IMMATURE STAGES OF CHEWING LICE (INSECTA: PHTHIRAPTERA) FROM NEOTROPICAL ICTERIDAE (AVES: PASSERIFORMES), AND DESCRIPTIONS OF THREE NEW SPECIES

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Abstract.— A morphological study of six little known or undescribed species of chewing lice parasitic on cowbirds (Icteridae) is given, based on a holistic approach which includes descriptions of the pre-imaginal stages. Both sexes, the last two nymphal stages and eggs of the new species *Myrsidea amblyramphidis* (Amblycera: Menoponidae) are described and illustrated (type host: *Amblyramphus holosericeus* (Scopoli)). Also, the male with all pre-imaginal stages (including hatching organ of nymph, egg and the three nymphal stages) of *Menacanthus leistidis* Cicchino, 1984 from *Leistes superciliaris* (Bonaparte) is described for the first time and the female is redescribed; a discussion of the morphological affinities with its closest species, *M. sturnellae* Price, 1977 is included. Among the Ischnocera (Philopteridae s.l.), both sexes and the last pre-imaginal stages of two incompletely known species of *Brueelia* Kéler, 1936, *B. mirabile* Carriker, 1963 from *Molothrus o. oryzivorus* (Gmelin), and *B. oxypyga* (Giebel, 1874) from *A. holosericeus* are described. Furthermore, two new species of *Brueelia*, *B. chopi* from *Gnorimopsar chopi* (Vieillot), and *B. paradoxa* from *Leistes superciliaris* are described from both sexes and their last two pre-imaginal stages, and eggs.

Key words.— Menoponidae, *Myrsidea*, *Menacanthus*, Philopteridae, *Brueelia*, new species, adults, nymphs, eggs, Icteridae.

INTRODUCTION

The study of immature chewing lice (also known as nymphs or pre-imaginal stages) is difficult and rarely included in the taxonomy and systematics of these insects (Price 1987). Nymphs are not only very small and feeble specimens but, also, more difficult to examine and manipulate than the large and well sclerotized adults (imagoes). Also, the collection of nymphs is difficult with the naked eye and preparing them adequately is another limiting factor for their proper study. For these reasons there are only few papers dealing with immature lice parasitic on passerines from South America (e.g., Cicchino 2003, 2004).

The life cycle of parasitic lice (Phthiraptera) includes five stages: egg, three nymphs (I, II, III) and imago (adult) (Price 1987). With a few exceptions (e.g. Mey 1994), most morphological studies of chewing louse have focused on adults. However, we believe that, to fully understand the evolution and phylogeny of lice, future studies should include full description of their immature stages as well. Thus, meaningful comparisons between morphology and molecular data would be possible, which in turn will allow better species and generic definitions, useful identifications keys, and robust phylogenies.

Most of the 26 species of *Brueelia* Kéler, 1936 parasitic on cowbirds (Icteridae) were reviewed by

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Cicchino and Castro (1996) and divided into two species-groups. Later on, Cicchino (2004) properly described nymphs II and III of three species of *Brueelia* parasitic on Icteridae: *B. ornatissima* (Giebel, 1874), *B. ruficapilla* Cicchino, 1990 and *B. thilia* Cicchino, 2004. However, both adults and pre-imaginal stages of two species (*B. mirabile* Carriker, 1963 and *B. oxypyga* (Giebel, 1874)) are still incompletely known due to the paucity of material available at that time.

Regarding the genus *Myrsidea* Waterston, 1915, there are currently 67 species found on cowbirds (Clay 1968, Valim and Weckstein 2013), but no pre-imaginal stages have been described from them. However, the pre-imaginal stages of two species from other passerine families have been described: *M. troglodyti* (Denny, 1842) ex Troglodytidae (Price *et al.* 2008) and *M. daleclaytoni* Valim et Cicchino, 2015 ex Corvidae (Valim and Cicchino 2015).

In addition, there are only three species of the genus *Menacanthus* Neumann, 1912 with full descriptions of pre-imaginal stages: *M. phasiani* (Modrzejewska et Złotorzycka, 1977) ex Galliformes (Modrzejewska and Złotorzycka 1987), *M. pici* (Denny, 1842) ex Piciformes (Castro and Cicchino 1978, Martín-Mateo 1984), and *M. bonariensis* Cicchino, 2003 ex Passeriformes (Cicchino 2003).

In this paper, we describe one new species of *Myrsidea* from *Amblyramphus holosericeus* (Scopoli) and two new species of *Brueelia*: one from *Gnorimopsar chopi* (Vieillot) and one from *Leistes superciliaris* (Bonaparte). These descriptions include adults and, depending on available material, second and third nymphal instars (discriminated by sex whenever possible), and eggs. Also, the adults and pre-imaginal stages of *Menacanthus leistidis* Cicchino, 1984, and two other species of *Brueelia* (*B. mirabile* Carriker, 1963 from *Molothrus o. oryzivorus* (Gmelin), and *B. oxypyga* (Giebel, 1874) from *A. holosericeus*) are described and compared morphologically. Host common and scientific names are given according to Dickinson and Christidis (2014).

MATERIALS AND METHODS

Most of the specimens examined were collected in the field by the junior author (ACC) from freshly captured birds, and sites of oviposition were mapped on pre-printed cards. Both adults and nymphs were mounted on slides following the technique described by Castro and Cicchino (1978), were studied and drawn using a camera lucida attachment, and measured with an appropriate calibrated eyepiece. All measurements and scales are in millimetres (mm).

Louse eggs were cleared and mounted in temporary slides using Amman's lactophenol, then examined, measured and drawn in a similar manner as adults and nymphs. For the SEM photographs, a Kodak Verichrome Pan VP120 (ASA125/22DIN) film was used. The nomenclature of egg chorion features follows Abrahamovich and Cicchino (1985), and those for body features and measurements of adults and nymphs of *Brueelia* follow Cicchino and Castro (1996).

In the genus *Myrsidea*, we use the setal count system as in Clay (1966, 1968) and ratified by Valim and Weckstein (2013). The nomenclature of cephalic and thoracic setae in Menoponidae follows Clay (1969), and that for cephalic carinae and setae in Philopteridae follows Clay (1951) and Mey (1994). Nymphal stages of Menoponidae were described following Castro and Cicchino (1978), Cicchino (2003), and Valim and Cicchino (2015). For nymphal stages of Philopteridae we followed Mey (1994), Cicchino (2004) and Cicchino and Valim (2008).

Abbreviations used for measurements in descriptions are as follows:

HL – head length,
POPW – preocular width,
OW – occipital width,
PL – prothorax length,
PW – prothorax width,
PTL – pterothorax length,
MTW – metathorax width,
AL – abdominal length,
GL – male external genitalia length,
GW – male external genitalia width,
GSL – genital sclerite length,
TL – total body length.

Holotypes are deposited in the entomological collections of the: Museo de La Plata, Buenos Aires Province, Argentina (MLPL). Paratypes are deposited in the same collections and also in the collection of the junior author (ACC) in Mar del Plata, Argentina, and in the Museu de Zoologia da Universidade de São Paulo, Brazil (MZUSP).

RESULTS

Systematics

Order **Phthiraptera** Haeckel, 1896

Suborder **Amblycera** Kellogg, 1896

Family **Menoponidae** Mjöberg, 1910

Genus ***Myrsidea*** Waterston, 1915

Myrsidea amblyramphidis sp. nov.
(Figs 1–3)

Myrsidea sp. nov. 6 (ex *A. holosericeus*), Cicchino and Castro 1998a: 101.

Type host. *Amblyramphus holosericeus* (Scopoli).

Type locality. Argentina: Provincia Buenos Aires, Lavalle.

Etymology. The species epithet is formed by the root of the type host genus: *Amblyramph* + *idis* [Latin], meaning 'belonging to' or 'connected with'.

Type material. Ex *Amblyramphus holosericeus*: Female holotype (MZUSP #6326), **ARGENTINA**: Provincia Buenos Aires, Partido Lavalle, 6 January 1973, coll. A.C. Cicchino. Paratypes: 2 males and 4 females, 3 nymphs II, 2 nymphs III (ACC, MZUSP #6327–31), same data as for holotype.

Other material examined. Ex *Amblyramphus holosericeus*: 1 male and 1 female (MZUSP #6334–35), **ARGENTINA**: Provincia Buenos Aires, Lezama, no date, coll. A.C. Cicchino.

Description. *Female*. Dorsal head seta 10 (*dhs10*), 0.053–0.065 long; *dhs11*, 0.120–0.133 long, ratio *dhs10*/11 0.4–0.5. Hypopharynx reduced, *ls5* 0.08–0.10; ventrolateral fringe, 10 setae; dorsal pair of setae on last segment of maxillary palp as in Fig. 1A. Gula with 5 setae on each side (sometimes 6 on one side). First tibia with 3 and 4 (latter rarely 5) outer lateral ventral and dorsal setae, respectively. Mesonotum without median division. Metanotum enlarged with posterior margin concave, central portion surpassing up to middle of tergite I, with 8–9 setae (one specimen with 11) setae on posterior margin; metapleura with 4 setae (rarely 5 in one side); metasternal plate each side with 4–6 setae. Setae of femoral brush, 14–19. Metanotum and abdomen as in Fig. 1B. Tergites I–III with minute to small setae at middle of segment and among the regular setae (mostly on II–III) and tergites I–V roughly concave on posterior margin. Without median gap in each tergal setal row. Tergal setae: I 20–25 (including 10–15 small); II 23–31 (6–10 small); III 28–33 (2–6 small); IV 28–35; V 26–30; VI 18–25; VII 12–20; VIII 4–9. Postspiracular setae shortest (0.15–0.25) on III, V and VI, and long (0.38–0.47) on I, II, IV, VII and VIII.

Sternite III neither arched nor narrowed medially (Fig. 1B). Sternites without anterior setae. Sternal setae: I none; II with aster of 4 spine-like setae (rarely 2 or 5 in one side) on each side, posterior margin with 14–19 and anteriorly with 21–27; III 32–40; IV 33–41; V 34–39; VI 29–35; VII 21–28. Subgenital plate with 20–26 setae; vulvar margin spiculated and medially concave, and with 10–13 setae. Spermatheca suboval with their lateral sides folded inwardly (Fig. 1C).

Pleural setae number (anterior setae in parenthesis): I 5–7; II 7–9 (rarely with 1 or 2 anterior setae); III 6–9 (1–3) (sometimes without anterior setae); IV 6–8 (1–3); V 6–8 (1–2); VI 5–7 (1); VII 3–4 (rarely 1 anterior seta). Tergite IX without inner posterior setae. Anus with 32–41 ventral and 39–42 dorsal fringe setae.

Measurements (n = 6): HL 0.32–0.34; POPW 0.36–0.39; OW 0.51–0.53; PW 0.34–0.36; PSPL 0.14–0.16; MTW 0.54–0.59; MSPL 0.18–0.20; AWIV 0.70–0.77; ANW 0.25–0.27; TL 1.74–1.83.

Male. Dorsal head seta 10, 0.045–0.060 long; *dhs11*, 0.116–0.118 long, ratio *dhs10*/11 0.5. Hypopharynx reduced, *ls5* 0.07–0.08, ventrolateral fringe, 11 setae. Gular plate with 5 setae on each side (rarely 4 and 8 in one side). Metanotum with 16–21 setae on posterior margin; metapleura with 4 setae (rarely 3 or 5 in one side); metasternal plate with 6 setae on each side (one specimen with 4 on both sides). Setae of femoral brush, 14–20. Some tergal setae set slightly anterior on tergal row of setae. Tergal setae (slightly anterior setae in parentheses): I 25–30; II 30–33 (1–3); III 33–41 (2–9); IV 35–40 (2–5); V 34–42 (2–9); VI 33–36 (3–5); VII 28–33 (2–3); VIII 23–24 (1–2). Without median gap in each tergal setal row; tergal setae of similar length reaching alveoli of next tergal row. Postspiracular setae as for female. Pattern of chaetotaxy of tergites and sternites as in Fig. 1D.

Sternites each with a sparse anterior row of setae. Sternal setae: I none; II with aster of 4 spine-like setae on each side, posterior margin with 17–19 and anteriorly with 24–30; III 39–49; IV 45–58; V 46–54; VI 45–50; VII 39–48. Subgenital plate with 38–45 setae.

Pleural setae number: I 5–6; II 8 (one specimen with 1 anterior seta); III 7–9 (one specimen with 1 anterior seta); IV 8–9 (1); V 6–7 (1–3); VI 5–6 (1–2); VII 4–6 (1). Tergite IX without inner posterior seta. Anus with 8 internal ventral and 3 dorsal setae. Genital sac sclerite as in Fig. 1E and 1F (lateral view).

Measurements (n = 3): HL 0.31–0.32; POPW 0.36–0.37; OW 0.50–0.51; PW 0.31–0.34; PSPL 0.13–0.14; MTW 0.46–0.49; MSPL 0.17–0.18; AWIV 0.63–0.64; GL 0.49–0.53; GSL 0.09–0.10; TL 1.54–1.65.

Third nymphal instar (NIII). Ratio of *dhs10/11* 0.5–0.6; hypopharynx reduced; *ls5* 0.08; ventrolateral fringe with 9 setae. Gular plate with 4+4 setae (rarely 5 in one side), with the posterior pair longer. Prosternum and mesosternum without setae, metasternum with 3–5 setae on each side. Pronotum with 6 posterior setae, each lateral corner with 3 short setae. Chaetotaxy of metanotum with pattern similar to that of female, with one spine-like lateral seta plus 4 (rarely 5 in one side) long setae on each side. Metapleura with 4 setae on each side (rarely 5 in one side) spiniform setae, the two most medial longer. Femoral brush with 14–15 setae. Sternite II: aster very rudimentary in each lateral corner, with 3 spine-like setae crescent in length from the lateral to medial; posterior margin with 9–12 and anterior portion with 7–11 medium long setae. Chaetotaxy of abdominal tergites with more setae than those in nymph II; tergal and sternal chaetotaxy as in Fig. 2A.

Measurements (n = 2): HL 0.31–0.33; POPW 0.35–0.36; OW 0.44–0.47; PW 0.30–0.31; PSPL 0.12–0.13; MTW 0.43–0.45; MSPL 0.15–0.16; AWIV 0.54–0.60; TL 1.45–1.57.

Second nymphal instar (NII). Ratio of *dhs10/11* 0.5; hypopharynx reduced; *ls5* 0.05–0.07; ventrolateral fringe with 9 setae. Gular plate with 3+3 setae, posterior pair longer. Prosternum and mesosternum without setae, metasternum with 2 setae on each side (one specimen with 3 on one side). Pronotum with 6 posterior setae, each lateral corner with 3 short setae. Metanotum with 3 anterolateral minute setae on each side, and 3 posterior setae on each side (one spine-like plus 2 medium long setae). Metapleura with 3 short spiniform setae. Femoral brush with 10 setae. Sternite II: aster rudimentary in lateral corners; composed by two small spiniform setae; posterior margin with 7–8 medium long setae, plus 2–3 anterior setae. Tergal and sternal chaetotaxy as in Fig. 2B.

Measurements (n = 3): HL 0.26–0.29; POPW 0.30–0.31; OW 0.38–0.40; PW 0.25–0.28; PSPL 0.10–0.11; MTW 0.33–0.37; MSPL 0.12–0.13; AWIV 0.45–0.51; TL 1.21–1.30.

Eggs. Elongate, about 3 times longer than wide (Fig. 3A). Dimensions (n = 3): maximum length 0.68–0.69; maximum width of the amphora 0.27–0.28;

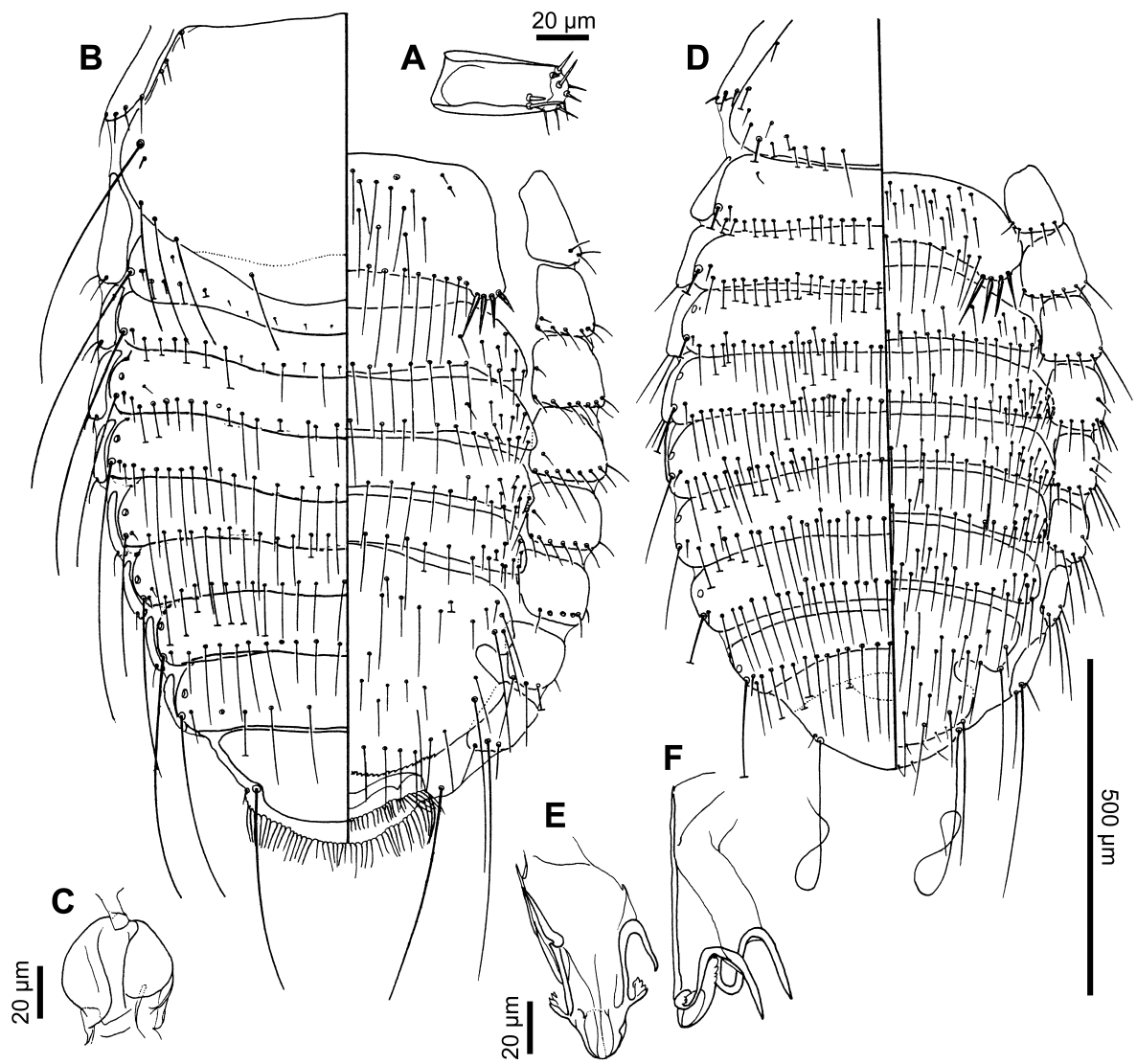

Figure 1. *Myrsidea amblyramphidis*: (A) female, last segment of maxillary palp; (B) female, metanotum and abdomen in dorso-ventral views; (C) female, spermatheca; (D), male, metanotum and abdomen in dorso-ventral views; (E–F) male, genital sclerite in dorsal and lateral views, respectively.

length of operculum (excluding the apical phanerum) 0.09–0.10; width of the operculum 0.15–0.16. Divided into operculum, amphora and a chorionic hydropyle (latter not studied). Operculum: distinctly elevated, presenting 13–15 high air chambers. Rest of the opercular surface smooth, without imprints forming a framework, but with a distinct and long apical phanerum (Fig. 3B). Amphora: distal half with a cross-linked subhexagonal mesh, often with a central knob, which abruptly disappears towards the middle third, becoming smooth as in the basal third (Figs 3A and 3C).

