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Chewing lice (Phthiraptera: Amblycera, Ischnocera) from wild passerines (Aves: Passeriformes) in northern Vietnam, with descriptions of three new species

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Abstract

Thirteen species of chewing lice (Insecta: Phthiraptera) were found on 46 wild passerines of 10 species in Cuc Phuong National Park in northern Vietnam. Three new species of the genera *Myrsidea* and *Brueelia* are described; they and their type hosts are: *Myrsidea annae* ex *Schoeniparus rufogularis* (Mandelli, 1873), *Brueelia hrabali* ex *Macronous gularis* (Horsfield, 1822) and *Brueelia neodaumae* ex *Zoothera dauma* (Latham, 1790). First records of chewing lice from *Serilophus lunatus* (Gould, 1834), *Stachyris nigriceps* Blyth, 1844, *Niltava davidi* La Touche, 1907 and *Alcippe morrisonia* Swinhoe, 1863, and a new host record for *Menacanthus nogoma* Uchida, 1926 are also included.

Key words: Phthiraptera, lice, *Brueelia*, *Myrsidea*, *Phlopterus*, *Menacanthus*, new species, birds, new records, Vietnam

Introduction

There are 446 species of passerine birds recorded in Vietnam (Lepage 2011), of which 152 are known to be hosts of 197 species of chewing lice (Insecta: Phthiraptera) belonging to 11 genera (Price *et al.* 2003). However, there are only six species of chewing lice recorded from Vietnam only (Mey 2004; Sychra *et al.* 2009; Najer *et al.* 2012), with all the other 191 species known from neighbouring countries as well. The aim of this paper is to follow up on our previous work (Sychra *et al.* 2009; Najer *et al.* 2012) and present new data on chewing lice found on wild passerines (other than bulbuls) in Vietnam, including the descriptions of three new species.

The relative high number of new species and new louse–host associations recorded in this paper, in proportion to the low number of parasitized birds, demonstrate that our knowledge of chewing lice from Vietnam is still very limited.

Material and methods

Wild passerines were examined in two locations within the Cuc Phuong National Park in northern Vietnam. For detailed locations and methods see Najer *et al.* (2012). The taxonomy of the birds follows Clements *et al.* (2011). Lice were identified primarily using papers by Ansari (1956a, 1956b), Tandan (1972), Fedorenko and Volkov (1977), Price (1977) and Mey (2004). Also, chewing lice belonging to the genus *Brueelia* were compared with all species of this genus known from birds which occur in Vietnam according to Lepage (2011). These papers we used for the comparisons: Piaget (1880), Ansari (1947, 1955, 1956a, 1956b, 1956c, 1957), Mey (1982), and Złotorzycka

(1997). In the following descriptions, all measurements are in millimeters. Abbreviations for the features measured are as follows: PAW, preantennal width; FW, front width; PAL, preantennal length; LHCL, lateral head carina length; DAPW, dorsoanterior plate width; DAPL, dorsoanterior plate length; TW, temple width; POL, postantennal length; HL, head length; PW, prothorax width; ML, metathorax length; MW, metathorax width; AWV, abdomen width at level of segment V; AL, abdomen length; TL, total length; and GW, male genitalia width. All morphological features including characterization of abdominal setae of *Brueelia* were measured and described as in our previous work (Najer *et al.* 2012).

The descriptions of the new species are attributed to the first two authors of this paper. The types of the new species described in this paper are deposited in the Department of Zoology Museum of the Institute for Ecology and Biological Resources, Vietnam Academy of Science and Technology, Hanoi, Vietnam (IEBR VAST). When indicated, some paratypes and other material will be deposited in the Moravian Museum, Brno, Czech Republic (MMBC).

Results

A total of 156 individuals of 31 bird species belonging to nine families were examined. Forty-six birds of 10 species were parasitised with 13 species of chewing lice of the genera *Myrsidea*, *Menacanthus*, *Brueelia*, and *Philopterus* (Table 1). Eight records represent new louse-host associations, as well as the first records of chewing lice for these same host species.

Only two species of chewing lice were identified as previously described species – *Menacanthus nogoma* Uchida, 1926 and *Menacanthus eurysternus* (Burmeister, 1838). Seven species of chewing lice were identified at the generic level only, because they are represented by an insufficient number of adults or by nymphs only (Table 1). One record of the genus *Philopterus* was determined at the generic level only, because there was no accessible type material for comparison of two very similar species. The remaining three species, belonging to two genera, represent new species that are described and named below.

Family Eurylaimidae

Host: *Serilophus lunatus* (Gould, 1834)—Silver-breasted Broadbill

Two species of chewing lice were found on this host:

Myrsidea sp. 1

Material studied. 1 male, 4 nymphs, VIETNAM: surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 4 February 2010, coll. I. Literak.

Remarks. This is the first record of a chewing louse from *Serilophus lunatus*. Unfortunately, it was not possible to identify these lice to the species level because of lack of material, especially the lack of females. They may represent a new, yet undescribed species. One of 3 birds examined was parasitized by *Myrsidea* sp. 1.

Brueelia sp. 1

Material studied. 1 male, 1 nymph, VIETNAM: surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 3 and 4 February 2010, coll. I. Literak.

Remarks. These specimens of *Brueelia* sp. 1 represent the first record of that louse genus from the family Eurylaimidae, as well as the first record from this family in Vietnam. Unfortunately, it was not possible to identify these lice to the species level because of lack of material, especially the lack of females. They may represent a new, yet undescribed species. Two of three birds examined were parasitized by *Brueelia* sp. 1

TABLE 1. List of wild passerines (Aves: Passeriformes) as hosts of chewing lice found in Cuc Phuong National Park, Vietnam in 2010.

Host	Family/Species of chewing lice	P ^A	♂	♀	Nymphs
Family Eurylaimidae					
<i>Serilophus lunatus</i> (Gould, 1834)	Menoponidae				
Silver-breasted Broadbill	* <i>Myrsidea</i> sp. 1	1 ^B /3	1	0	4
“ “ “	Philopteridae				
	* <i>Brueelia</i> sp. 1	2/3	1	0	1
Family Muscicapidae					
<i>Larvivora sibilans</i> (Swinhoe, 1863)	Menoponidae				
Rufous-tailed Robin	* <i>Menacanthus nogoma</i> Uchida, 1926	2/21	4	2	3
“ “ “	Philopteridae				
	* <i>Brueelia</i> sp. 2	1 ^B /21	1	1	5
<i>Niltava davidi</i> La Touche, 1907	Philopteridae				
Fujian Niltava	* <i>Philopterus</i> sp.	7/12	12	41	53
Family Timaliidae					
<i>Alcippe morrisonia</i> Swinhoe, 1863	Menoponidae				
Grey-cheeked Fulvetta	* <i>Myrsidea</i> sp. 2	3/6	0	0	10
<i>Macronous gularis</i> (Horsfield, 1822)	Philopteridae				
Pin-striped Tit-Babbler	<i>Brueelia hrabali</i> sp. nov.	2/9	3	9	5
<i>Schoeniparus rufogularis</i> (Mandelli, 1873)	Menoponidae				
Rufous-throated Fulvetta	<i>Myrsidea annae</i> sp. nov.	5/8	3	4	27
<i>Stachyris nigriceps</i> Blyth, 1844	Menoponidae				
Grey-throated Babbler	* <i>Myrsidea</i> sp. 3	1 ^B /7	0	0	1
“ “ “	Philopteridae				
	* <i>Brueelia</i> sp. 3	1 ^B /7	0	0	1
Family Turdidae					
<i>Turdus cardis</i> Temminck, 1831	Menoponidae				
Japanese Thrush	<i>Menacanthus</i> sp.	1/4	0	0	4
<i>Zoothera dauma</i> (Latham, 1790)	Philopteridae				
Scaly Thrush	<i>Brueelia neodaumae</i> sp. nov.	1/1	4	15	53
Family Zosteropidae					
<i>Zosterops japonicus</i> Temminck & Schlegel, 1845	Menoponidae				
Japanese White-eye	<i>Menacanthus eurysternus</i> (Burmeister, 1838)	19/42	2	3	54

