres and endomeral plate much as in FIG. 6.............................6
7. Each side of metanotum with at least 3 lateroanterior setae (LS: FIG. 2); ♀ subgenital plate lightly spicate to distinctly serrated (SGP: FIG. 29) mediodiagonally; ♀ genitalia with parameres and endomeral plate much as in FIG. 26.............................7
8. Precocular width at least 0.39 and temple width at least 0.49; ♀ precocular width at least 0.37 and temple width at least 0.45............................8
   Precocular width under 0.39 and/or temple width under 0.49; ♀ precoccal width under 0.37 and/or temple width under 0.45.........................10
9. Tergite I with only up to 15 marginal setae; ♀ genitalia with strongly developed apically blunt sac sclerite (FIG. 20, 21); from Icteridae (*Sturnella*)...........sturnellae, n. sp.
   Tergite I with at least 16 marginal setae; ♀ genitalia with weaker apically tapered sac sclerite not developed more than as in FIG. 22.............................9
10. Dorsal anal fringe of over 42 setae; ♀ sternite II with over 27 setae; from Tyrannidae (*Tyrannus*)..................tyrannini, n. sp. (in part)
11. Dorsal anal fringe of under 42 setae; ♀ sternite II with under 26 setae; from Icteridae (*Icterus, Molothrus, Euphagus*)..................quiscalli, n. sp.
12. Metanotum marginally with not over 11 setae........11
   Metanotum marginally with at least 12 setae...........17
13. Small ventral spinous head process, not over 0.03 long; Larger ventral spinous head process, longer than 0.03...14
14. Ocular seta 19 at least 0.04 long; sternite IV with over 38 setae, V over 40; ♀ with at least 18 setae along margin of last tergite, ♀ at least 13; from Tyrannidae (*Myiarchus, Nuttarlaurus*)..................distinctus (in part)
   Ocular seta 19 not over 0.03 long; sternite IV with under 37 setae, V under 40; ♀ with under 18 setae along margin of last tergite, ♀ usually with under 13...13
15. Gular plate with dark, even pigmentation, except for small central lighter "hole"; ♀ inner posterior setae (IPS) all subequally long, much as in FIG. 34; ♀ temple width under 0.44, ♀ under 0.41; from Motacillidae (*Motacilla*) and Musciicapidae (*Erithacus, Cincilidum*)............................nogoma
   Gular plate pigmented otherwise, without central lighter "hole"; ♀ with both short and long inner posterior setae, much as in FIG. 27; ♀ temple width over 0.45, ♀ over 0.41; from Emberizidae (*Zonotrichia, Spizella*)..................chrysopehaeus (in part)
16. Inner central pronotal seta 2 minute, much finer than outer seta 1, and less than 0.01 long....................15
   Inner central pronotal seta 2 stout, much like outer seta 1, and usually at least 0.01 long..................16
17. Ventral spinous head process 0.035–0.06 long, tapered to sharp point; from 12 genera in Alaudidae, Emberizidae, Fringillidae, Icteridae, Ploceidae..................alaudae (in part)
   Ventral spinous head process only 0.035 long, with
blunt tip much as in FIG. 8; from Muscicapidiae (Omanthe).......................... exilis (in part)
16. Ventral spinous head process only up to 0.04 long; ♂ with both short and long inner posterior setae; ♂ prothorax width only up to 0.30, metathorax width under 0.37; from Emberizidae (Zonotrichia, Spizella)....
.................. chrysocephalus (in part)
Ventral spinous head process at least 0.05 long; ♂ inner posterior setae all subequally long; ♂ prothorax width at least 0.31, metathorax width over 0.37; from Motacillidae (Motacilla, Anthus).................pusillus
17. Small ventral spinous head process, not over 0.03 long...............
18. Larger ventral spinous head process, over 0.03 long.............
19. Ocular seta 19 at least 0.04 long; ♂ with over 35 setae in dorsal anal fringe; ♂ with over 16 setae on each of tergites III–V; from Tyrannidae (Myiarchus, Nuttallarius).................................distinctus (in part)
Ocular seta 19 shorter, under 0.03 long; ♂ with under 35 setae in dorsal anal fringe; ♂ with under 16 setae on each of tergites III–V; from Trogodytiidae..............
20. ♂ tergite V with over 17 setae, VII with over 11; ♂ sternite V with under 29 setae, VI with under 25; from Trogodytiidae, Thryomanes..............aedonis, n. sp.
♂ tergite V with under 17 setae, VII with under 11; ♂ sternite V with over 29 setae, VI with at least 25; from Saltipes..................... obsoleti, n. sp.
21. Sternite IV with over 50 setae and ♂ temple width over 0.48, ♂ over 0.45; from Tyrannidae (Tyrannus).......
.................. tyranni, n. sp. (in part)
Sternite IV with under 45 setae and/or ♂ temple width under 0.48, ♂ under 0.45 (♂ of M. exclis unavailable).........
22. Ventral spinous head process 0.035–0.06 long, tapered to sharp point; from 12 genera in Alaudidae, Emberizidae, Fringillidae, Icteridae, Ploceidae....
.............................alaudae (in part)
Ventral spinous head process only 0.035 long, with blunt tip much as in FIG. 8; from Muscicapidae (Omanthe).......................... exilis (in part)
23. Gular plate shaped as in FIG. 24, with setae inserted in clear lateral area and with small unpigmented central “hole”; ventral spinous head process 0.07–0.14 long...............