Diagnosis. There are no previous records of *Myrsidea* from *Amblyrhamphus holosericeus* (see Price *et al*. 2003: 348) and, although knowledge about this

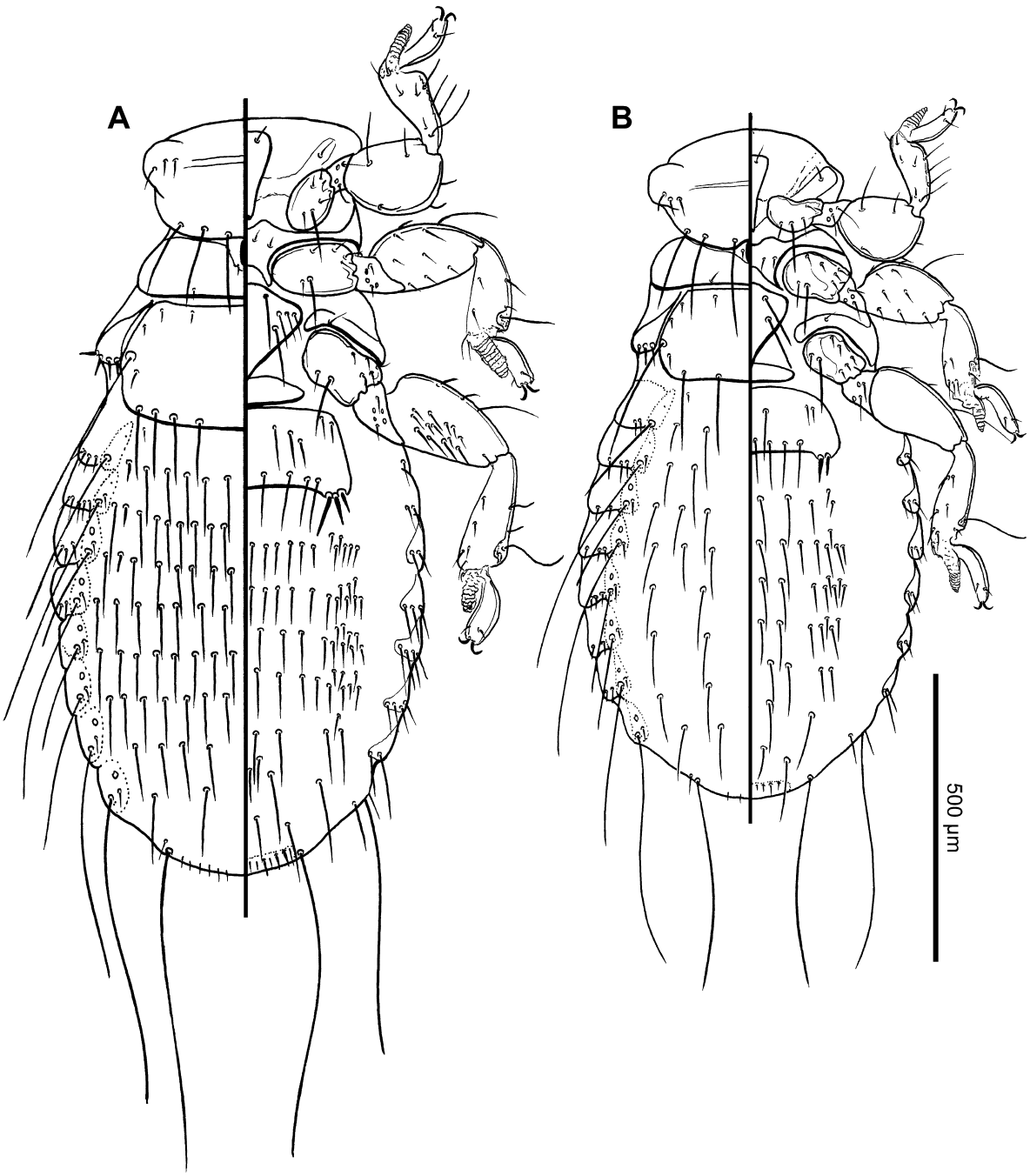

Figure 2. *Myrsidea amblyramphidis*: thorax and abdomen in dorso-ventral views: (A) nymph II; (B) nymph III.

louse genus has increased substantially, only recently have descriptions of immature stages been provided for some species (Valim and Cicchino 2015). Price *et al.* (2008: 63) described the third nymph of *Myrsidea troglodyti* (Denny, 1842) (ex Troglodytidae) based on its syntypes. Data on *Myrsidea* from *Cyanocorax* spp. (ex Corvidae) (Valim and Cicchino 2015) show that NI has no asteral seta, NII has two setae on aster (Fig. 2A), and NIII has three setae on aster (Fig. 2B). We wonder about the description of *M. troglodyti* by Price *et al.* (2008: 63, fig. 10), where only two asteral setae are drawn and mentioned for the 'third instar nymph'. Another concern about this description is that the 'third instar nymph' of *M. troglodyti* has 10 metasternal setae, a number greater than in any adult *Myrsidea* found on Troglodytidae (4–8 setae); also its total length (1.74–1.78) is greater than in most females of other *Myrsidea* parasitic on wrens (1.45–1.68), with the exception of females of *M. whitemani* Price, Johnson et Dalgleish, 2008, which reach a maximum of 1.81. We believe that the 'third instar nymph' described by Price *et al.* (2008) from Denny's type series could be a pharate. Therefore, we will compare NII of *M. amblyramphidis* with the 'third nymph' of *M. troglodyti* (here considered as NII).

Second nymphs of both species can be easily separated by (1) the hypopharyngeal sclerite: rudimentary in *M. amblyramphidis* but moderately developed in *M. troglodyti*; (2) the number of metanotal setae: 6 in *M. amblyramphidis*, 8–9 in *M. troglodyti*; (3) the number of anterior setae on sternite II: 2 in *M. amblyramphidis*, 10–11 in *M. troglodyti*; (4) the length of the postspiracular setae on abdominal segments I, III, V, VI: all short in *M. amblyramphidis*, only V is short in *M. troglodyti*; and (5) considerably greater number of tergal and sternal setae in *M. troglodyti*.

Nymph II of *M. amblyramphidis* and that of *M. daleclaytoni* have (1) three pairs of long posterior setae on the pronotum; (2) two pairs of setae on the metasternal plate; (3) one pair of anterior setae on sternite II; and (4) only two spine-like setae in each aster on sternite II. Nymphs III of these two species have the same pronotal chaetotaxy and spine-like setae in each aster of sternite II. However, they differ by the development of the hypopharyngeal sclerite (well developed in *M. daleclaytoni*), and by the metanotal and abdominal chaetotaxy (sparse and with median gaps in setal rows in *M. daleclaytoni*).

Adults of *M. amblyramphidis* belong to the homogeneous group of *Myrsidea* species parasitic on Icteridae (see Clay 1968), and are morphologically close to adults of *M. comosa* Clay, 1968 and *M. lampropsaricola* Valim et Weckstein, 2013. These three species share an underdeveloped hypopharyngeal sclerite, plus an enlarged metanotum in females. The sparse number of anterior setae on the pleurites (less than 3) distinguishes *M. amblyramphidis* from *M. comosa* with more than 10. Furthermore, *M. amblyramphidis* can be differentiated from *M. lampropsaricola* by the higher number of tergal setae and the shape of the male genital sclerite. Females of *M. amblyramphidis* are unique in the distal enlargement of the metanotum, surpassing the level of the posterior margin of sternite II, while females of *M. comosa* and *M. lampropsaricola* have a less noticeable enlargement; also, *M. amblyramphidis* can be distinguished by having a distinct row of very small setae on tergites I–III (see Fig. 1B). The male genital sclerite of *M. amblyramphidis* is also close to those of *Myrsidea psittaci*, but these species can be differentiated by subtle details in these sclerites and by a higher number of tergal setae (more than 25 on each I–VII in *M. amblyramphidis*). Females of *M. psittaci* differ from those of *M. amblyramphidis* by the abovementioned tergal development and by chaetotaxy.

The presence of a long apical phanerum in the operculum of the eggs of *M. amblyramphidis* is diagnostic when compared with those features in species of *Myrsidea* parasitic on Corvidae (Passeriformes), which lack apical phanerum (Cicchino and Valim 2015, Valim and Cicchino 2015).

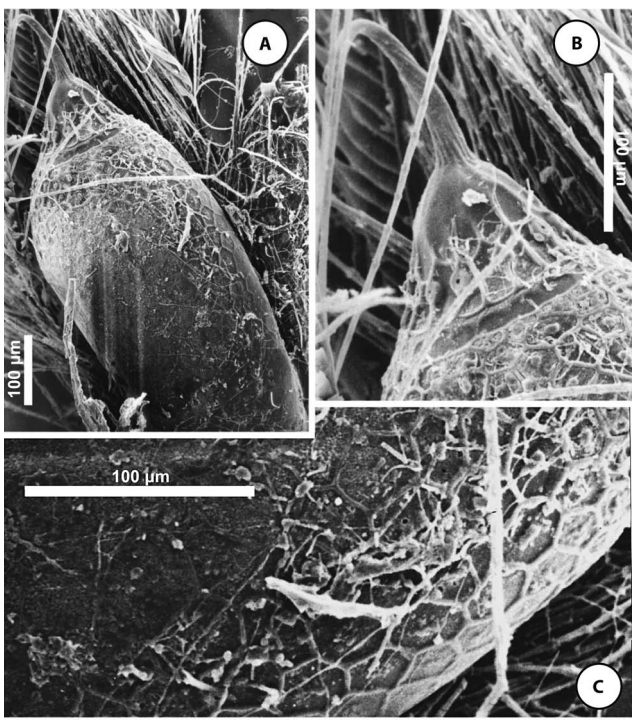

Figure 3. *Myrsidea amblyramphidis* egg: (A) whole in lateral view; (B) detail of operculum; (C) detail of the surface of amphora.

Myrsidea psittaci Carriker, 1955

Myrsidea psittaci Carriker, 1955: 38, figs 3–4. Type host: *Amazona ochrocephala ochrocephala* (Gmelin) (in error, see Clay 1968: 227).

Type locality. Venezuela: Carabobo, Urama.

Material examined. Ex *Amblyramphus holosericeus*: 2 females (MZUSP #6336–37), **ARGENTINA**: Provincia Entre Ríos, Holt, 31 May 1943. 1 female (MZUSP #6338), **ARGENTINA**: Provincia Buenos Aires, Lezama, no date, coll. A.C. Cicchino.

Remarks. The only species of *Myrsidea* known from *A. holosericeus* is the new species described above. Although the type host of *M. psittaci* is in error, at least four other natural hosts have been recorded for this species (Cicchino 1987: 184; Price *et al.* 2003: 131). Therefore, this is the fifth host recorded for the polyxenic *M. psittaci*, and an additional case of synoxenism with two species of *Myrsidea* (*M. psittaci* and *M. amblyramphidis*) co-existing on the same host individual from Lezama, Buenos Aires (see Cicchino and Castro 1998a). Adults of these two species are differentiated in the diagnosis above (see also Clay 1968). Considering that these two species can be found on the same host individuals, and that their eggs have been described (see Cicchino and Valim 2015, Valim and Cicchino 2015), in Table 1 we list the main chorionic structures to differentiate the eggs of these two species of *Myrsidea*.

Genus ***Menacanthus*** Neumann, 1912

Menacanthus leistidis Cicchino, 1984 (Figs 4–7, 20)

Menacanthus leistidis Cicchino, 1984: 327, figs 1–6. Type host: *Leistes superciliaris* (Bonaparte).

Menacanthus leistidis: Cicchino and Castro (1998: 98, 101; new host record on *Leistes defilippi* (Bonaparte)); Price *et al.* (2003: 122, world checklist); González-Acuña *et al.* (2006: 212, new host record on *Leistes loyca* (Molina)); Soto *et al.* (2013: 1317, parasitological indexes).

Type locality. Argentina: Provincia Buenos Aires, La Plata.

Type material. Ex *Leistes superciliaris*: Female holotype and one female paratype (MLPL), **ARGENTINA**: Provincia Buenos Aires, La Plata, February 1984, coll. A.C. Cicchino. 5 female paratypes (ACC, MZUSP #5796), Provincia Buenos Aires, Arditi, 30 December 1984, coll. A.C. Cicchino.

Other material examined. Ex *Leistes superciliaris*: 1 male, 2 females, 2 NI, 2 NII, 2 NIII (ACC; MZUSP #6321), Provincia Buenos Aires, Berisso District, La Balandra, 12 December 1986, coll. A.C. Cicchino. 2 females (ACC), same data, except October 1995. 3 females, 1 NII, 1 NIII (ACC, MZUSP #6318), same data, except November 1996. 3 males, 2 females, 1 NII, 1 NIII, 14 eggs (ACC, MZUSP #6319–20), same data, except 16 December 1996.

Ex *Leistes defilippi*: 1 male (ACC), **ARGENTINA**: Provincia Buenos Aires, Tigre District, Delta, no date, coll. A.C. Cicchino.

Redescription. *Female*. Habitus as in Fig. 4A. Ventral spine-like processes short, 0.02–0.03. Ocular seta (*dhs19*) thin, 0.03–0.04. Gular plate entirely pigmented and with small irregular fenestrae grouped in the central area, usually four in number and different in size (Fig. 5A; see also figs 1–3 in Cicchino 1994), with 4–5 setae each side (commonly 4+4). Pronotum with 8 marginal posterior setae. Metanotum with 2 lateroanterior setae (rarely 3+2) and 10 posterior marginal setae. Prosternal plate without central setae, mesosternal plate with 12–14 and metasternal with 8–9 setae. Tergal abdominal setae: I 16; II 13–16; III 14–16; IV 13–17; V 15–17; VI 16; VII 12–17; VIII 9–14; IX 11–14. Spiracles set on a pale area of the tergal plate, which appears to be soft tegument. Sternal abdominal setae: I 2; II 21–26; III 31–42; IV 38–50; V 38–49; VI 31–41; VII 24–38. Pleurites II–VII with 3–4 medium long posterior setae, plus one inner most short posterior setae, and 2–3 short setae anteriorly. Subgenital plate with 30–38 setae. Anal fringe with 36 dorsal and 45–48 ventral setae.

Measurements (n = 5). HL 0.29–0.35; OW 0.50–0.53; PW 0.38–0.41; MTW 0.46–0.51; TL 1.78–1.92.

Male. Habitus as in Fig. 4B. Head features and chaetotaxy much as in female. Mesosternal plate with 12–14 and metasternal plate with 7–8 setae. Tergal abdominal setae: I 11–12; II 14; III 15; IV 14–15; V 15–17; VI 15–16; VII 13–14; VIII 9–11; IX 5. Spiracles as described for females. Sternal abdominal setae: I 2; II 18–19; III 34–35; IV 45; V 41–43; VI 37; VII 27–28; VIII 14–20; IX 9–15. Genitalia with large basal apodeme; parameres curved inwardly, but with tips bent outwardly; mesosome roughly Y-shaped (Fig. 4C). Genital sclerite large, with free lateral arms and curved posteriorly (Fig. 4D).

Measurements (n = 4). HL 0.29–0.33; OW 0.48–0.49; PW 0.35–0.36; MTW 0.41–0.44; GL 0.44–0.49; GW 0.08–0.11; GSL 0.14–0.15; TL 1.53–1.67.