^A = prevalence as number of birds parasitized/number of birds examined.

^B = this bird was parasitised by this louse genus only.

* = new louse-host association.

Family Muscicapidae

Host: *Larvivora sibilans* (Swinhoe, 1863) – Rufous-tailed Robin

Two species of chewing lice were found on this host:

***Brueelia* sp. 2**

Material studied. 1 male, 1 female, 5 nymphs, **VIETNAM:** surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 4 February 2010, coll. I. Literak, in IEBR VAST (O. Sychra V31).

Remarks. This is the first record of a chewing louse from *Larvivora sibilans*. The specimens of *Brueelia* are close to *Brueelia flavala* Najer & Sychra, 2012 and *Brueelia cucphuongensis* Najer & Sychra, 2012 described from the same location from *Hemixos flavala* Blyth, 1845 and *Pycnonotus finlaysoni* Strickland, 1844, respectively (Najer *et al.* 2012). Considering that our specimens show intermediate characters between both aforementioned species, and with only one adult specimen of each sex, a species identification of this *Brueelia* sample cannot be made at present. One of 21 birds examined was parasitized by *Brueelia* sp. 2.

***Menacanthus nogoma* Uchida, 1926**

Type host: *Calliope calliope* (Pallas, 1776)

Material studied. 3 males, 1 female, **VIETNAM:** the botanical garden, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 7 February 2010, coll. I. Literak, in IEBR VAST (O. Sychra V32); 1 male, 1 female with the same data as the previous sample but in MMBC (O. Sychra V33).

Remarks. This is the new host-louse associations for *Menacanthus nogoma* that was previously known from 7 species of birds from the families Muscicapidae and Motacillidae, including 5 species of the genus *Luscinia* (Price *et al.* 2003), now placed into the genera *Calliope*, *Larvivora*, and *Tarsiger* (Clements *et al.* 2011). Two of 21 birds examined were parasitized by *Menacanthus nogoma*.

Host: *Niltava davidi* La Touche, 1907—Fujian *Niltava*

One species of chewing louse was found on this host:

***Philopterus* sp.**

Material studied. 2 males, 2 females, **VIETNAM:** surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 5 February 2010, coll. I. Literak, in IEBR VAST (O. Sychra V34 and V35); 1 male, 1 female with the same data as the previous sample but in MMBC (O. Sychra V36). Seven of 12 birds examined were parasitized by *Philopterus* sp.

Remarks. *Philopterus* sp. represents the first record of a chewing louse from *Niltava davidi*. Our samples most likely belong to *Philopterus davuricae* Fedorenko & Volkov, 1977 (type host: *Muscicapa dauurica* Pallas, 1811), but the description of this species is insufficient to identify our material with certainty. The two morphological features mentioned by Fedorenko & Volkov (1977) as characteristic of *P. davuricae* agree with those in our specimens but, also, the same features are found in *Philopterus mugimaki* Fedorenko & Volkov, 1977 (type host: *Ficedula mugimaki* (Temminck, 1835)). Furthermore, there is no known record of a male for either species, so our species identification would have to rely on females only, which is not satisfactory for this genus. Therefore, we regard our record of *Philopterus* from *Niltava davidi* as undetermined at the species level, because (1) we were not able to compare our specimens with the type material of *Philopterus davuricae* and *Philopterus mugimaki*, and (2) because males are needed for a reliable identification of *Philopterus* species.

Family Timaliidae**Host: *Alcippe morrisonia* Swinhoe, 1863—Grey-cheeked Fulvetta**

One species of chewing lice were found on this host:

***Myrsidea* sp. 2**

Material studied. 10 nymphs, **VIETNAM:** surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 4 February 2010, coll. I. Literak.

Remarks. This is the first record of a chewing louse from *Alcippe morrisonia*. Three of six birds examined were parasitized by *Myrsidea* sp. 2.

Host: *Schoeniparus rufogularis* (Mandelli, 1873)—Rufous-throated Fulvetta

One species of chewing louse was found on this host:

***Myrsidea annae* Najer & Sychra, sp. nov.**

(Figs. 1 A–E, 6 A–B)

Type host: *Schoeniparus rufogularis* (Mandelli, 1873) – Rufous-throated Fulvetta

Female (n = 3) (Figs 1A–B, 6B). Hypopharynx fully developed, gula with 4 setae on each side. Metasternal plate with 4 medium long setae, metanotum not enlarged, with 17–21 marginal setae.

Abdominal tergites I–III strongly enlarged with pronounced medioposterior tapering convexity; tergite I extends to level of mid pleurite IV; tergite II to level of end of pleurite IV; tergite III to level of mid pleurite V (Fig. 1A). Tergite IV with pronounced enlargement, but with central part of posterior margin almost straight; tergite V compressed by enlarged previous tergites, with slightly convex posterior margin. Tergal setae, with median gap on tergites V–IX, as follows: I, 22–23; II–III, 21–25; IV, 20–24; V, 19–22; VI, 18–21; VII, 10–14; VIII, 8–9. Postspiracular setae long (0.26–0.37) on II, IV; medium long (0.16–0.26) on I and VIII; and short (0.07–0.16) on III, V, VI and VII. Sternal setae: II, 4 in each aster, 17–19 marginal between asters, 15–20 anterior; III, 25; IV, 33–34 (one specimen had fewer sternal setae; its numbers are given in parentheses; 28); V, 32–33 (24); VI, 28–30 (15); VII, 14–19 (12); VIII–IX, 9–11 marginal and 11 anterior; sternites III–VII without medioanterior setae. Sternite II with concave anterior and posterior margin, as in Fig. 1B. Pleurites without anterior setae. Dimensions: PAW, 0.31; PAL, 0.17; TW, 0.40; POL, 0.11; HL, 0.26–0.28; PW, 0.24–0.25; ML, 0.22–0.23; MW, 0.42–0.44; AWIV, 0.55–0.63; AL, 0.75–0.79; ANW, 0.20; TL, 1.39–1.43.