24. Gular plate shaped and/or pigmented otherwise; ventral spinous head process variably shorter to up to 0.09 long...............
25. Some tergites with groups of short, stout setae laterally; widespread on many families.................eury sternus
Tergites without such groups of short, stout setae laterally; from Corvidae (Nucifraga, Corvus, Den droica, Urocissa).............................merisou
26. Ocular seta 19 and outer central pronotal seta 1 similar and stout (FIG. 38, 39), and without anterior setae on pleurites; pigmentation of gular plate either with deep posterior indentation (FIG. 40) or with very large enclosed lighter central area, much as in FIG. 23.............
27. Ocular seta 19 usually finer than outer central pronotal seta 1; often several pleurites with at least 1 anterolateral seta, especially if ocular seta stout; pigmentation of gular plate variable...............
28. Pigmentation of gular plate with deep, open posterior indentation (FIG. 40); ♂ with medioposterior margin of subgenital plate strongly serrated; from Muscicapidae (Phoenicurus, Muscicapa) and Sylviidae (Phylloscopus).............agilis
Pigmentation of gular plate with very large enclosed central lighter area (FIG. 23); ♂ with medioposterior margin of subgenital plate at most only lightly spicate; from Parulidae..........................
29. Each of tergites II–VII with only single spinoform seta medially of postspiracular seta; ♂ subgenital plate with all posterior setae more or less equally slender; from Geothlypis..................geothlypis, n. sp.
Most to all of tergites II–VII with series of several spinoform setae medially of postspiracular seta; ♂ subgenital plate with lateroposterior setae heavier than medioposterior setae; from Dendroica................
.............................dendroicae, n. sp.
30. ♂ (M. robustus unavailable)..........................
31. Temple width at least 0.57, metathorax width at least 0.56; both anal fringes of over 50 setae; at least 30 setae on last tergite; ventral spinous head process at least 0.08 long; from Aegithalidae (Psiltriparus).....robus tus
Temple width not over 0.56, metathorax width not over 0.55; either or both anal fringes of under 50 setae; under 30 setae on last tergite; ventral spinous head process shorter to as long as above...........
32. Subgenital plate only lightly spiculated medioposteriorly; from Oriolidae (Oriolus) and Pycnonotidae (Criniger, Pycnonotus)..................orioli
Subgenital plate with prominent deep serrations medioposteriorly...............
33. Each of sternites III–VII with at least 45 setae; from Trogodytiidae (Trogodytes, Cistothorus).............tenuifrons
Each of sternites III–VII with under 45 setae...............
34. Each side of last segment with only 1 very long seta extending beyond ends of anal fringe setae; from Syl viidae (Sylvia, Acrocephalus, Phylloscopus) and Vireonidae (Vireo).............curuccae
Each side of last segment with 2 very long setae extending beyond ends of anal fringe setae...............
35. Temple width over 0.49, metathorax width over 0.44; ventral spinous head process at least 0.07 long; from Paridae (Parus)..................sinatus
Temple width under 0.49, metathorax width under 0.44; variable ventral spinous head process, often shorter but up to 0.08 long...............
36. Weakly pigmented gular plate, except anteriorly lightly (FIG. 35); ventral spinous head process not over 0.05 long; marginal temple seta 25 usually absent; from Parulidae (Setius, Mniotilta, Verni vora).................. aurocapillus
Well-pigmented gular plate with central lighter “hole” (FIG. 31); ventral spinous head process at least 0.05 long; marginal temple seta 25 present, up to 0.025 long; from Sylviidae (Cettia, Acrocephalus, Locustella, Phylloscopus)............takayama i
37. Temple width at least 0.45...............
38. Temple width under 0.45...............
39. Sternites III–IV each with over 30 setae; subgenital plate with at least 14 setae; from Trogodytiidae (Trogodytes, Cistothorus).............tenuifrons
Sternites III–IV each with under 30 setae; subgenital plate with only up to 12 setae; from Paridae (Parus)..................sinatus
40. Gular plate weakly pigmented, except darker laterally (FIG. 35); marginal temple seta 25 apparently absent; from Parulidae (Setius, Mniotilta, Vernivora)..................aurocapillus
Gular plate well pigmented, with light central “hole” (FIG. 31); marginal temple seta 25 present, 0.01–0.025 long...............
41. Most to all of tergites II–V with 14–16 setae; from
Oriolidae (Oriolus) and Pycnonotidae (Griniger, Pycnonotus) ........................................... oriol
Most to all of tergites II–V usually with 17–20 setae;
from Sylviidae and Vireonidae.......................... 38

38. From Sylvia, Aerocephalus, Phylloscopus and Vireo........

......................................................... curucce
From Cettia, Aerocephalus, Locustella, Phylloscopus......
......................................................... takayamai

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