Third nymphal instar (*NIII*). General habitus as in Fig. 6A. Head sensillum *c* and *dhs14* present (nomenclature according to Clay 1969) (Fig. 6B). Chaetotaxy of dorsal head, pronotum and metanotum much as in female. Gular plate with sclerotization restricted to lateral areas where 3+3 setae are set. Mesosternal plate with 6 and metasternal plate with 8 setae. Tergal abdominal setae: I 8; II–VII 10 (rarely 9); VIII–IX 6–8. Sternal abdominal setae: I 2; II 19; III–V 26–29; VI 29; VII 18; VIII 12; IX 14. Sterna III–VII with a median anterior row of setae discernible.

Table 1. External differences of the eggs of *Myrsidea amblyramphidis* sp. nov. and *Myrsidea psittaci* Carriker, 1955, both ex *Amblyramphus holosericeus* (Scopoli, 1786)

	Myrsidea amblyramphidis sp. nov.	*Myrsidea psittaci* †
Operculum		
shape lateral view	conical and elongated	conical and flattened
apical phanerum length	longer than length of operculum	shorter than length of operculum
number of air chambers	13–15	12–14
elevation of air chambers	High	low
impression of the mesh	light, restricted to the base	almost smooth
Amphora		
sculpture	distributed irregularly, reaching the middle of amphora and composed by > 4 rows of large hexagons	restricted to the apical third and composed by up to 4 rows of large hexagons
impression of the mesh	lightly impressed	strongly impressed
Size		
measurements (in mm), total length ‡ x total width	0.68–0.69 x 0.27–0.28	0.63–0.71 x 0.27–0.29

† data taken from Cicchino & Valim (2015) and Valim & Cicchino (2015); ‡ apical phanerum excluded.

Measurements (n = 5). HL 0.28–0.29; OW 0.44–0.45; PW 0.33; MTW 0.43; TL 1.39–1.41.

Second nymphal instar (*NII*). General habitus as in Fig. 6C. Head sensillum *c* and *dhs14* present (Fig. 6D). Chaetotaxy of dorsal head, pronotum and metanotum much as in NIII. Gular plate lacking sclerotization and with 2+2 conspicuous setae (rarely 2+1). Meso- and metasternal plates with 6–7 setae each. Tergal abdominal setae: I–II 6; III 6–8; IV–V 8; VI–VII 7–8; VIII 5–6; IX 4. Sternal abdominal setae: I 0–1; II 9–11; III 9–14; IV 11–12; V 10–12; VI 11–12; VII 8–10; VIII 6–7; IX 4. Sterna III–VII without anterior row of setae, only few latero-anterior setae reminiscent of the lateral patch of setae.

Measurements (n = 6). HL 0.25–0.26; OW 0.39–0.40; PW 0.27–0.29; MTW 0.34–0.36; TL 1.17–1.18.

First nymphal instar (*NI*). General habitus as in Fig. 6E. Head lacking the *dhs14* and sensillum *c* (Fig. 6F). Gular plate lacking setae and sclerotization. Without outermost marginal setae on pronotum (*sms*). Metanotum as in NII. Meso- and metasternal plates with 2 setae each. Tergal abdominal setae: I–VIII 6; IX 4. Sternal abdominal setae: I 0; II 6–8; III–VI 6 (rarely 5); VII–IX 4. Sternites III–VII with a single row of setae.

Measurements (n = 5). HL 0.24–0.25; OW 0.35; PW 0.23–0.24; MTW 0.28–0.29; TL 0.97–0.98.

Hatching organ. It is defined as a differentiation of the embryonic membrane whose function is lacerate the vitelline membrane (Hinton 1977). Our study of this organ in two embryos shows that it is formed by three distinct sections: one apical provided with 9 lancets arranged in tight circle; one medial with 8 lancets set in a single line and one proximal with a group of about 10 small, less conspicuous, tubercles (Fig. 7A).

Eggs. Elongate, about 2.6 times longer than wide (Fig. 7B). Dimensions (n = 8): maximum length 0.67–0.70, maximum width of the amphora 0.25–0.27. Divided into operculum, amphora and a chorionic hydropyle (not studied). Operculum: moderately elevated (Fig. 7C), with 17–25 slightly elevated air chambers. Remaining opercular surface with imprints of follicular cells forming a thick framework, without extensions or apical phanerum (Figs 7D–E). Amphora: distal third with a cross-linked sub-hexagonal pattern which abruptly disappears towards the middle third, and becoming smooth on the basal third (Figs 7B–C).

Cementation. Done with a moderate amount of spumaline on basal barbs of the vanus, near the superior umbilicus, or slightly above it (Figs 7F–H).

Sites of oviposition. Always on the head, extending to no more than the base of the neck. Preferential sites are lores, eyebrows, face, anterior parts of ear areas, jaw and gular areas to the beginning of the neck (Fig. 20).

The extension of these sites is related to the level of infestation. Oviposition ranges from three individuals with different parasitic burdens is shown in Figs 7I–K. The bird in Fig. 7I had the highest density of eggs on one eyebrow area, less in the facial and anterior auricular areas, and the lowest in the base of the neck and throat. A lower parasitic burden is shown in Fig. 7J, but with more than 50% of the embryonated. The population illustrated in Fig. 7K had hatched eggs only.

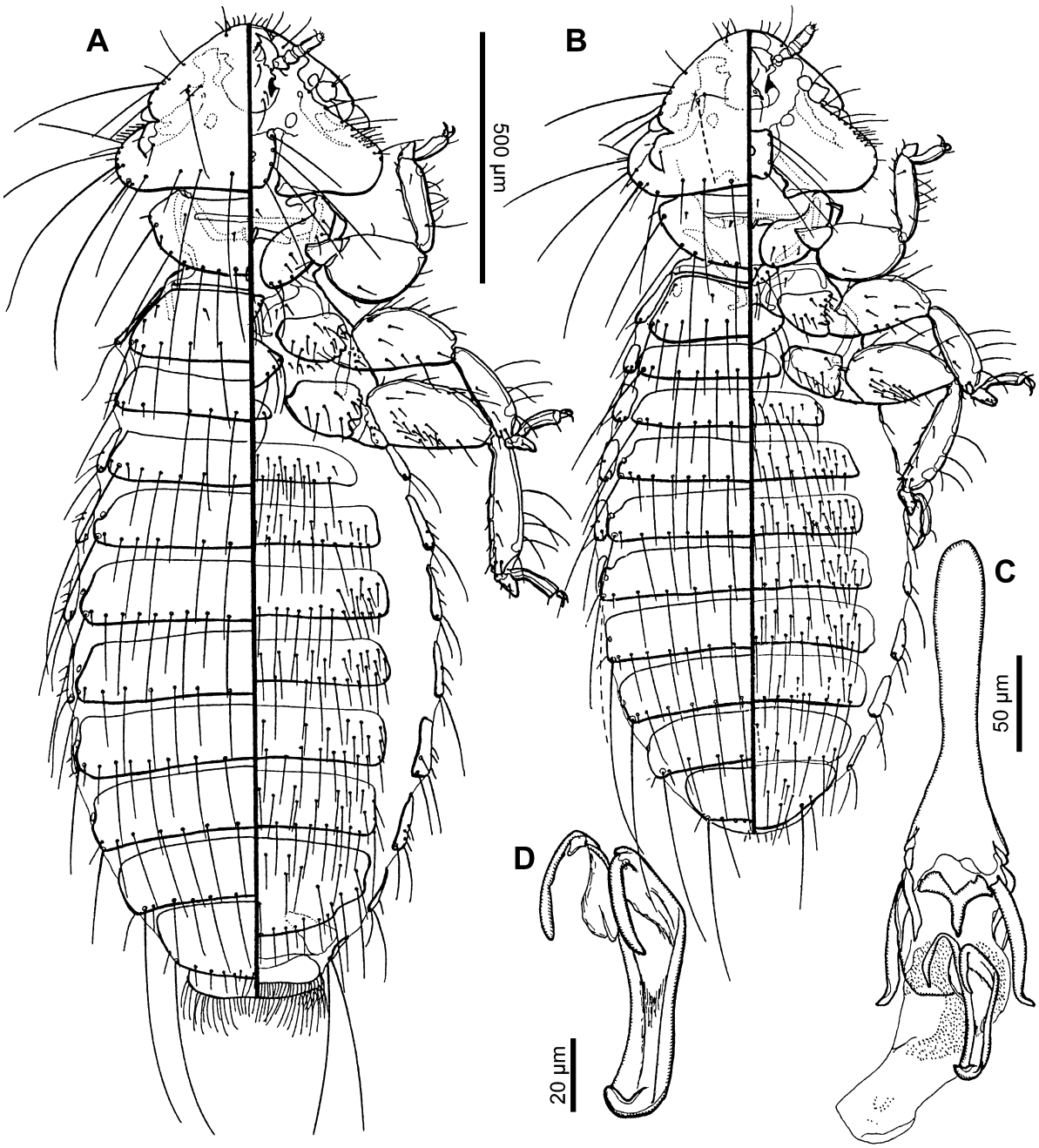

Figure 4. *Menacanthus leistidis*. Habitus: (A) female; (B) male. Genitalia: (C) male; (D) male genital sclerite.

Diagnosis. The three immature stages of *Menacanthus leistidis* have a distinct head shape and fewer number of tergal setae when compared with *M. phasiani*, *M. pici*, and *M. bonariensis*. The sternal chaetotaxy of *M. phasiani* is reduced in comparison with the other three species, forming a distinct lateral patch of setae on each abdominal segment in all stages (Modrzejewska and Złotorzycka 1987). The third nymph of *M. bonariensis* has median indentations in tergites II–VI, which are absent in *M. leistidis*.

Eggs of two species of *Menacanthus* from Neotropical passerines, *M. bonariensis* and *M. leistidis*, are completely distinct from each other. In *M. bonariensis* the amphora and operculum are smooth, and there is a long apical phanerum (Cicchino 2003), while the distal third of the amphora and entire operculum of *M. leistidis* are sculptured, and the operculum lacks apical phanerum (Figs 7B–E).

Adults of both sexes of *Menacanthus leistidis* are easily separated from the morphologically closest

species, *M. sturnellae*, by the gular plate being entirely pigmented and bearing small fenestrae in its central area (see Fig. 5). Dimensions and chaetotaxy of the male fall within the ranges of *M. sturnellae* provided by Price (1977); the genitalia and genital sclerites of these two species are also quite similar. The female of *M. leistidis* is distinguishable by its postpalpal ventral process shorter (0.02–0.03) than in *M. sturnellae* (0.04–0.05), and fewer setae on tergites III–VI (13–17 *vs* 17–22 in *M. sturnellae*), as well as on the subgenital plate (30–38 *vs* 34–42 in *M. sturnellae*). *Menacanthus leistidis* can be distinguished from *M. quiscali* Price, 1977 by the gular plate pigmentation and the tendency to have fewer setae on tergites II–IV (11–17 *vs* 18–27 in *M. quiscali*) and V–VII (12–17 *vs* 16–24 in *M. quiscali*), as well as on the subgenital plate (30–38 *vs* 34–48 in *M. quiscali*).

Remarks. *Menacanthus leistidis* has been recorded from three Neotropical species of *Leistes* (*Sturnella* Vieillot *sensu* Short 1968): *L. superciliaris* (its type host), *L. defilippi* and *L. loyca* (see Cicchino and Castro 1998a, González-Acuña *et al*. 2006, Soto *et al*. 2013, this paper). Also, it seems to be the South American vicariant to the predominantly Nearctic *M. sturnellae* Price, 1977, which is a regular parasite of northern species of *Leistes*, such as *L. neglecta* Audubon and *S. magna* (Linnaeus) (but *S. magna* reaches the extreme north end of Brazil, see Sick 1997). Although *M. sturnellae* has been recorded on *Leistes loyca* in South America more than once (Palma *et al*. 1998, Soto *et al*. 2013), we have re-examined the material studied by Soto *et al*. (2013) and found they are immatures and adults of *M. leistidis*. Cicchino and Castro (1998a), González-Acuña *et al*. (2006), and Soto *et al*. (2013) provided new records of *M. leistidis* from Argentina and Chile, but the male and the immature stages had not been described since its original description by Cicchino (1984).

The male genitalia of *Menacanthus leistidis* are very similar, if not the same, to those described for *M. sturnellae*. The conspicuous sclerotization of the gular plate (see Fig. 5A, and figs 1–3 in Cicchino 1984) is the distinctive character in both sexes of *M. leistidis* to separate it from *M. sturnellae* and *M. quiscali* (see above).

We do not agree with Palma *et al*. (1998: 318) in that the original description of *M. leistidis* is not enough to be certain of its true status. Even after the complete redescription of this species in this paper, the description by Cicchino (1984) – based on the same characters employed by Price (1977), including the sclerotization of the gular plate (see Figs 5A, B) – is sufficient to identify the species without any doubt and separate it clearly from *M. sturnellae*.

Diagnostic characters of immature stages. Modrzejewska and Złotorzycka (1987: 670) established four categories of morphological characters present in nymphs, in adults or in both simultaneously, of which three are relevant to the three nymphs of *M. leistidis*:

(1) Constant characters independent of developmental stage: a) occipital setae *dhs*21–23, b) temporal setae *dhs*24–30, c) frontal setae *dhs*12–13, d) ocular setae *dhs*19–20, e) dorsal head setae 14, 16, 17, 18, f) prothoracic posterior marginal setae; g) metathoracic setae;

(2) Setal characters that change gradually from NI to adults: a) on gular plate, b) on the meso- and metasternum, c) on abdominal tergites and sternites;

(3) Characters present in NI only (the only stage with its own characters, thus differing from the other two pre-imaginal stages), as follows: a) absence of *dhs14* and *dhs23*, b) absence of head sensillum *c*, c) absence of the outermost prothoracic seta.

Among the above characters, those which allow unequivocal differentiation of the three nymphal stages from each other, and a meaningful comparison with those of other species of *Menacanthus* are:

(2a) Chaetotaxy of gular plate: no seta in NI, 2+2 (rarely 2+1) in NII, and 3+3 (rarely 3+2) in NIII. The same pattern applies to *M. pici* and *M. bonariensis*

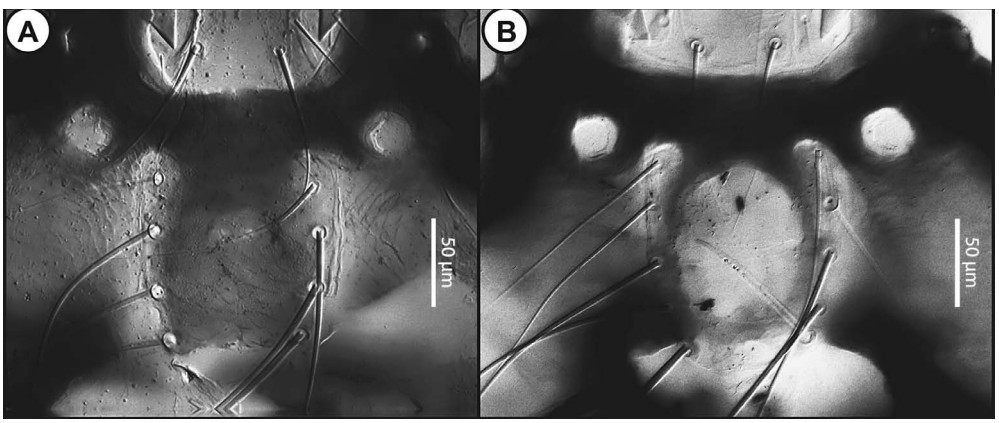

Figure 5. Female gular plate: (A) *Menacanthus leistidis* (paratype); (B) *Menacanthus sturnellae* (paratype).

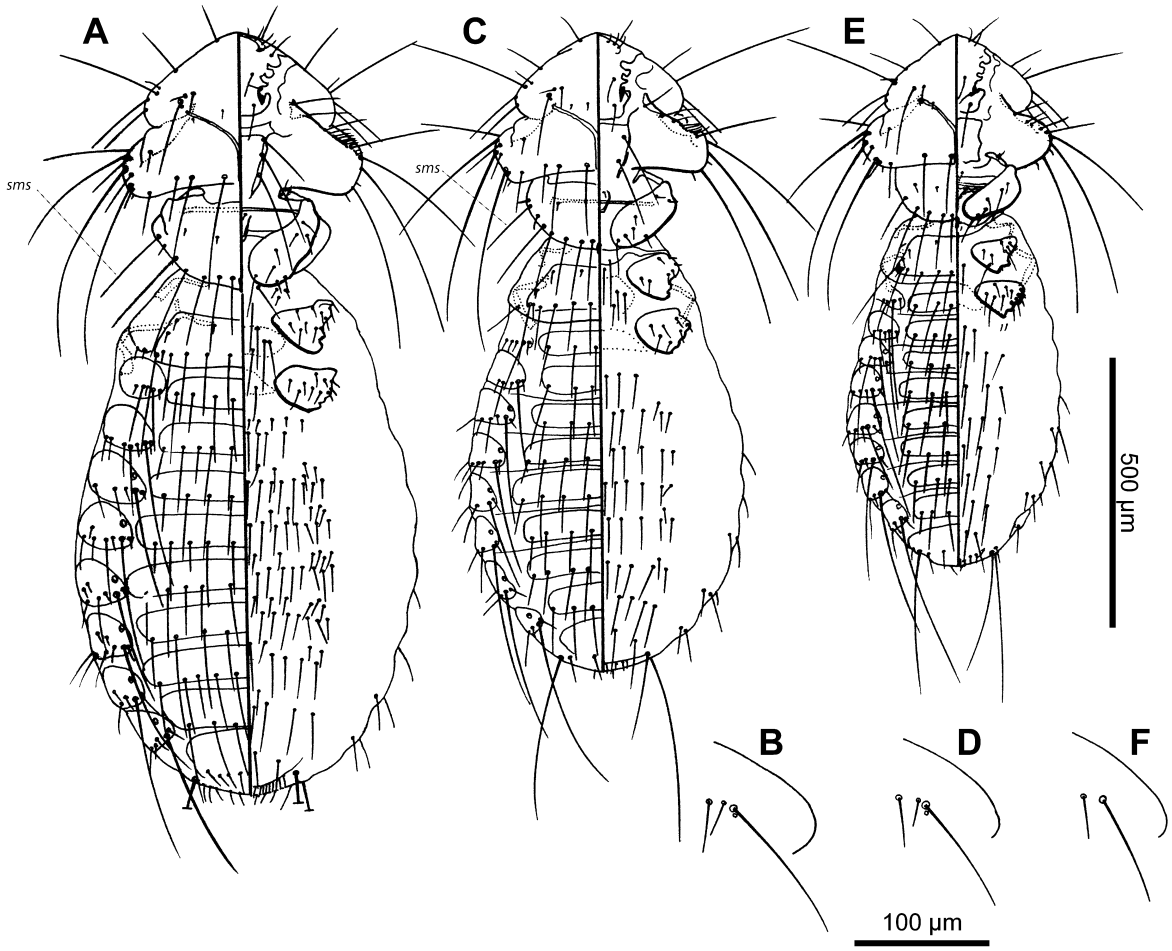

Figure 6. *Menacanthus leistidis*. Habitus: (A) nymph III; (C) nymph II; (E) nymph I. Dorsal head setae: (B) nymph III; (D) nymph II; (F) nymph I. (legs omitted, except for coxae).