Male (n = 3) (Figs 1C–E, 6A). Gula with 5 setae on each side. Metasternal plate with 2 setae, metanotum with 5 short setae on each postero-lateral margin.

Abdominal tergites straight, without any enlargement. Tergal setae, with median gap in each row, as follows: I, 11–13; II, 14–16; III, 15–16; IV, 10–17; V, 14; VI, 13–15; VII, 9–10; VIII, 6–9. Postspiracular setae as for female. Sternal setae: II, 4 in each aster, 13–17 marginal between asters, 7–11 anterior; III, 17–21; IV, 16–25; V–VI, 19–26; VII, 9–14; VIII, 6–7; sternites III–VII without medioanterior setae. Male genitalia as in Fig. 1D. Genital sac sclerite with short subapical projection on each side, concave posterior margin and with long darker medioposterior line (Fig. 1E). Dimensions: PAW, 0.28–0.29; PAL, 0.16–0.18; TW, 0.37–0.38; POL, 0.08–0.10; HL, 0.25–0.27; PW, 0.22–0.23; ML, 0.16–0.18; MW, 0.31–0.32; AWIV, 0.39–0.41; AL, 0.61–0.62; TL, 1.15–1.18; GW, 0.10.

Type material. Holotype female (Fig. 6B) ex *Schoeniparus rufogularis*, VIETNAM: surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 2 February 2010, coll. I. Literak, in IEBR VAST (O. Sychra V37). Paratypes: 2 males, 1 female with the same data as holotype but in IEBR VAST (O. Sychra V37 and V38); 1 male from 3 February 2010, other data as in holotype, 1 female with the same data as holotype but in MMBC (O. Sychra V39).

Remarks. *Myrsidea annae* is the first species of chewing lice known from fulvettas of the genus *Alcippe*; it can easily be distinguished from other *Myrsidea* known from the family Timaliidae by the following characteristics: (1) fully developed hypopharynx; (2) considerably enlarged female abdominal tergites (Fig. 1A); (3) male genital sac sclerite with short subapical projection on each side and with concave posterior margin (Fig. 1E).

Tandan (1972) reviewed the species of *Myrsidea* parasitic on birds belonging to the family Timaliidae, and included separate male and female keys to their identification. In the key to *Myrsidea* females, *M. annae* sp. nov. keys to couplet 3, being closest to *M. manipurensis* Tandan, 1972 and *M. duplicita* Tandan, 1972. It is readily distinguished from both aforementioned species by its different abdominal tergal configuration. In the key to *Myrsidea* males, *M. annae* sp. nov. keys to couplet 4, being closest to *M. bhutanensis* Tandan, 1972. It can be separable from that of *M. bhutanensis* by genital sac sclerite and smaller number of setae on tergite VII (9–10 vs. 15–17).

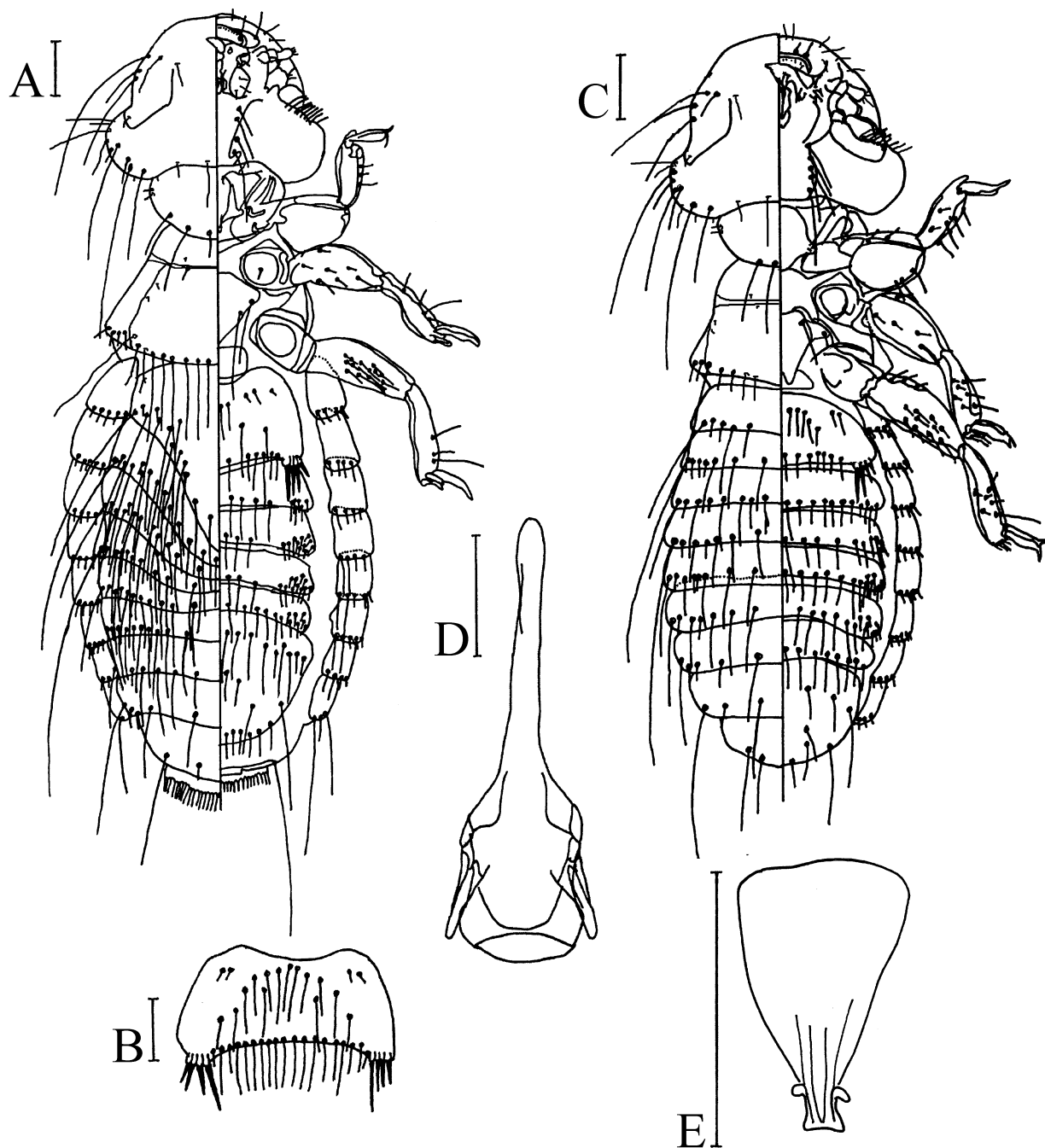


FIGURE 1. *Myrsidea annae*. A, dorso-ventral view of female. B, Female sternite II. C, dorso-ventral view of male. D, male genitalia. E, male genital sac sclerite. Scales = 0.10 mm for all figures.