(see Castro and Cicchino 1978, Cicchino 2003). Martín-Mateo (1984) states that NI of *M. pici* has 2–3+2–3 gular setae, but this does not agree with our and others' observations (Castro and Cicchino 1978, Cicchino 2003), because NI does not have gular setae. In our opinion, what Martín-Mateo (1984) interpreted as NI, actually corresponds to NII and/or NIII freshly moulted. A different pattern is present in *M. phasiani*, whose NI has 1+1 gular setae (Modrzejewska and Złotorzycka 1987);

(2b) Meso- and metasternal chaetotaxy: NI always has 2 setae on each of these segments; NII has 6–7; and NIII 6–8. Adults have 12–14 setae on the mesostermum, and 7–9 on the metasternum. NI is unequivocally recognized by this character;

(2c) The abdominal chaetotaxy on tergites and sternites undergo an increase in the number of setae through the nymphal development, with each stage possessing narrow ranges that do not overlap with those on the next stage. Thus, total numbers of setae on tergites III–VII and sternites II–VII are the most relevant features to separate different stages. In NI, the total number of setae on tergites III–VII is 28–30, and on sternites II–VII is 34–36; in NII, they are 36–40 and 58–71 respectively; and in NIII, 40–49 and 144–149, respectively. Similarly, in nymphs of *M. pici*: NI has a total of 40 setae on tergites III–VII and 32 on sternites II–VII; NII has 48–50 on tergites III–VII and 72 on sternites II–VII; and NIII has totals of 68–74 tergal and 140–150 sternal setae on the same segments (see Castro and Cicchino 1978, Cicchino 2003). The discrepancy of our data and those supplied by Martín-Mateo (1984) for NI is probably due to her error in identifying this stage, perhaps hers being a teneral NII; similarly, what she regards as NII probably correspond to NIII, but of different sexes;

(3a) Absence of *dhs14* in NI. It has already been noted by Kéler (1951) for *Pseudomenopon scopulacorne* (Denny, 1842), by Modrzejewska and Złotorzycka (1987) for *Menacanthus phasiani* and *Amyrsidea megalosoma* (Overgaard, 1943), and by Cicchino (2003) for *Menacanthus bonariensis*;

(3b) Head sensillum *c* in NI. It is absent in *M. leistidis* and in at least three other species of *Menacanthus* parasitic on Passeriformes. As above, this feature allows the identification of NI of other *Menacanthus* species parasitic on Passeriformes and Piciformes;

(3c) Absence of the outer prothoracic seta. Besides *Menacanthus leistidis*, this absence occurs in *M. aedonis* Price, 1977 (ACC obs. pers.), *M. bonariensis* (see Cicchino 2003), and *M. pici* (see Castro and Cicchino 1978). According to Modrzejewska and Złotorzycka (1987), the outer prothoracic setae are also missing in *Menacanthus phasiani* and in *Amyrsidea megalosoma*.

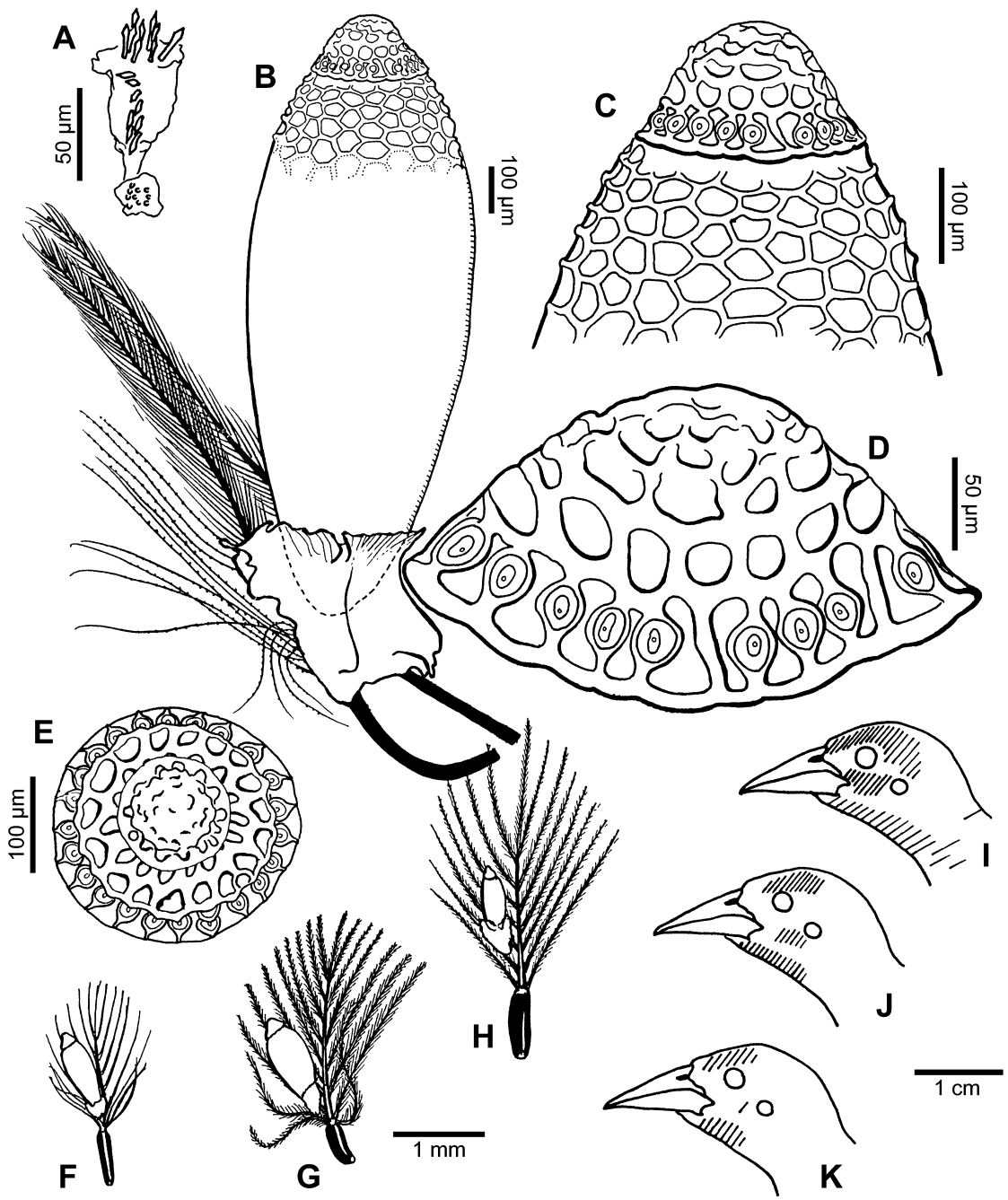

Figure 7. *Menacanthus leistidis*: (A) hatching organ of the embryo. Egg: (B) lateral view; (C) detail of its distal third; (D–E) operculum, lateral and polar views, respectively. Oviposition: (F–H) variation in cementing of eggs on feathers of the periauricular region; (I–K) oviposition sites on three individual hosts.

Suborder **Ischnocera** Kellogg, 1896

Family **Philopteridae** Burmeister, 1838 (*sensu lato*)

Genus ***Brueelia*** Kéler, 1936

Brueelia mirabile Carriker, 1963
(Figs 8, 9A–C, 9H, 14A–B, 14F, 15A–B)

Brüelia mirabile Carriker, 1963: 306, figs 19–20. Type host: *Molothrus oryzivorus oryzivorus* (Gmelin).

Brueelia mirabile: Cicchino and Castro (1996: 15, figs 51–52, 102 and 126); Cicchino and Castro (1998: 122); Price *et al*. (2003: 156).

Type locality. Colombia: Choco, Nuqui.

Material examined. Ex *Molothrus o. oryzivorus*: 2 males, 8 females, 2 NIII (female), **BRAZIL**: Mato Grosso State, no precise locality, September 1892, no coll (ACC).

Redescription. *Male*. General habitus as in Fig. 8A. Head largely oval. Preantennal margin noticeably convex. Marginal carina thick, with its internal margin undulated and pigmented in two thirds of its length. Tracks of insertion of the cibarial muscles almost obsolete. Pulvinar margin of the frontoclypeal suture with a macula occupying almost a half of its length and not reaching its internal margin. Nodal area of the frontoclypeal suture deeply darkened, somewhat lightened toward the genal area. Subgenal area, hypostomal, occipital and postoccipital sutures widely pigmented. Pro- and pterothoracic apodemes dark brown to black, moderately developed. Posterior margin of pterothorax brownish. Mesosternal plate oval to pyriform, metasternal plate large and elongate, subrectangular in shape. Abdominal tergopleural plates with anterior and posterior margins brown, VIII–IX only in their posterior edges, XI indicated by a small, roughly round, brownish spot. Tergopleurites V–VII each with a long postspiracular and one small accessory seta (occasionally one postspiracular seta in IV). Small sutural setae present on V–VII, frequently on IV. Three to four small posterior setae on tergites VI–VIII. Pleural chaetotaxy: II–III 0; IV–VIII 2. Sternal plates transverse, wide, with its anterior and posterior thirds separated by a hyaline medial area. Subgenital plate with two small lateral fenestrae, and a wide very large central fenestra which sometimes shows different degrees of coalescence with the lateral ones (Fig. 15A). Genitalia (Fig. 15B): basal plate almost parallel-sided, paramera long and with their external margin deeply concave; lateral sclerites of the mesosomal complex with one marginal and 2–3 irregular ventral rows of small tubercles.

Measurements (n = 2). HL 0.33–0.45; POW 0.32; OW 0.29–0.37; PL 0.13–0.15; PW 0.22–0.26; PTL 0.16–0.22; PTW 0.33–0.44; AL 0.80–1.08; AW 0.41–0.55; TL 1.34–1.83.

Female. As in Fig. 8B. Head and thorax much as for male, abdomen differing in measurements, shape, details of pigmentation and sexual characters. Long postspiracular seta present on tergopleurites V–VIII; VIII with a long sutural seta. Abdominal tergopleurites: II with pigmented anterior and posterior margins; III–VIII with all margins completely pigmented; IX+X mask-shaped and deeply notched medially, with slight individual variation; XI with a subtriangular brownish spot each side (Figs 14A–B). Fenestrae on sternites: II and III very large and central; IV–VI moderately narrow; subgenital plate with two proximal, transverse and narrow, usually coalescent with the long and narrow central fenestra, and two distal lateral, medium-sized, irregular and elongate, with 2–4 small setae on each side (Fig. 14F). Gonapophysis with two to five setae, usually three (Figs 9B–C). Vulvar margin, each side with 6–8 small and spiniform, and 4–6 longer and slender setae (Fig. 9H).

Measurements (n = 5). HL 0.32–0.33; POW 0.32; OW 0.34–0.35; PL 0.13; PW 0.25; PTL 0.18–0.19; PTW 0.38; AL 1.08; AW 0.46–0.47; TL 1.69–1.72.

Female third nymphal instar (*NIII*). As in Fig. 9A. General features of the head reminiscent to that of female, except for the absence of temporal carinae. Abdominal hemitergites II–VII with anterior and posterior margins brownish, VIII and IX encircled in brown, X and XI as well defined spots. Postspiracular setae present on V–VIII.

Measurements (n = 2). HL 0.30–0.33; POW 0.29–0.30; OW 0.33–0.38; PL 0.13–0.15; PW 0.23–0.25; PTL 0.18–0.20; PTW 0.34–0.35; AL 0.83–0.90; AW 0.36–0.42; TL 1.42–1.60.

Remarks. Cicchino and Castro (1996) redescribed the male, pointing out the disagreement with Carriker's (1963) measurements and some morphological features when compared with their females. The preantennal margin is noticeable more convex in both sexes, and differences in chaetotaxy and tergal and sternal pigmentation may be attributable to the condition of the specimens studied by Carriker (1963).

It is worth mentioning that Cicchino and Castro (1996) found a population of *Brueelia decumana* Cicchino et Castro, 1996 on an individual host of *M. o. oryzivorus* from Ituzaingó, NE Corrientes Province, Argentina. But that host had been captured in the same area where the type host of *B. decumana* – *Psarocolius decumanus maculosus* (Chapman, 1920), a large cacique blackbird – is frequently parasitized by the non-nest builder *M. o. oryzivorus* (see Friedmann 1963). As pointed out by Cicchino and Castro (1996), brood parasitism, together with some other chronological factors, may play an important role in the apparently anomalous distribution of certain *Brueelia* species in some local populations of blackbirds. Hence, the study of all life cycle stages of these permanent

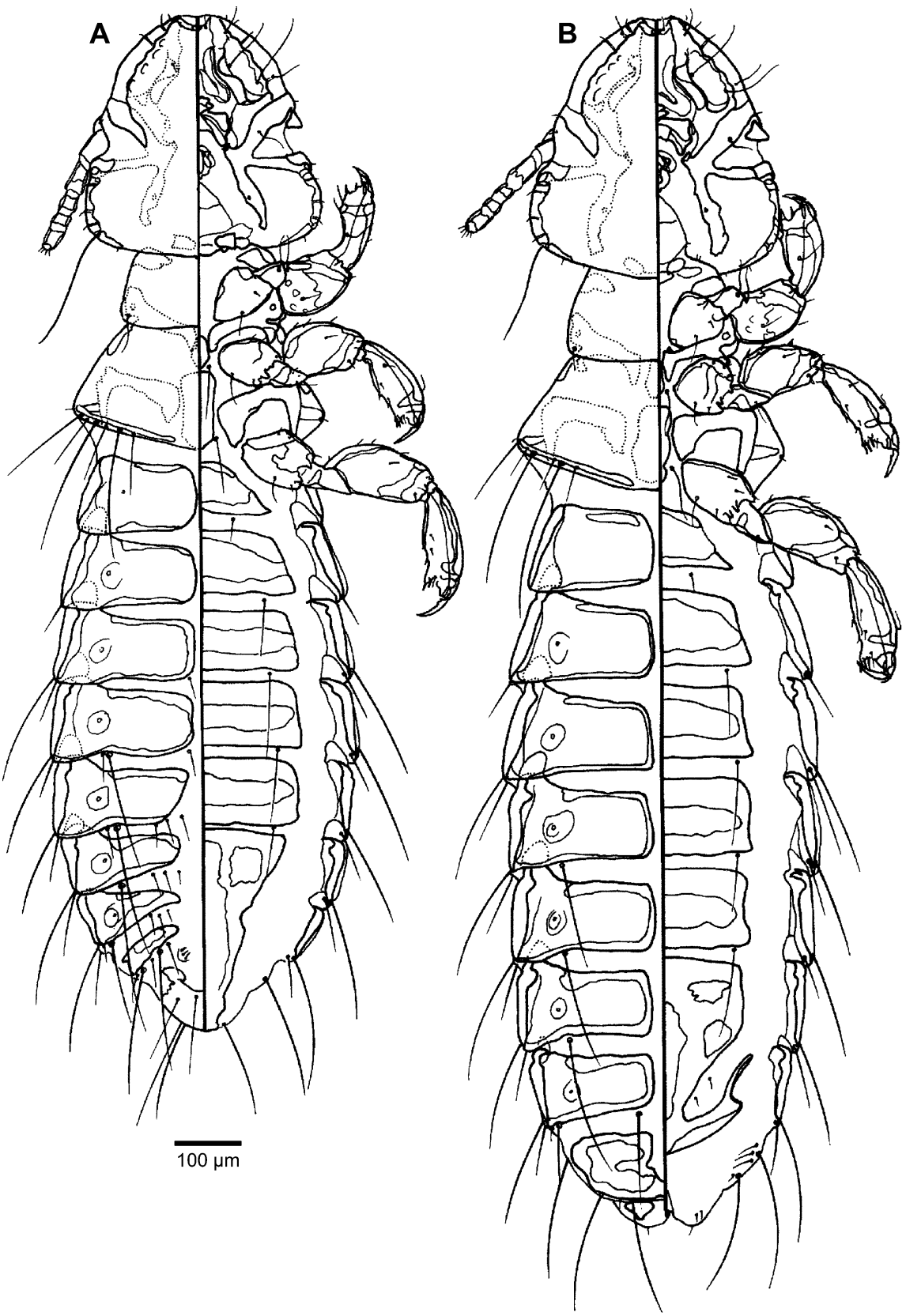

Figure 8. *Brueelia mirabile*. Habitus: (A) male; (B) female.