Five of eight birds examined were parasitized by *Myrsidea annae*.

Etymology. This species is named in remembrance of the late Anna Pospisilova, a close friend of the first author.

Host: *Macronous gularis* (Horsfield, 1822)—Pin-striped Tit-Babbler

One species of chewing louse was found on this host:

***Brueelia hrabali* Najer & Sychra, sp. nov.**

(Figs. 2A–B; 3A–F; 6C–D)

Type host: *Macronous gularis* (Horsfield, 1822) – Pin-striped Tit-Babbler

Male (n = 3) (Figs. 2A and 6C): Preantennal region longer than the postantennal, with slightly concave anterior margin. The marginal carina uninterrupted laterally, with complete medial interruptions formed by a pair of sutures originating in the anterior hyaline margin, sutures run along either side of a moderately sclerotized dorsal anterior head plate of unique shape with two lateral and one central pointed projections (Fig. 3A), but leave the plate continuous with the remainder of the head's dorsal sclerotization (Fig. 3B) (type “e” in Johnson *et al.* 2002). Metanotum with 4 setae (2 short and 2 medium long) on each side of posterior margin. Metapleurite with two medium long and one short seta.

Tergal setae: postspiracular seta present on each side of tergites IV–VII; postspiracular accessory setae absent; sutural seta short (0.040–0.050), present on each side of tergites II–VIII; tergal posterior setae: II–VI, 0; VII, 0–1; VIII, 1–2 on each side of segment. Tergite VIII with one seta in each postero-lateral corner; tergite IX with 2 long and 3–5 short setae, on each side; terminal dorsal sclerite with only 2 short setae (Fig. 3E). Each tergal plate with two differently coloured parts – a dark brown lateral band with a light median area; it gives the impression of being divided into two separated parts (Fig. 6C). Abdominal sterna II–VII with a pair of short lateral setae. Paratergal setae: II, 0; III–V, 1; VI–VII, 2; VIII, 4–5. Male genitalia as in Figs. 3C and 3D with very short and stout parameres and rectangle-shaped endomerale plate with serrated latero-anterior parts and two central oval plates each with 2–3 minute setae. Dimensions: PAW, 0.25–0.27; PAL, 0.19–0.20; TW, 0.31–0.32; POL, 0.14–0.16; HL, 0.36–0.37; PW, 0.21–0.22; ML, 0.15–0.16; MW, 0.26–0.29; AWV, 0.36–0.37; AL, 1.21–1.22; GW, 0.07; TL, 1.84–1.86.

Female (n = 3) (Figs. 2B and 6D): Generally as for male. Metanotum with 2 long and 2 medium long setae on each postero-lateral margin. All tergites without tergal posterior or sutural setae. Tergite VIII with one seta in each postero-lateral corner; tergite IX with 2 long and 0–1 short seta, on each side. Ventral terminalia as in Fig. 3F, subgenital plate wide and significantly convex posteriorly, with 12–16 spine-like and 9–11 fine minute setae. Dimensions: PAW, 0.28–0.29; PAL, 0.22; TW, 0.35–0.38; POL, 0.17–0.18; HL, 0.40–0.41; PW, 0.24–0.25; ML, 0.17–0.18; MW, 0.29–0.31; AWV, 0.42–0.46; AL, 1.42–1.54; TL, 2.16–2.24.

Type material. Holotype male ex *Macronous gularis*, **VIETNAM:** surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 3 February 2010, coll. I. Literak, in IEBR VAST (O. Sychra V40). Paratypes: 2 males, 1 female with the same data as holotype but in IEBR VAST (O. Sychra V40 and V41); 1 male, 1 female with the same data as holotype but in MMBC (O. Sychra V42).

Remarks. *Brueelia hrabali* is the first species of chewing lice known from babblers of the genus *Macronous*. It can be morphologically separated from other species of the genus *Brueelia* known from birds which may occur in Vietnam, by the following combinations of features: (1) the shape of the head and body; (2) dorsal head plate with two lateral and one central pointed projections (Fig. 3A); (3) the characteristic two-colored tergal plates, as in Figs. 6C and 6D; (4) male genitalia with short parameres and rectangle-shaped endomerale plate with two central oval plates (Figs. 3C and 3D); (5) the high ratio of abdomen length to body length. *Brueelia hrabali* appears to be much longer than other species of *Brueelia* known from the family Timaliidae, except for *Brueelia impressifrons* Ansari, 1956a, although *Brueelia hrabali* can be distinguished from the latter by the features mentioned above. Two of nine birds examined were parasitized by *Brueelia hrabali*.

Etymology. This species is named in honor of Jozef Hrabal, the uncle of the first author, who often encouraged his interest in nature.

Host: *Stachyris nigriceps* Blyth, 1844—Grey-throated Babbler

Two species of chewing lice were found on this host:

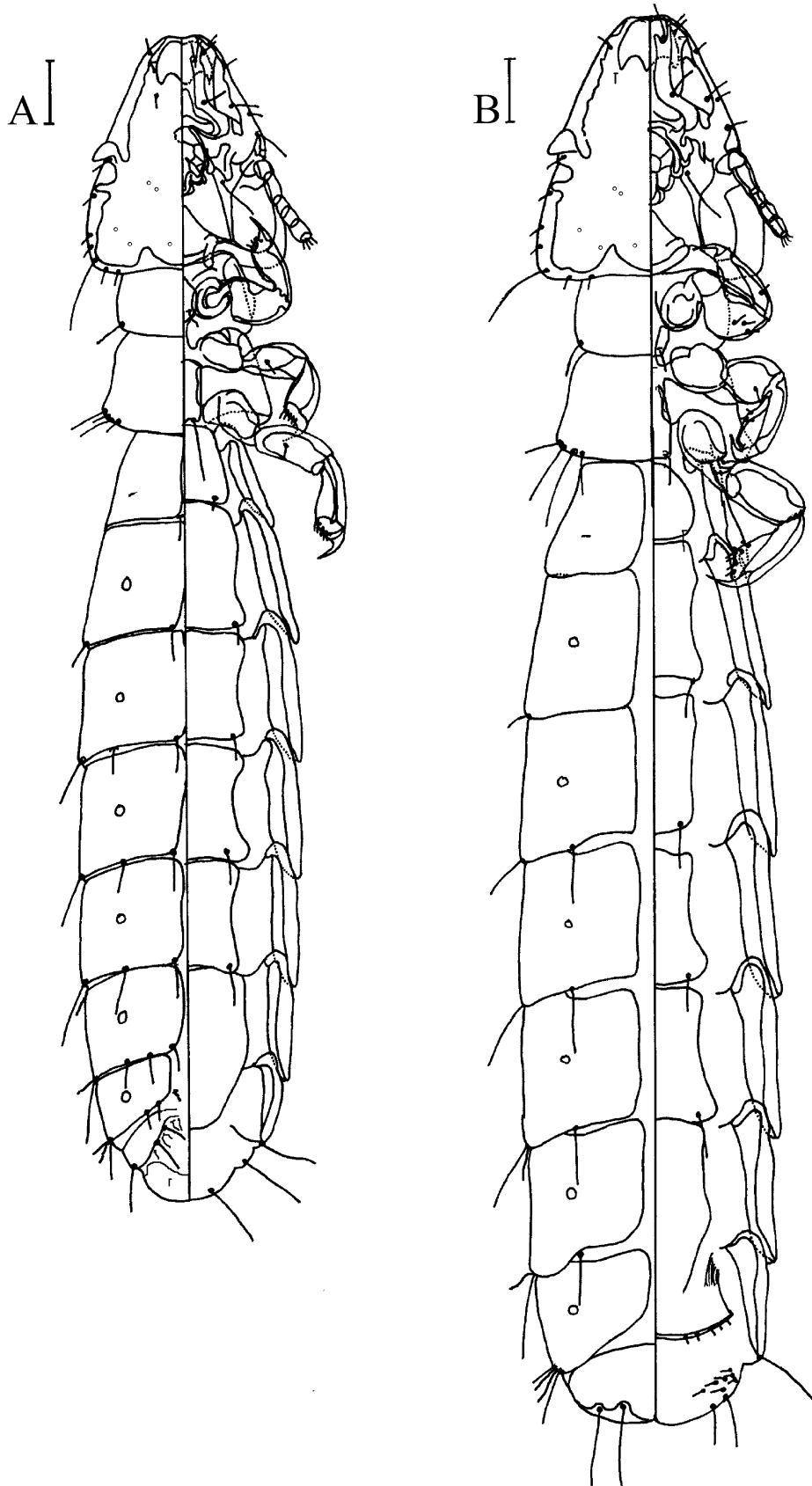


FIGURE 2. *Brueelia hrabali*. A, dorso-ventral view of male. B, dorso-ventral view of female. Scales = 0.10 mm for both figures.

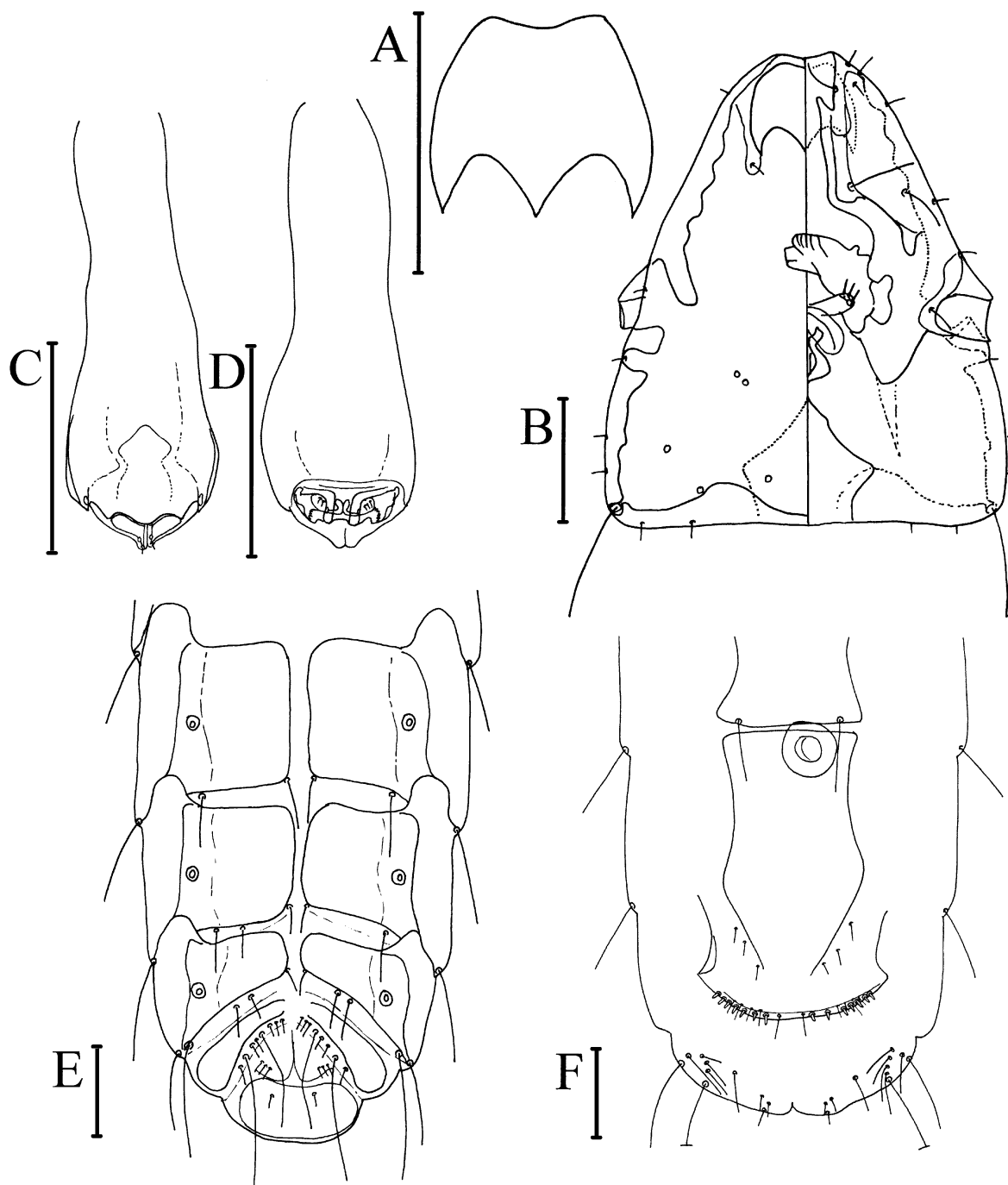


FIGURE 3. *Brueelia hrabali*. A, dorsal anterior head plate. B, head of male. C, dorsal view of male genitalia. D, ventral view of male genitalia. E, dorsal view of male terminalia. F, ventral view of female terminalia. Scales = 0.10 mm for all figures.

Myrsidea sp. 3

Material studied. 1 nymph, **VIETNAM**: surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 4 February 2010, coll. I. Literak.

Remarks. This is the first record of a chewing louse from *Stachyris nigriceps*. One of 7 birds examined was parasitized by *Myrsidea* sp. 3.

***Brueelia* sp. 3**

Material studied. 1 nymph, VIETNAM: surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 4 February 2010, coll. I. Literak.

Remarks. One of 7 birds examined was parasitized by *Brueelia* sp. 3.

Family Turdidae**Host: *Turdus cardis* Temminck, 1831—Japanese Thrush**

One species of chewing lice were found on this host:

***Menacanthus* sp.**

Material studied. 4 nymphs, VIETNAM: surroundings of the tourist center and ranger station in central part of Cuc Phuong National Park, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 2 February 2010, coll. I. Literak.

Remarks. *Turdus cardis* is known as host of *Menacanthus eurysternus* (Burmeister, 1838) (Price *et al.* 2003). We suppose that our sample the most likely belongs to this species. One of 4 birds examined was parasitized by *Menacanthus* sp.