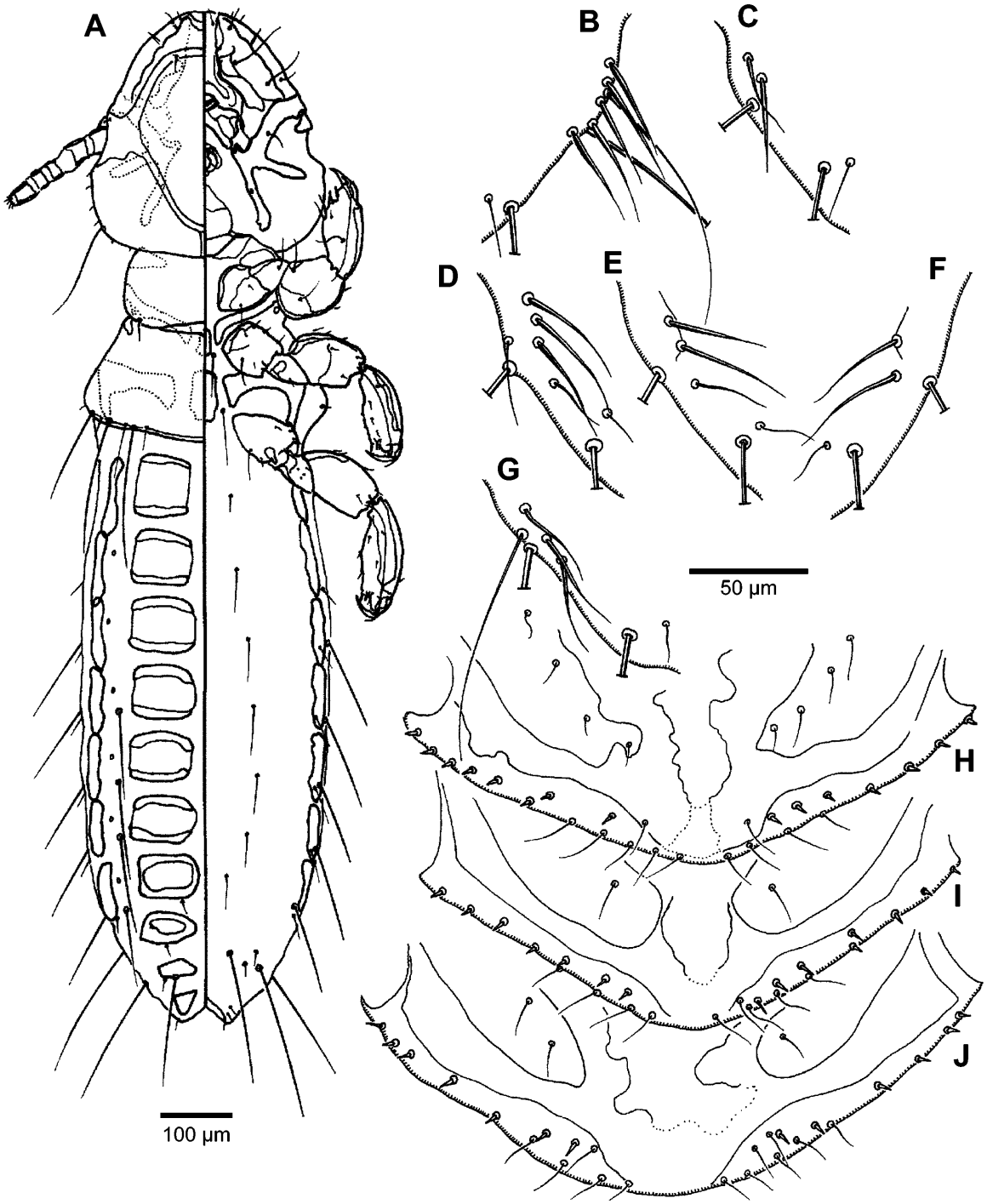

Figure 9. *Brueelia mirabile*: (A) habitus of female nymph II. Female gonapophyses: (B–C) *B. mirabile*; (D–F) *B. oxypyga*; (G) *B. chopi*. Female vulvar margins: (H) *B. mirabile*; (I) *B. oxypyga*; (J) *B. chopi*.

ectoparasites is important in order to properly distinguish a true host-louse relationship from an accidental one.

Nymphs II of *B. mirabile* are morphologically close to those of *Brueelia ruficapilla* and *Brueelia thilia* due the presence of postspiracular seta on segment V (in *B. ornatissima*, the postspiracular is present only on VI and VII). The presence of pleural setae on III in *B. mirabile* distinguishes it from those two species. In NII of *Brueelia thilia*, the sclerotization of tergites X and XI is not developed, while in *B. mirabile* and *B. ruficapilla* those tergites are well sclerotized. In addition, *B. mirabile* and *B. ruficapilla* can be distinguished by the pattern of coloration of tergites IV–VIII.

Adults are members of the *amazonae*-species subgroup (*sensu* Cicchino and Castro 1996), with forehead noticeably convex, marginal carina thickened, nodal area of the frontoclypeal suture deeply darkened, posterior margin of pterothorax narrowly brownish, tergopleurites II in females and II–III in males with only the anterior and posterior margins brownish, and IV–VII in males and III–VIII in females with all margins brownish. Male with sutural setae on IV–VIII, postspiracular and accessory setae on V–VII, and usually 2 posterior tergal setae on VI–VIII. Female with triangular brown spot on tergopleurites XI.

Brueelia oxypyga appears to be the morphologically closest species to *B. mirabile*, differing mostly in body measurements, head shape, thickness of the cephalic marginal carina, and details in the pigmentation of tergopleurites III–VIII of both sexes. Also, in the male, by a tendency to have a larger number of posterior tergal setae on tergopleurites VI–VIII; and in the female (adult and nymph III) by the presence of a well sclerotized and brownish plate on tergite XI.

Brueelia oxypyga (Giebel, 1874)
(Figs 9D–F, 9I, 10A–B, 11A–C, 14C–D, 14G, 15C–D)

Nirmus oxypygus Giebel, 1874: 135. Type host: *Amblyramphus holosericeus* (Scopoli).
Brüelia oxypyga: Hopkins and Clay (1952: 59).
Brueelia oxypyga: Cicchino and Castro (1996: 25, figs 78–80, 91); Cicchino and Castro (1998: 122); Price *et al*. (2003: 157).

Type locality. Unknown.

Material examined. Ex *Amblyramphus holosericeus*: 1 NII (male), 2 NII (female), **ARGENTINA**: Buenos Aires province, near General Lavalle, Canal 2, 10 January 1973, coll. A. C. Cicchino. 3 males, 1 female, 1 NIII (female), **ARGENTINA**: Provincia Buenos Aires, Lezama District, 17 November 1968, coll. A. C. Cicchino. 2 males, 4 females, 1 NII (female), 1 NIII (female), **ARGENTINA**: Provincia Entre Ríos, Islas del Ibicuy District, Estacion Holt, 31 May 1943, no coll.

Redescription. *Male*. As in Fig. 10A. Head ovoid, with preantennal margin slightly convex. Marginal carina moderately thick, with its internal margin undulated and pigmented throughout its length. Tracks of cibarial muscles almost obsolete. Pulvinar margin of the frontoclypeal suture with a macula occupying two thirds of its length and reaching its internal margin. Nodal area of the frontoclypeal suture deeply darkened. Subgenal area and hypostomal suture deeply and widely darkened. Occipital and postoccipital sutures narrowly pigmented. Pro and pterothoracic apodemes moderately developed and dark brown. Posterior margin of pterothorax brownish. Mesosternal plate oval to pyriform, metasternal plate large, elongate and subrectangular, with concave sides. Abdominal tergopleural plates II–VIII with only their anterior and posterior margins brown, IX+X with all margins brown. Tergopleurites IV–VII each with a medium long to very long postspiracular seta; V–VII each with one medium long to short accessory seta; V–VIII each with 1–4 (usually 3) short posterior setae; IV–VIII each with a small sutural seta. Pleural cheaetotaxy: II 0; III 1; IV–VII 2. VIII 1–2. Sternal plates transverse, wide, with their anterior and posterior thirds widely separated by a median hyaline area, much larger in II–III. Subgenital plate (Fig. 15C) with two small lateral fenestrae and a very wide and large central fenestra often showing some degree of coalescence with the lateral ones. Genitalia: basal plate almost parallel-sided, somewhat concave, paramera long, with external margins deeply concave; lateral sclerites of the mesosomal complex with one marginal and 2–3 irregular ventral rows of small tubercles (Fig. 15D).

Measurements (n = 5). HL 0.32–0.33; POW 0.27–0.29; OW 0.32; PL 0.12–0.15; PW 0.22–0.25; PTL 0.16–0.18; PTW 0.32–0.35; AL 0.60–0.88; AW 0.38–0.45; GL 0.21–0.27; GW 0.07–0.09; TL 1.38–1.51.

Female. As in Fig. 10B. Head and thorax much as for male, abdomen differing in measurements, shape, details of pigmentation and sexual characters. Tergopleurites V–VIII each with long postspiracular seta; VIII with a long sutural seta. Abdominal tergopleurites II–V with pigmented anterior and posterior margins; VI–VIII with all margins brownish; IX+X mask-shaped and deeply notched medially, with slight individual variation; XI with no dark spots (Figs 14C–D). Sternites II–VI with a moderately narrow central fenestra; subgenital plate with the upper lateral fenestrae transverse and narrow, sometimes coalescent with the long and narrow central fenestra; lower lateral fenestrae medium-sized, irregularly rounded; with 2–3 small setae on each side (Fig. 14G). Gonapophysis with three to five setae, usually three (Figs 9D–F). Vulvar margin, each side with 7–8 small and spiniform, and 4–5 longer and slender setae (Fig. 9I).

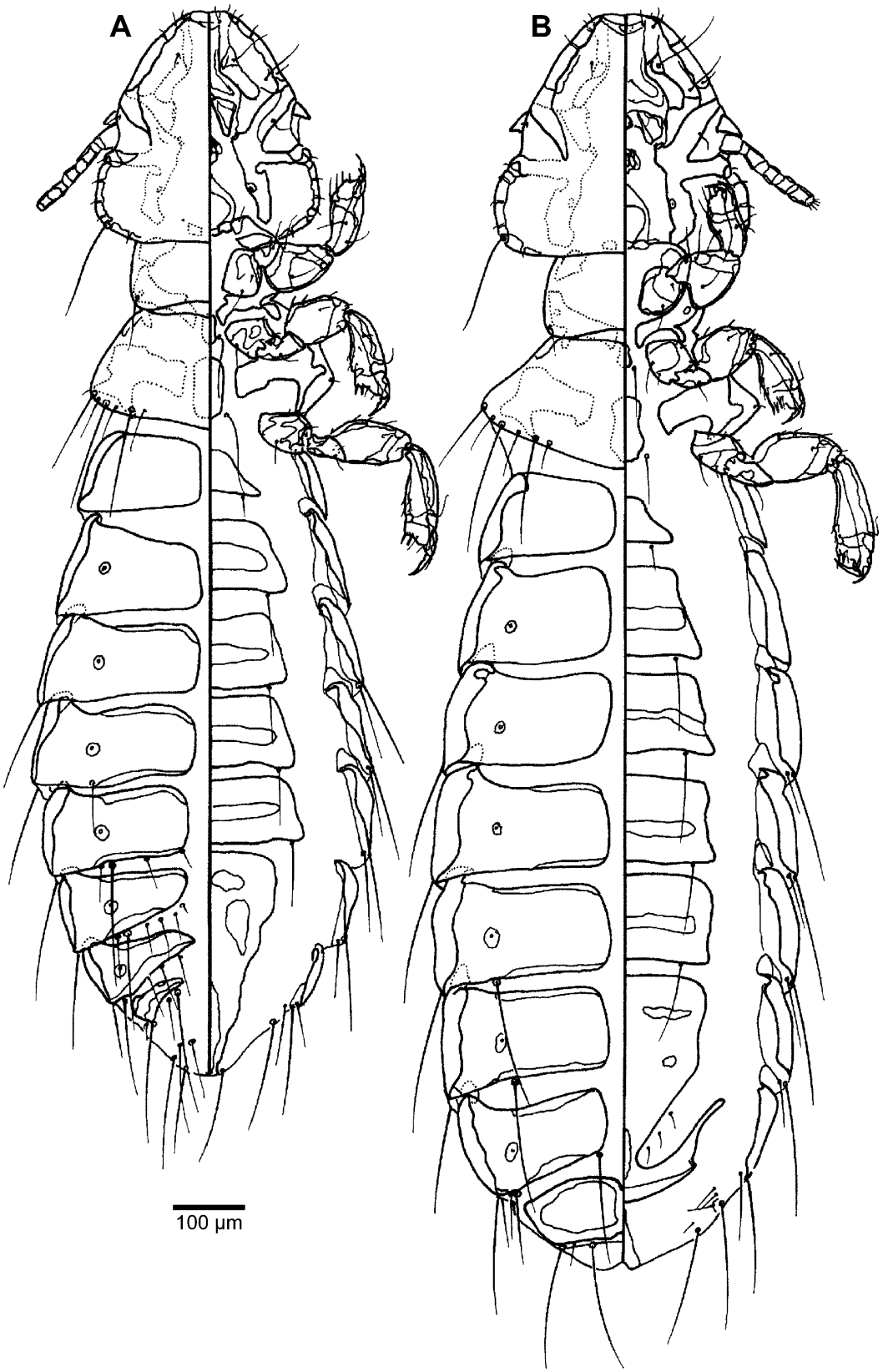

Figure 10. *Brueelia oxypyga*. Habitus: (A) male; (B) female.

Measurements (n = 6). HL 0.39–0.46; POW 0.32–0.33; OW 0.45–0.53; PL 0.11–0.16; PW 0.25–0.28; PTL 0.20–0.22; PTW 0.38–0.44; AL 1.10–1.36; AW 0.48–0.62; TL 1.81–2.10.

Female third nymphal instar (*NIII*). As in Fig. 11A. General features of the head reminiscent to those of the female, except for the absence of marginal temporal carinae. Pleural chaetotaxy as in female. Abdominal hemitergites II–VIII with anterior and posterior margins brownish, IX encircled in brown, X as a well-defined subquadrangular spot, XI lacking spots. Postspiracular setae present on V–VIII; sutural long seta on VIII, short on IX.

Measurements (n = 1). HL 0.33, POW 0.26, OW 0.31, PL 0.13, PW 0.20, PTL 0.15, PTW 0.31, AL 0.79, AW 0.35, TL 1.31.

Female second nymphal instar (*NII*). As in Fig. 11B. Much as for nymph III but smaller. Pleural chaetotaxy differs: I–II 0; III–VII 1. Sutural seta on VIII medium to short.

Measurements (n = 3): HL 0.29, POW 0.21–0.22, OW 0.26–0.27, PL 0.11, PW 0.18–0.19, PTL 0.12–0.13, PTW 0.25–0.26, AL 0.66–0.67, AW 0.29–0.30, TL 1.11–1.13.

Male second nymphal instar (*NII*). As in Fig. 11C. Much as for female nymph II, except for a smaller abdomen, hemitergite IX transverse and with its

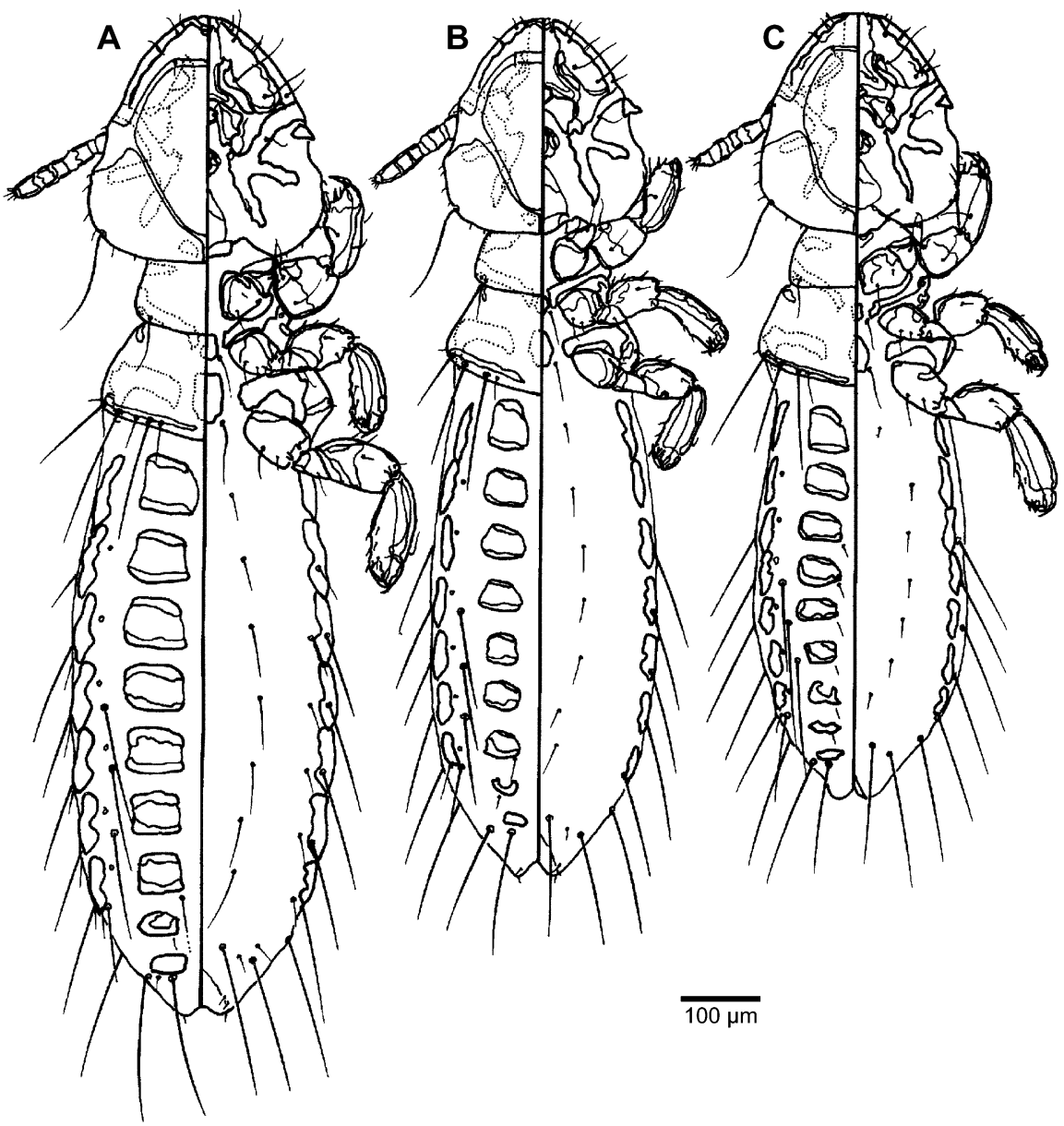

Figure 11. *Brueelia oxypyga*. Habitus: (A) female nymph III; (B) female nymph II; (C) male nymph II.

anterior margin medially notched, X narrowly transverse, and the presence of small sutural setae on IV–IX.

Measurements (n = 1). HL 0.29, POW 0.23, OW 0.26, PL 0.11, PW 0.19, PTL 0.13, PTW 0.26, AL 0.56, AW 0.28, TL 1.04.

Remarks. Their second and third nymphal stages of *B. oxypyga* are morphologically close to those of *B. mirabile, B. ruficapilla* and *B. thilia* due the presence of postspiracular seta on segment V. Also, *B. mirabile* and *B. oxypyga* are morphologically close by having pleural setae on segment III. However, *Brueelia oxypyga* can be distinguished from *B. mirabile* by having a well sclerotized tergite XI (indistinct in *B. mirabile*).

Adults of *B. oxypyga* belong to the *amazonae*-species subgroup (*sensu* Cicchino and Castro 1996), with forehead slightly convex, nodal area of the clypeofrontal suture deeply darkened, posterior margin of pterothorax narrowly brown, tergopleurites II–V in both sexes and VI–VII in males with only the anterior and posterior margins brownish, and VI–VIII with all margins brownish in females. Males with sutural setae on IV–VIII, postspiracular setae on IV–VIII, postspiracular accessory seta on V–VII, and usually 3 small posterior tergal setae. Female without a sclerotized plate on tergite XI.

Cicchino and Castro (1996) redescribed the female of *B. oxypyga*, pointing out that the morphologically closer species appeared to be *B. mimas* Cicchino et Castro, 1996, differing mostly in body measurements, head shape, pigmentation of sternites II–VI and of subgenital plate in both sexes. In males, also by the presence of sutural seta on IV in *B. mimas* (absent in *B. oxypyga*) in addition to the shape and body measurements.

Brueelia chopi sp. nov.
(Figs 9G, 9J, 12A–B, 13A–C, 14E, 14H, 15E–F)

Brueelia sp. nov. (ex *G. chopi*), Cicchino and Castro (1998b: 122).

Type host. *Gnorimopsar chopi* (Vieillot).

Type locality. Argentina: Misiones province, Eldorado District, Eldorado.

Etymology. The specific epithet is taken from the specific name of the type host, and is a noun in the genitive case.

Type material. Ex *Gnorimopsar chopi*: Male holotype, **ARGENTINA**: Provincia Misiones, El Dorado, 20 May 1962, coll. A.C. Cicchino. Paratypes: 1 female, 2 NIII (male and female), 1 NII (female?), same data as the holotype.

Other material examined. Ex *Gnorimopsar chopi*: 2 males and 2 females (MZUSP #2286–87), ex *G. chopi*, **BRAZIL**: Tocantins State, Lageado, Parque Estadual Lageado, Represa (10°10'36"S, 48°12'08"W), 27 June 2008, coll. A.M.J. Enout.

Description. *Male*. As in Fig. 12A. Head ovoid, with preantennal margin moderately convex. Marginal carina moderately thick, with its internal margin undulated and pigmented throughout its length. Tracks of cibarial muscles almost obsolete. Pulvinar margin of the frontoclypeal suture with a macula occupying almost two thirds of its length and reaching its internal margin. Nodal area of the frontoclypeal suture deeply darkened. Subgenal area and hypostomal suture deeply and widely darkened. Occipital and postoccipital sutures narrowly pigmented. Pro- and pterothoracic apodemes moderately developed and dark brown. Posterior margin of pterothorax narrowly brownish. Mesosternal plate small and pyriform, metasternal plate large, elongate, subrectangular in shape, with straight sides or slightly concave. Abdominal tergopleural plates II–VII with their anterior and posterior margins brownish; IX+X with all margins brown. Tergopleurites IV–VII each with a medium to very long postspiracular seta; V–VII each with one short to medium long, accessory seta; V–VIII each with 2–3 short posterior setae; and IV–VII each with a small sutural seta. Pleural cheaetotaxy: II–III 0; IV 1–2; V–VIII 2. Sternal plates transverse, wide, with their anterior and posterior thirds widely separated by a median hyaline area, much larger in II–III. Subgenital plate with two irregularly-shaped lateral fenestrae and one very wide and large central fenestra often showing coalescence with the lateral ones (Fig. 15E). Genitalia: basal plate with slightly concave lateral sides (Fig. 15F); paramera long as in Fig. 15D (although in Fig. 15F they appear to be much shorter because they are bent upwards in the holotype), and with their external margins deeply concave; lateral sclerites of the mesosomal complex with one marginal and 2–3 irregular ventral rows of small tubercles (Fig. 15F).

Measurements (n = 3). HL 0.32–0.33; POW 0.25; OW 0.27–0.29; PL 0.10–0.11; PW 0.20–0.21; PTL 0.16; PTW 0.32–0.33; AL 0.72–0.80; AW 0.38–0.40; GL 0.19; GW 0.08; TL 1.28–1.36.

Female. As in Fig. 12B. Head and thorax much as for male, but abdomen differing in measurements, details of pigmentation and sexual characters. Tergopleurites V–VII each with a long postspiracular seta; VIII with a trichoid lateral seta and one long sutural seta. Abdominal tergopleurites II–V with anterior and posterior pigmented margins; VI–VIII with margins completely and widely brownish; IX+X mask- shaped and deeply notched medially; and XI with a brownish spot on each side (Fig. 14E). Pleural chaetotaxy: II 0; III 1; IV–V 1–2; VI–VIII 2. Sternites II–VI with a large fenestra, IV–VI with a moderately narrow central fenestra; subgenital plate with the proximal lateral fenestrae transverse and narrow, sometimes coalescent with the

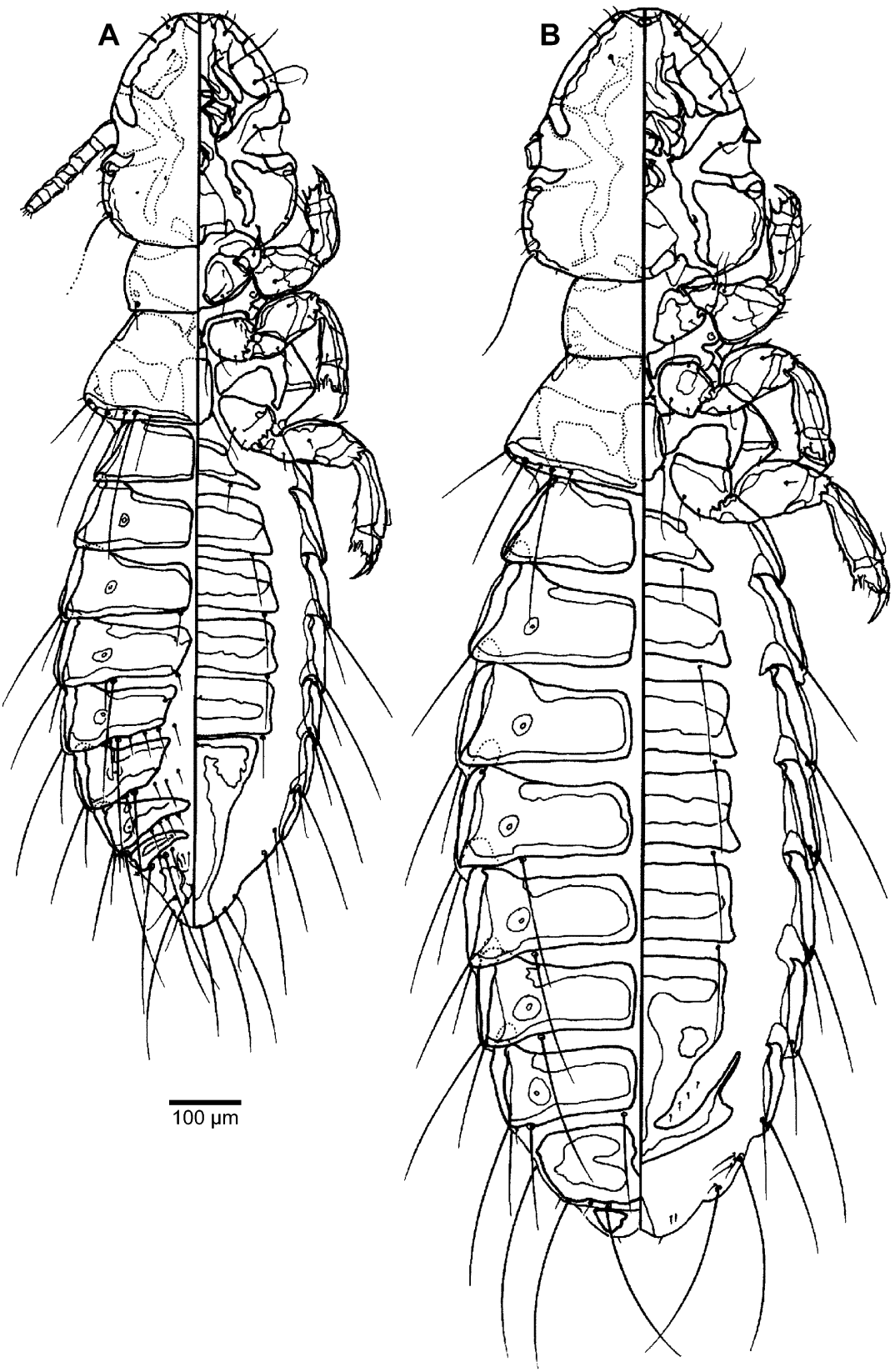

Figure 12. *Brueelia chopi*. Habitus: (A) male; (B) female.

long and narrow central fenestra; lower lateral fenestrae medium-sized, irregularly rounded, with 2–3 small setae on each side (Fig. 14H). Gonapophysis with two to four, usually three, setae (Fig. 9G). Vulvar margin, each side with 6–7 small and spiniform setae, and 4–7 longer and slender setae (Fig. 9J).

Measurements (n = 3). HL 0.35–0.38; POW 0.27–0.30; OW 0.32–0.34; PL 0.12–0.13; PW 0.22–0.24; PTL 0.18–0.19; PTW 0.35–0.39; AL 1.07–1.10; AW 0.45–0.53; TL 1.68–1.73.

Female third nymphal instar (*NIII*). As in Fig. 13A. General features of the head reminiscent to those of female, except for the absence of marginal temporal carinae, and by having a narrower marginal carina. Pleural chaetotaxy: II–III 0; IV 1; V–VII 2; VIII 1–2. Abdominal hemitergites II–VIII with anterior and posterior margins brownish; IX almost encircled with brown pigmentation; X as a well-defined subquadrangular and anteriorly notched spot; XI as a triangular spot. Postspiracular setae present on V–VII; short

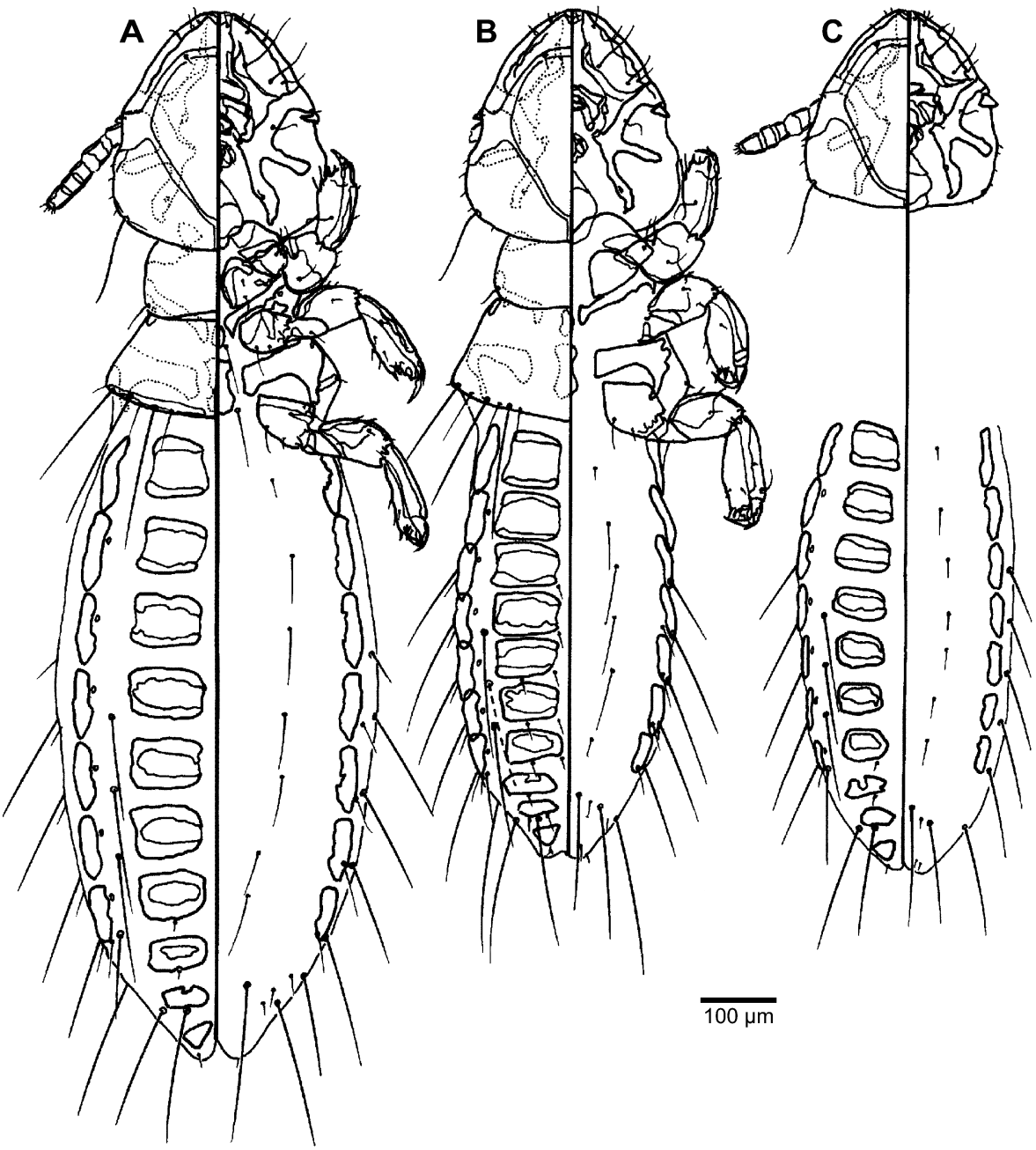

Figure 13. *Brueelia chopi*. Habitus: (A) female nymph III; (B) male nymph III; (C) head and abdomen of nymph II (female?).

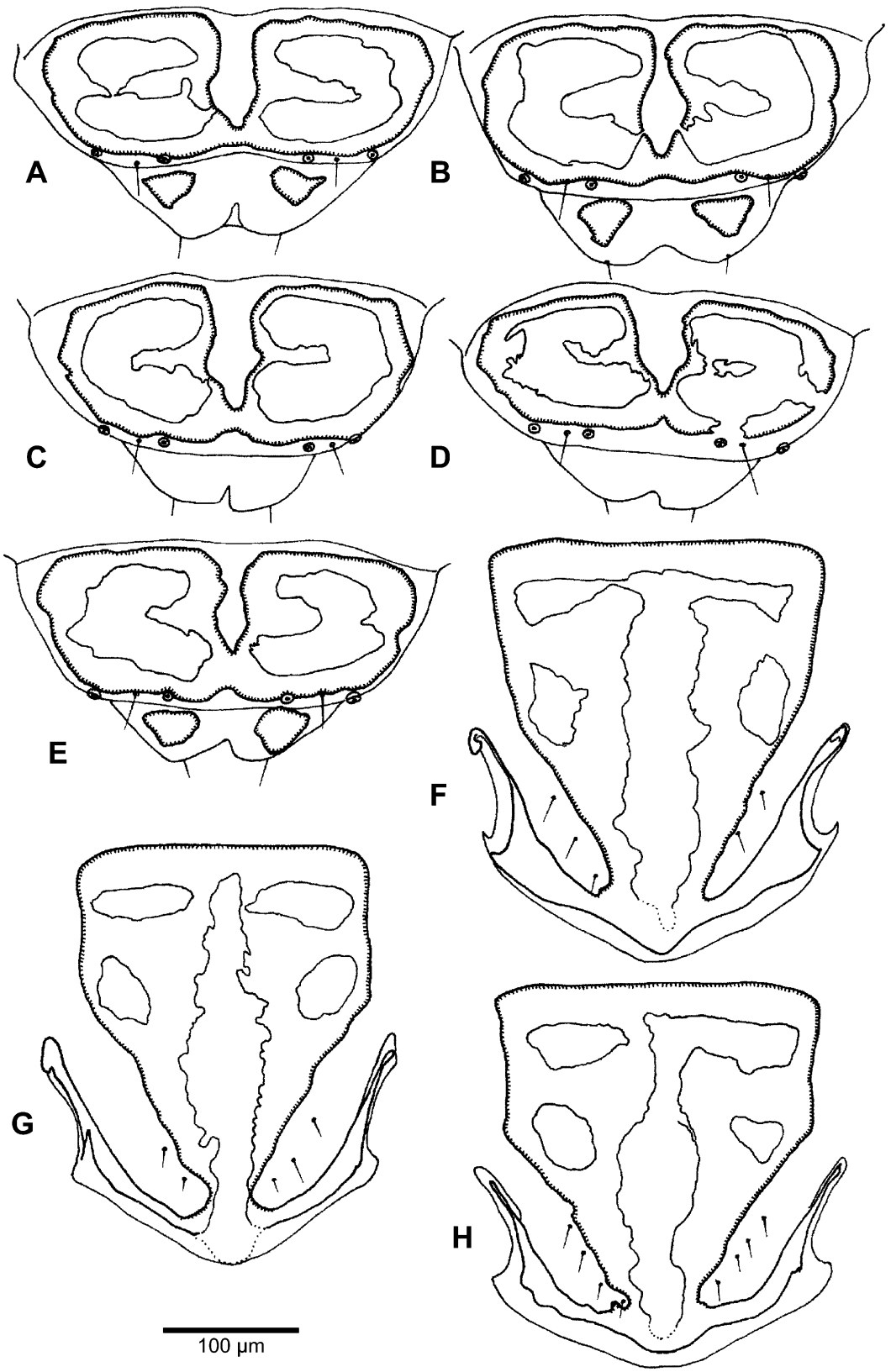

Figure 14. Female abdominal tergites IX + X and XI: (A–B) *Brueelia mirabile*; (C–D) *B. oxypyga*; (E) *B. chopi*. Female subgenital plates: (F) *B. mirabile*; (G) *B. oxypyga*; (H) *B. chopi*.

posterior seta on VIII–IX. The only specimen available lacks sutural seta on segment VIII.