Host: *Zoothera dauma* (Latham, 1790)—Scaly Thrush

One species of chewing louse was found on this host:

***Brueelia neodaumae* Najer and Sychra, sp. nov.**

(Figs. 4A–B; 5A–D; 6E–F)

Type host: *Zoothera dauma* (Latham, 1790)—Scaly Thrush

Male (n = 4) (Figs. 4A, 5A–B, 6E): Preantennal region moderately longer than the postantennal, with slightly concave anterior margin. The shape of dorsal anterior head plate characteristically oval, with straight front and hind margin as shown (Fig. 5C). Marginal carina with partial lateral interruptions, dorsal anterior head plate completely encircled by sutures, isolating it from the rest of the dorsal head sclerotization. (Fig. 5C) (type “f” in Johnson *et al.* 2002). Metanotum with 7 setae (3 long and the others medium long) on each postero-lateral margin.

Tergal setae: postspiracular seta present on each side of tergites IV–VII; postspiracular accessory setae: II–V, 0; VI, 0–1; VII, 1; VIII, 0; sutural seta: II–III, short (not more than 0.050); IV–V, long (more than 0.125); VI, medium long (0.075) on each side; VII–VIII, apparently without sutural setae (short tergo-posterior setae mediad of each spiracle are counted as posterior setae, because they are not in the medio-lateral end of each tergal plate); tergal posterior setae: II–VI, 0; VII, 1; VIII, 1–2 on each side of abdominal segments. Tergite VIII with one seta in each postero-lateral corner; tergite IX with 2 long and 4–5 short setae, on each side; terminal dorsal sclerite with 8 setae (Fig. 5B). Abdominal sterna II–VII with a pair of short lateral setae. Paratergal setae: II–III, 0; IV–V, 2; VI–VII, 3; VIII, 4. Male genitalia as in Fig. 5A with stout parameres with enlarged rounded base, endomerall complex oval with 4–5 short setae on each side with conspicuously serrated Y-shaped anterior end. Dimensions: PAW, 0.41–0.42; PAL, 0.25–0.27; TW, 0.49–0.50; POL, 0.21–0.22; HL, 0.51–0.53; PW, 0.28–0.30; ML, 0.21–0.22; MW, 0.42–0.45; AWV, 0.59–0.66; AL, 0.91–1.01; GW, 0.07–0.09; TL, 1.71–1.85.

Female (n = 4) (Figs. 4B, 5D, 6F): Generally as for male. Metanotum with 2 medium long and 2 short setae on each postero-lateral margin. Tergite VI without postspiracular accessory seta; no tergal posterior setae on any tergal plate. On each side of all tergites present one long (over 0.200) sutural seta; tergite IX with 2 long and one short seta, on each side. Ventral terminalia with subgenital plate posteriorly convex, with 18–22 spine-like and 14–18 fine minute setae (Fig. 5D). Dimensions: PAW, 0.43–0.44; PAL, 0.27–0.29; TW, 0.52–0.53; POL, 0.23–0.27; HL, 0.55; PW, 0.31–0.32; ML, 0.22–0.25; MW, 0.46–0.48; AWV, 0.66–0.70; AL, 1.08–1.18; TL, 1.97–2.10.

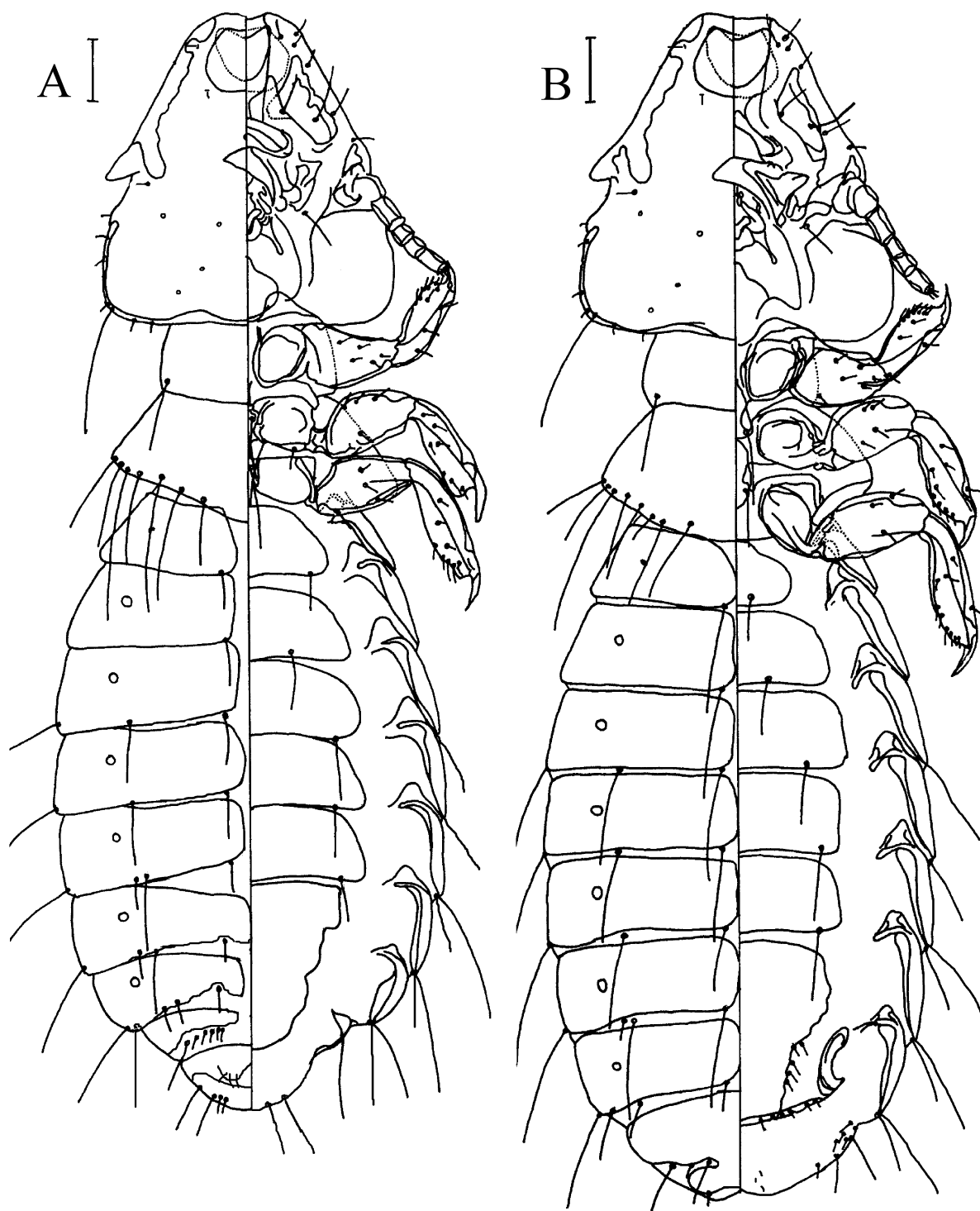


FIGURE 4. *Brueelia neodaumae*. A, dorso-ventral view of male. B, dorso-ventral view of female. Scales = 0.10 mm for both figures.

Type material. Holotype male ex *Zoothera dauma*, **VIETNAM**: the botanical garden, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 8 February 2010, coll. I. Literak, in IEBR VAST (O. Sychra V43). Paratypes: 1 male, 2 females with the same data as holotype but in IEBR VAST (O. Sychra V43 and V44); 2 males, 2 females with the same data as holotype but in MMBC (O. Sychra V45 and V46).

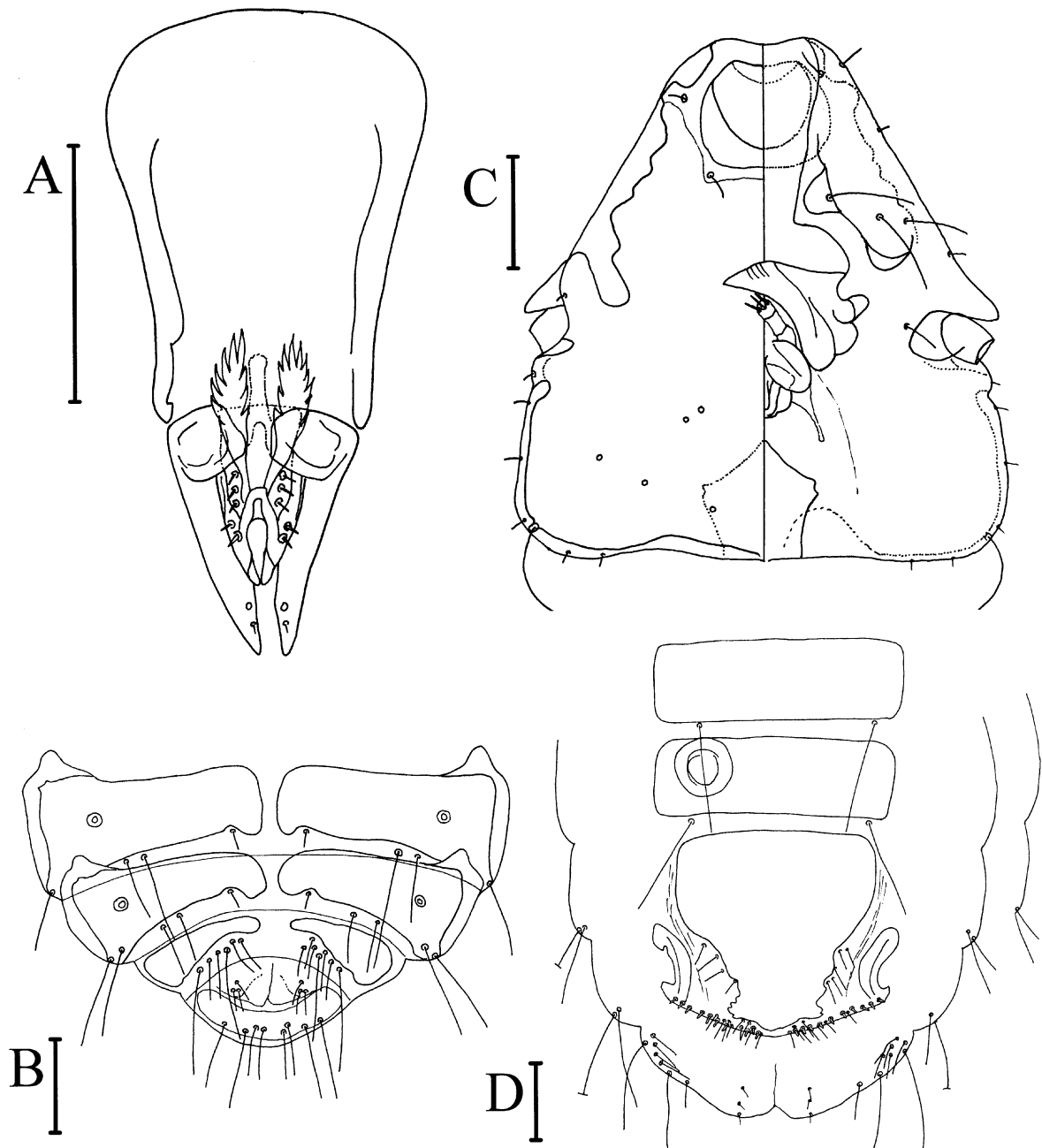


FIGURE 5. *Brueelia neodaumae*. A, male genitalia. B, dorsal view of male terminalia. C, head of male. D, ventral view of female terminalia. Scales = 0.10 mm for all figures.

Remarks. *Brueelia neodaumae* is the second species of *Brueelia* known from *Zoothera dauma*, after *Brueelia daumae* (Clay, 1936). Compared with all species of *Brueelia* known from birds that occur in Vietnam (Price *et. al.* 2003), *B. neodaumae* is most similar to *Brueelia merulensis* (Denny, 1842) from *Turdus merula*, and *Brueelia myiophoneae* (Clay, 1936) from *Myiophonus caeruleus*. However, *B. neodaumae* can be separated from those two species by the following combination of features: (1) shape of the head and the dorsal anterior head plate, as in Figs. 5C; (2) male genitalia with stout parameres and endomeral complex with conspicuously serrated Y-shaped anterior end (Fig. 5A); (3) shape and chaetotaxy of female subgenital plate, as in Fig. 5D. *Brueelia neodaumae* is morphologically closer to *Brueelia myiophoneae*, from which it can be distinguished by: (A) the shape of the tergal

plates VII–IX (narrowed in the middle in *Brueelia myiophoneae*, rectangular in *Brueelia neodaumae*); (B) the shape of male genitalia, especially endomeral complex with conspicuously serrated Y-shaped anterior end (Fig. 5A) and (C) smaller dimension, especially TW (0.49–0.50 vs. 0.54 for male and 0.52–0.53 vs. 0.58 for female). Only one bird was examined.