Measurements (n = 1). HL 0.33; POW 0.27; OW 0.29; PL 0.12; PW 0.21; PTL 0.15; PTW 0.32; AL 0.89; AW 0.44; TL 1.44.

Male third nymphal instar (*NIII)*. As in Fig. 13B. Much as for female nymph III, except for size, presence of short sutural setae on IV–VIII, and posterior tergal setae on VI–IX. Also, hemitergite IX transverse, subrectangular and anteriorly notched.

Measurements (n = 1). HL 0.32; POW 0.25; OW 0.29; PL 0.13; PW 0.22; PTL 0.16; PTW 0.34; AL 0.61; AW 0.30; TL 1.16.

Second nymphal instar (*NII*). As in Fig. 13C. Much as for nymph III, but smaller. Pleural chaetotaxy differs: II–III 0; IV–VII 1. Sutural seta on VIII medium to short.

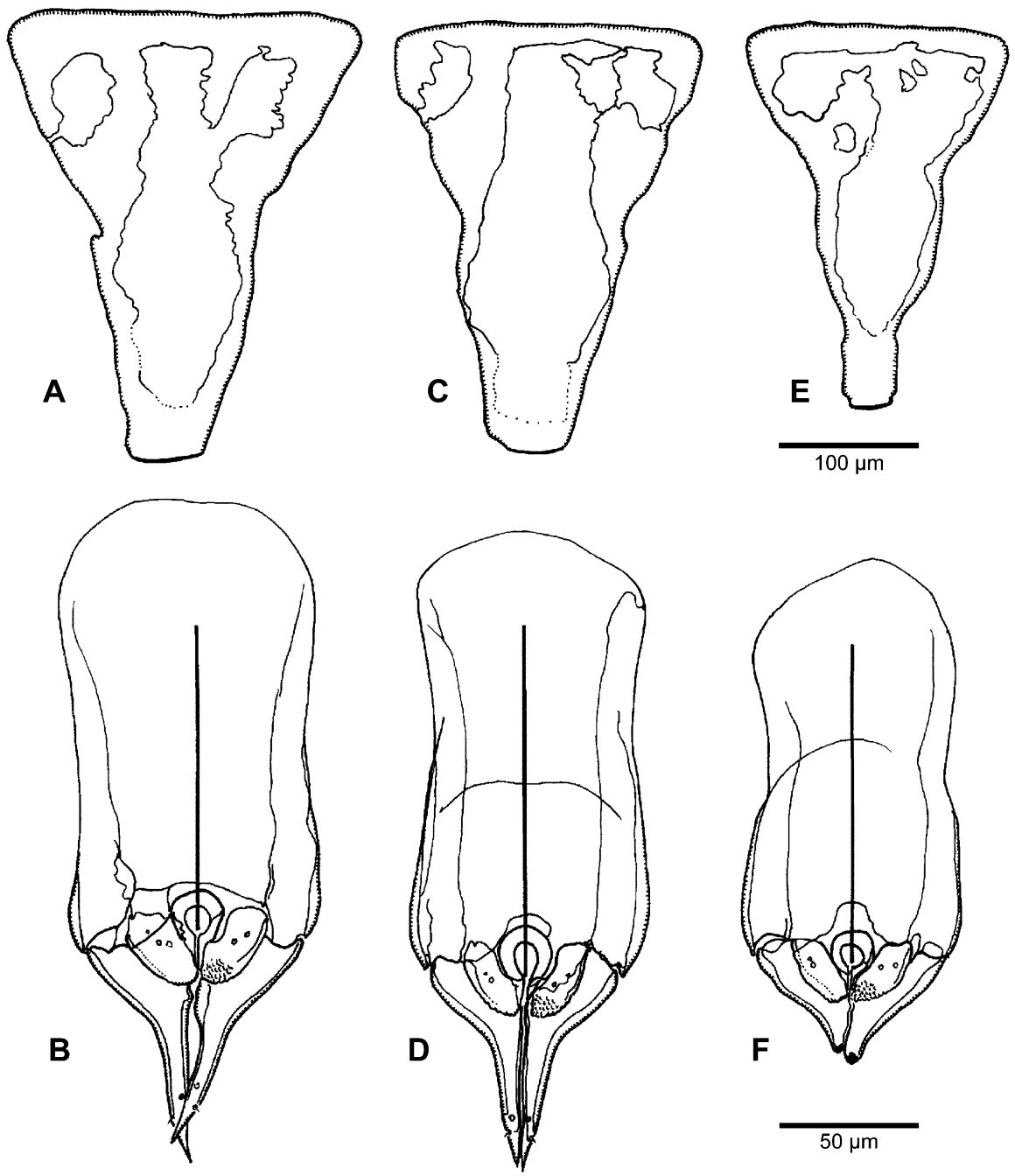

Figure 15. Male subgenital plates of: (A) *B. mirabile*; (C) *B. oxypyga*; (E) *B. chopi*. Male genitalia: (B) *B. mirabile*; (D) *B. oxypyga*; (F) *B. chopi*.

Measurements (n = 1). Due the poor condition of the single specimen available, only reliable measurements are given: HL 0.27; POW 0.24; OW 0.26; AL 0.64; AW 0.30.

Diagnosis. The last immature stages of *B. chopi* are close to those of *B. mirabile, B. oxypyga, B. ruficapilla* and *B. thilia*, due the presence of postspiracular seta on segment V. The absence of pleural setae on NIII in *B. chopi*, *B. ruficapilla* and *B. thilia* places these species in a morphologically close group. The presence of well sclerotized tergite XI is common to *B. chopi* and *B. ruficapilla*, but their nymphal stages can be distinguished by their pattern of pigmentation and the fenestrae on tergite IX.

Adults of *B. chopi* belong to the *amazonae*-species group (*sensu* Cicchino and Castro 1996) with both sexes greatly dimorphic in body measurements, the male being noticeably smaller than the female (Figs 12A–B), head ovoid with preantennal margin slightly convex, nodal area of the frontoclypeal suture deeply darkened, tergopleurites I–VII in males and II–III in females with their anterior and posterior margins brownish, IV–VIII completely encircled in brown pigmentation, with a well sclerotized and brownish plate on each side of tergite XI in females, with sternites II–III largely fenestrated, and with postspiracular setae present on V–VIII in both sexes.

Brueelia chopi is morphologically very close to *B. oxypyga* and *B. amazonae* Stafford, 1943, differing in the shape of the forehead; the nodal area of the frontoclypeal suture being deeply infuscate; and with tergopleurites II–III in both sexes and IV–VII in males, having only their anterior and posterior margins brownish.

Brueelia paradoxa sp. nov.
(Figs 16–20)

Brueelia sp. nov. (ex *L. superciliaris*), Cicchino and Castro (1998b: 122).

Type host. *Leistes superciliaris* (Bonaparte).

Type locality. Argentina: Buenos Aires, Berisso, La Balandra.

Etymology. The adjective *paradoxa* (*para-* 'contrary to' + *-doxa* 'an opinion'), feminine, reflects the eclectic features of this exceedingly interesting and infrequently collected species, combining several characters of the *picturata* species-group with some others known only in the *ornatissima* species-group.

Type material. Ex *Leistes superciliaris*: Male holotype **ARGENTINA**: Provincia Buenos Aires, Berisso District, La Balandra, 16 December 1993, coll. A. C. Cicchino. Paratypes. 3 males, 4 females, 4 NII, 2 NIII (males), 2 NIII (females), (one female in MZUSP #6322), same data as holotype. 2 males and 1 female (MZUSP #6323–25), **ARGENTINA**: Provincia Buenos Aires, Berisso District, La Balandra, 28 October 1993, coll. A. C. Cicchino.

Description. *Male*. Habitus as in Fig. 16A. Head oval, longer than wide. Preantennal margin slightly convex; marginal carina thickened with its inner edge sinuate, and completely pigmented (except for a small portion adjacent to the nodal area). Tracks of insertion of cibarial muscles poorly defined. Frontoclypeal suture with its nodal area blackish, and its pulvinar border with a macula occupying approximately a half of its length. Subgenal area and hypostomal, occipital and postoccipital sutures widely pigmented, with pigmentation extending over a great portion of the subgenal area, and the tracks of insertion of the mandibular adductor muscles clearly visible and strongly pigmented. Gular plate pigmented in its apical half, the pigment delimiting a rhombic silhouette. Marginal temporal carinae pigmented up to level of *mts6*. Pro and pterothoracic apodemes deeply black. Mesosternal plate subtriangular to subpyriform; metasternal plate subrectangular, noticeably longer than wide. Posterior margin of pterothorax lacking pigmented sclerotization. Abdomen with tergites II–VIII lightly and uniformly pigmented. Tergite VIII with its posterior margin lightly brownish. Paratergal chaetotaxy: II–III 0; IV–VIII 1. Sternal plates III–VI brownish, with their central third lighter, II and subgenital plates uniformly pigmented. Tergal chaetotaxy: V–VII each with postspiracular seta long and a small accessory seta; VII–VIII each with 2–3 small posterior tergal setae; VI–VIII each with one small sutural seta. Genitalia (Figs 17F–G): basal plate wide, with subparallel lateral borders; paramera pigmented, long, straight and subtriangular in shape (Fig. 17G); lateral sclerites of the mesosomal complex with their posterior edge corrugated, with 2–3 row of rugas (Figs 17F–G).

Measurements (n = 4). HL 0.34–0.35; POPW 0.25–0.26; OW 0.30–0.31; PL 0.11; PW 0.21–0.22; PTL 0.14; MTW 0.28–0.29; AL 0.89–0.90; AW 0.35–0.36; TL 1.45–1.46.

Female. Habitus as in Fig. 16B. Head, thorax and abdomen much as for male, differing in body size, abdominal terminalia and tergal chaetotaxy (one long postspiracular seta on VI–VIII only). Tergal plate IX+X with pigmented area shaped as a 'mask' or a horizontal '8', and XI with a wide brownish spot on each side (Fig. 17A). Subgenital plate uniformly pigmented, without fenestra (Fig. 17B), with 2–3 small setae on each side (Figs 17B, 17E). Gonapophysis usually with 3 setae, less frequently with four (Figs 17C–D). Vulva, each side with 3–4 short and spiniform and 5–6 longer and finer setae (Fig. 17E).

Measurements (n = 5). HL 0.37; POW 0.27–0.28; OW 0.33–0.34; PL 0.13; PW 0.23–0.33; PTL 0.14–0.15; MTW 0.31; AL 1.01–1.02; AW 0.41–0.42; TL 1.62–1.64.

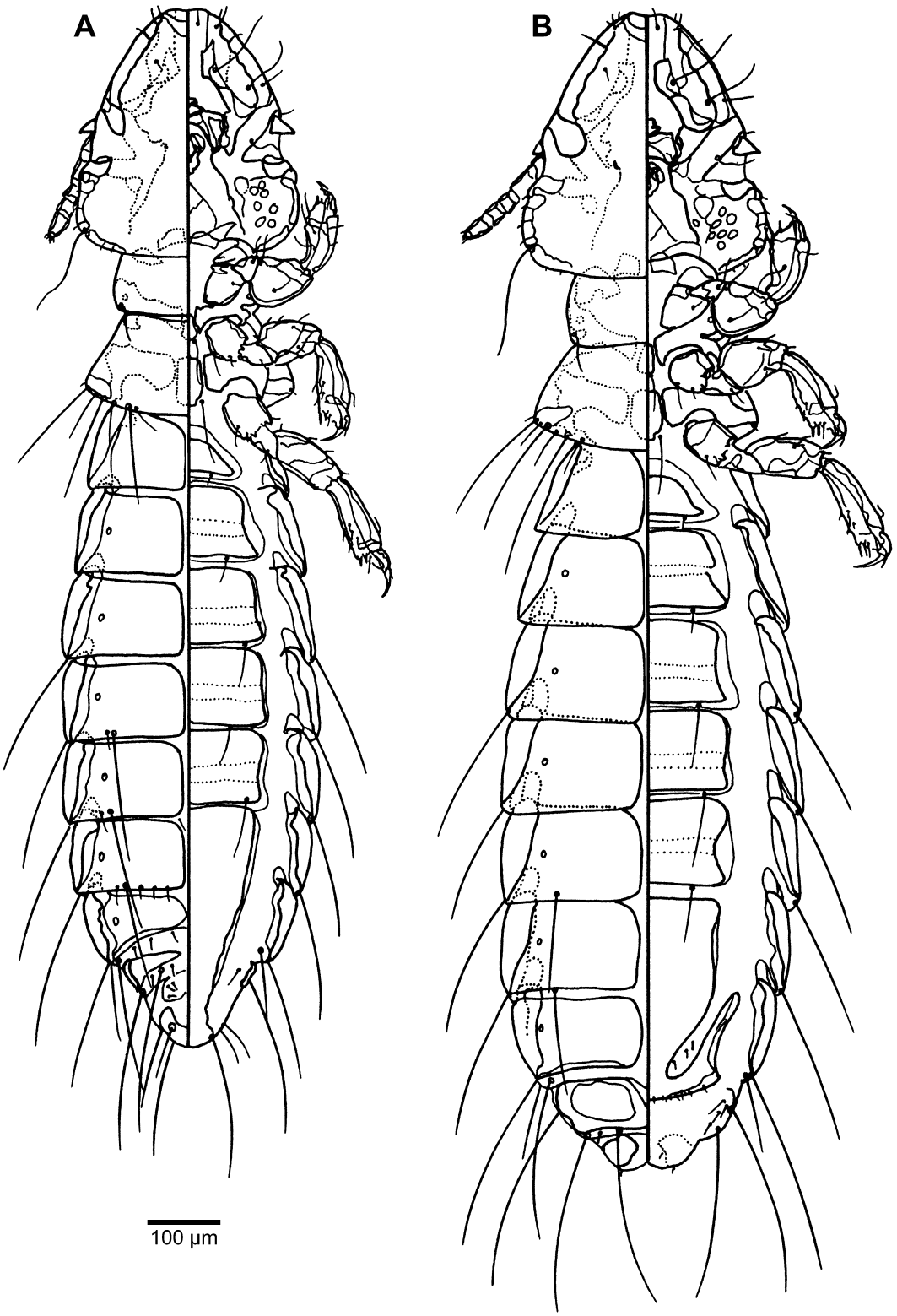

Figure 16. *Brueelia paradoxa*. Habitus: (A) male; (B) female.

Female third nymphal instar (*NIII*). As in Fig. 18A. Pigmentation of head and thorax reminiscent of that of the female, but less extended. Pleural plates II–VIII widely developed, with the following chaetotaxy: II 0, III 0–1, IV–VII 1. Hemitergal plates almost unpigmented, VI lightly pigmented, VII–VIII with their margins more pigmented, and IX+X with a small and horizontal spot more pigmented. Postspiracular setae on V–VII, and a small sutural seta on VIII. Sternal setae II–VII small, VIII longer.

Measurements (n = 2). HL 0.33; POW 0.26; OW 0.30; PL 0.12; PW 0.20; PTL 0.13–0.14; MTW 0.27–0.28; AL 0.71–0.72; AW 0.28–0.29; TL 1.26–1.27.

Male third nymphal instar (*NIII*). As in Fig. 18B. Much as for female nymph III, except as follows: hemitergal plates II–III almost unpigmented, those on

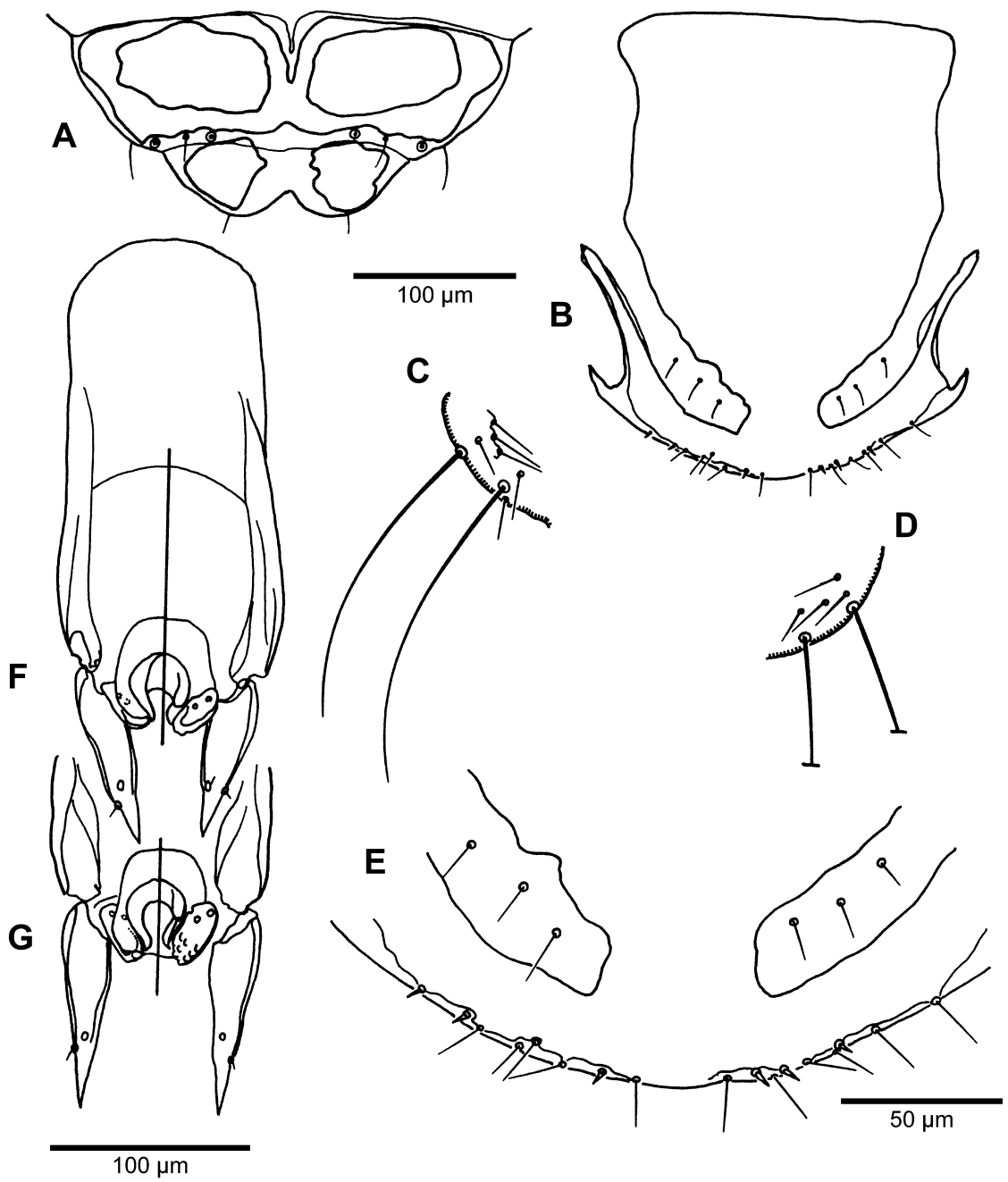

Figure 17. *Brueelia paradoxa*: (A) female tergites IX + X and XI; (B) female subgenital plate and vulva; (C–D) female gonapophyses (two patterns); (E) details of the vulvar margin; (F) male genitalia; (G) same, detail of distal portion of another individual.

IV–VIII with pigmentation progressively darker, IX with a small and deeply pigmented spot, postspiracular setae on VI–VII only (may be an accessory seta on VII, but it is inconspicuous), and all sternal setae short.

Measurements (n = 2). HL 0.31; POW 0.24; OW 0.27; PTL 0.12; MTW 0.26–0.27; AL 0.70; AW 0.28–0.29; TL 1.23–1.24.

Second nymphal instar (*NII*). As in Fig. 18C. Much as for the preceding stage, but with carinae less developed and less pigmented. Hemitergal plates II–VIII with pigmentation progressively darker, IX–XI without pigment. Long postspiracular setae present on VI–VII; all sternal setae short.

Measurements (n = 4). HL 0.29–0.30; POW 0.22–0.23; OW 0.26–0.27; PL 0.09; PW 0.17–0.18; PTL 0.12; MTW 0.24–0.25; AL 0.58–0.59; AW 0.26–0.27; TL 1.05–1.06.

Eggs. Elongate (Fig. 19A) and somewhat flattened, elliptical in transversal section. Maximum length (opercular phanerum excluded) 0.58, maximum width

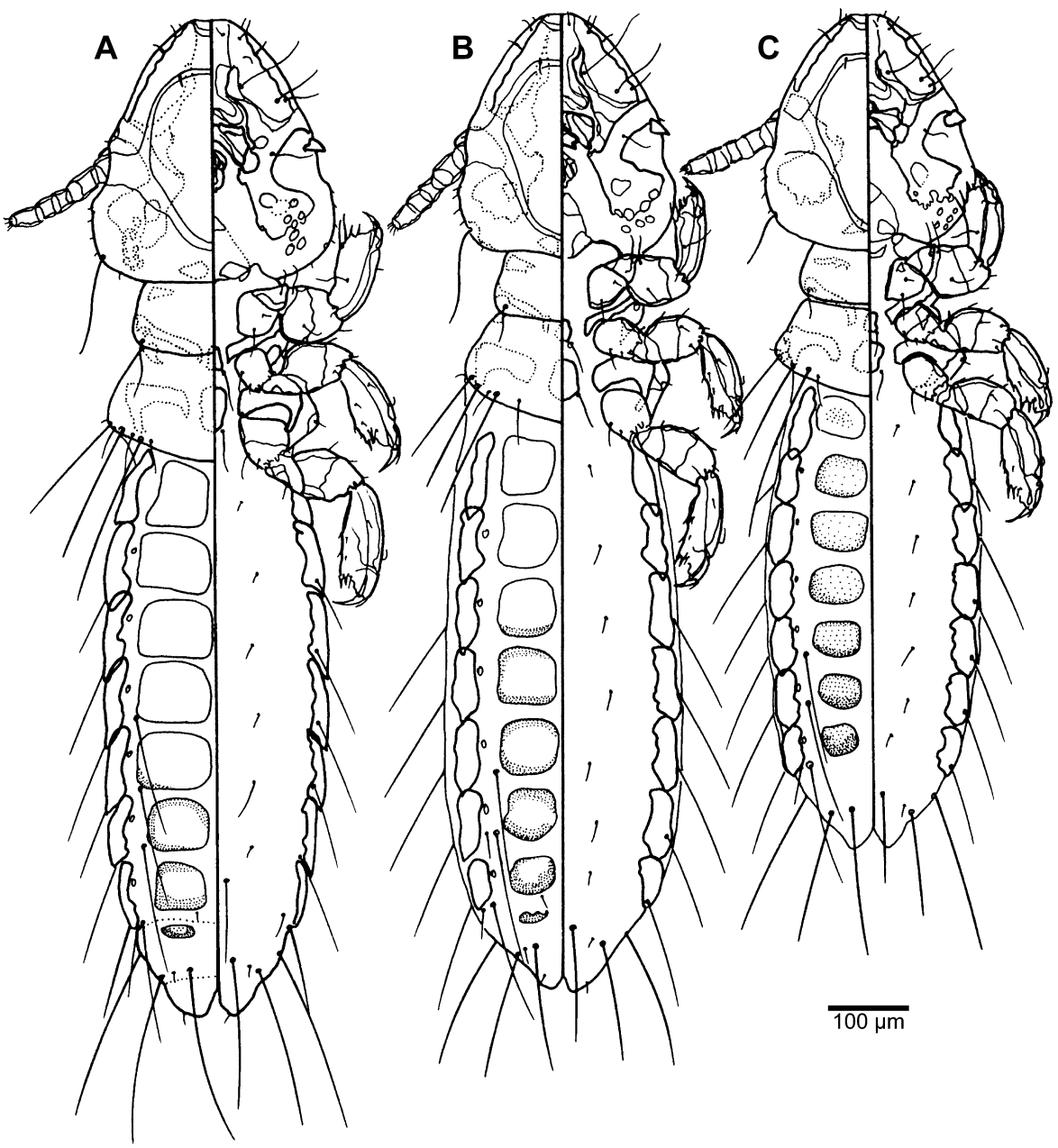

Figure 18. *Brueelia paradoxa*. Habitus: (A) female nymph III; (B) male nymph III; (C) nymph II.

measured at level of the center of the amphora, 0.24. Operculum with an irregular row of 18–28 (usually 18–19) air chambers (Figs 18B–F), and a long, extended or variously coiled, central phanerum (Figs 19C–F). Maximum and minimum diameters of the operculum are 0.13 and 0.09, and the maximum and minimum lengths of the phanerum are 0.75 and 0.39, respectively. Amphora smooth, with its maximum length 0.56. Chorionic hydropyle small and set posteriorly at amphora, centric with a beam of channels arranged as shown in Fig. 19G. The only illustrated egg of a species of *Brueelia* is that of *B. parabolocybe* (Carriker, 1903) – a parasite of flycatchers (Tyrannidae) – in Cicchino and Abrahamovich (1986). Eggs of *B. paradoxa* and those of *B. parabolocybe* share an apical phanerum, air chambers set on nearly two irregular rows on the operculum, and a smooth amphora. However, eggs of *B. paradoxa* are distinct in having

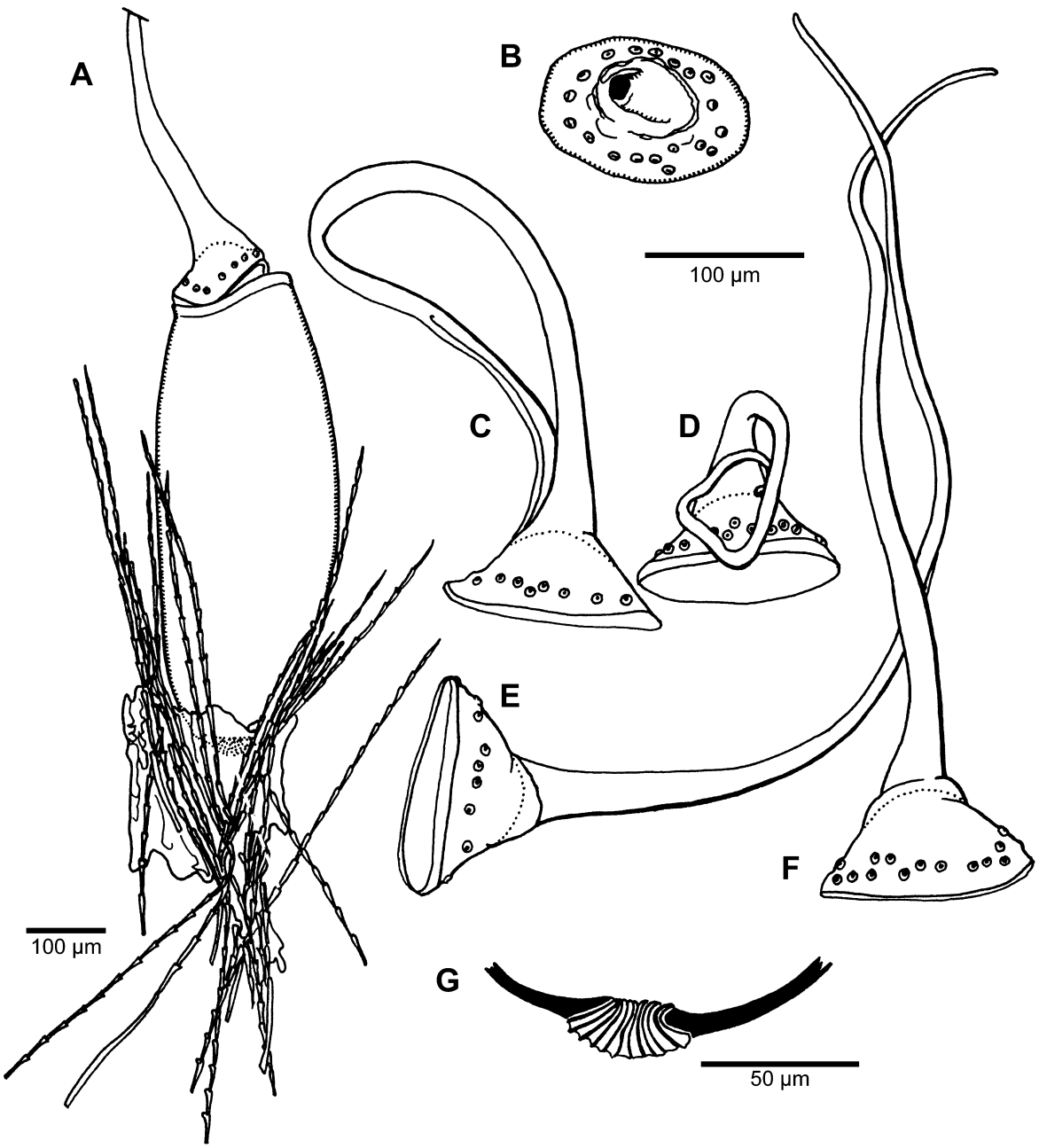

Figure 19. *Brueelia paradoxa*. Egg: (A) general aspect and cementation to a bundle of barbules of the lower vane of a breast contour feather; (B) apical view of operculum; (C–F) different details of the operculum and variation of its apical phanerum in lateral views; (G) optical section of the chorionic hydropyle.

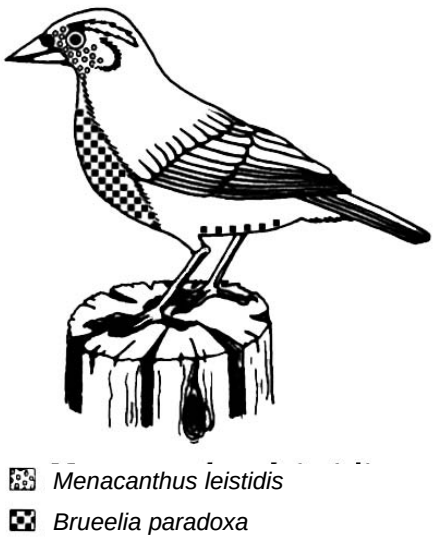

Figure 20. Oviposition sites of the two chewing louse species (*Menacanthus leistidis* and *Brueelia paradoxa*) on a specimen of *Leistes superciliaris*.

a longer apical phanerum (at least $^1/_2$ length of amphora) than that of *B. parabolocybe* (at most $^1/_3$ length of amphora) (see Cicchino and Abrahamovich 1986).

Sites of oviposition. The eggs laid in the lower vanus, glued basally to a bundle of barbules by a moderate amount of spumaline (Fig. 19A), one or more per feather belonging to the ventral pterylae from the upper breast and the abdomen, reaching in heavy infestation almost the crissum. This area of oviposition does not overlap that of the only other louse species known to parasitize this host, *M. leistidis* (see above), which oviposite in the frontal, facial and chin areas of the head (Fig. 20).

Diagnosis. The immature stages of *B. paradoxa* are close to those of *B. mirabile, B. oxypyga*, *B. ruficapilla*, *B. thilia* and *B. chopi* due the presence of postspiracular seta on segment V. The presence of pleural setae on segment III (at least in NIII) in groups *B. mirabile, B. oxypyga* and *B. paradoxa* as morphologically close. The unpigmented tergite XI places it together with *B. oxypyga*, from which it can be distinguished by the shape and pigmentation of tergites II–IX.

Within the species of *Brueelia* parasitic on the Icteridae, adults of *B. paradoxa* belong to the *picturata* species-group as defined by Cicchino and Castro (1996) by sharing the following features: a) tergal plates uniformly pigmented without brownish margins, b) subgenital plates uniformly pigmented in both sexes, c) pleural plates wide, thick and brownish, d) sutural seta absent on VIII, and e) parameres of the male genitalia long and triangular, with their external margin almost straight. *Brueelia paradoxa* differs from other members of the group by: a) lower half of the frontoclypeal suture pigmented, brownish, b) pigmentation of the occipital and postoccipital sutures largely extended toward the genal area and containing the deeply pigmented tracks of insertion of the mandibular adductors muscles, c) female tergite IX+X with more pigmented borders shaped as a 'mask' or a horizontal '8', and d) presence of a well sclerotized and brownish plate on each side of tergite XI in females.

Brueelia paradoxa has some cephalic features known only in some species of the *amazonae* subgroup of the *ornatissima* species-group (*sensu* Cicchino and Castro 1996), and shares most abdominal features with the *picturata* species-group, as well as with a number of *Brueelia* species infesting primarily Argentinean and Chilean Andino-Patagonian fringilline finches (e.g. species of *Diuca* Reichenbach and *Phrygilus* Cabanis) (Cicchino and González-Acuña 2008, 2009). Therefore, at present it is not possible to speculate whether these characters are conservative, regressive or adaptive features, obscuring their phylogenetic significance.

This fact let us to redefine the *picturata* species-group with features as follows: a) genal, subgenal, hypostomal, occipital and postoccipital areas hyaline, or uniformly and widely pigmented, including most part of the genal and subgenal areas, b) pulvinal border of the frontoclypeal suture hyaline or with a brownish spot occupying its posterior portion, c) tergopleural plates II–VIII lightly and uniformly pigmented in both sexes, d) gular plate uniformly pigmented, or with its basal and apical thirds more deeply pigmented, but never fenestrated or hyaline in the middle, e) subgenital plates entire and almost uniformly pigmented in both sexes, f) pleural plates wide and brownish, g) female tergopleural plates VIII lacking the long sutural seta, h) parameres of the male external genitalia long and triangular, with its external border almost straight.

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