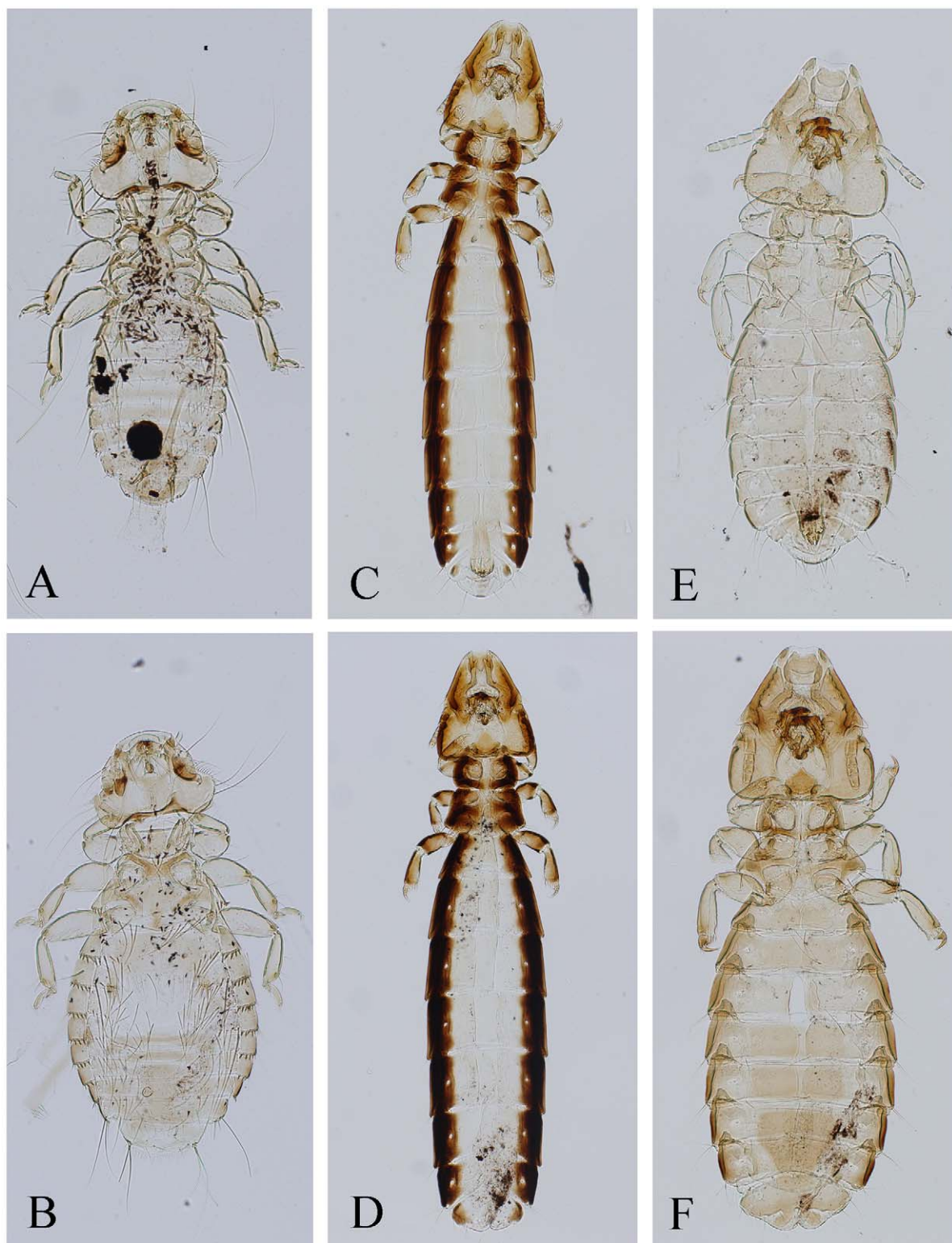


FIGURE 6. A, Paratype male of *Myrsidea annae*. B, Holotype female of *Myrsidea annae*. C, Holotype male of *Brueelia hrabali*. D, Paratype female of *Brueelia hrabali*. E, Holotype male of *Brueelia neodaumae*. F, Paratype female of *Brueelia neodaumae*.

Etymology. The name of this species is formed by the combination of a suffix referring to the species name of type host, and a prefix indicating that it is a new, additional species of *Brueelia* described from *Zoothera dauma*.

Family Zosteropidae

Host: *Zosterops japonicus* Temminck & Schlegel, 1845—Japanese White-eye

One species of chewing louse was found on this host:

***Menacanthus eurysternus* (Burmeister, 1838)**

Type host: *Pica pica* (Linnaeus, 1758)

Material studied. 2 males, 2 females, **VIETNAM:** the botanical garden, Cuc Phuong, Province of Ninh Binh (20°15' N 105°42' E), 7–8 February 2010, coll. I. Literak in IEBR VAST (O. Sychra V47 and V48).

Remarks. *Menacanthus eurysternus* is a species of chewing louse known from a very large number of hosts (Price 1975; Price *et al.* 2003: 119), and is the only species known from the family Zosteropidae. Nineteen of 42 birds examined were parasitized by *Menacanthus eurysternus*.

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References

- Ansari, M.A.R. (1947) Mallophaga (Ischnocera) infesting birds in the Punjab (India). *Proceedings of the National Institute of Science India*, 13, 253–303.
- Ansari, M.A.R. (1955) Studies on the ischnoceron Mallophaga infesting birds in Pakistan. *Proceedings of the Seventh Pakistan Science Conference, Biology*. Bahawalpur, Pakistan, 51–57.
- Ansari, M.A.R. (1956a) A brief survey of *Brüelia* species (Ischnocera: Mallophaga) parasitic on the babblers and laughing thrushes (Timaliidae). *Pakistan Journal of Health*, 6, 133–174.
- Ansari, M.A.R. (1956b) Studies on *Brüelia* species (Mallophaga) occurring on true thrushes. *Biologia (Lahore)*, 2, 102–143.
- Ansari, M.A.R. (1956c) Revision of the *Brüelia* (Mallophaga) species infesting the Corvidae. Part I. *Bulletin of the British Museum (Natural History) Entomology*, 4(8), 371–406.
- Ansari, M.A.R. (1957) Revision of the *Brüelia* (Mallophaga) species infesting the Corvidae. Part II. *Bulletin of the British Museum (Natural History) Entomology*, 5, 143–182.
- Burmeister, H. (1838) Mallophaga Nitzsch. *Handbuch der Entomologie*, Berlin, 2, 418–443.
- Clay, T. (1936) New species of Mallophaga recorded from Asiatic birds. *Proceedings of Zoological Society of London 1935*, 105, 905–914.
- Clements J.F., Schulenberg T.S., Iliff M.J., Sullivan B.L., Wood C.L. & Roberson D. (2011) The Clements checklist of birds of the world: Version 6.6. Available from: <http://www.birds.cornell.edu/clementschecklist/downloadable-clements-checklist>. (Accessed 21 September 2012).
- Denny, H. (1842) *Monographia anoplurorum Britanniae*. Henry G. Bohn, London, xxv + 262 pp.
- Fedorenko, I.A., Volkov, V.I. (1977) On studying bird lice of the *Philoaterus* genus parasitizing on flycatchers. *Vestnik Zoologii*, 1977(4), 60–70.
- Johnson, K.P., Adams, R.J. & Clayton, D.H. (2002) The phylogeny of the louse genus *Brueelia* does not reflect host phylogeny. *Biological Journal of the Linnean Society*, 77, 233–247.
- Lepage, D. (2011) Avibase – Bird Checklists of the World: Vietnam. Available from Avibase – the world bird database. URL: <http://avibase.bsc-eoc.org/checklist.jsp?region=vn&list=howardmoore> (accessed 21 July 2011).

- Mey, E. (1982) Mongolische Mallophagen I. Ergebnisse der mongolischen Gemeinschaftsreise von Ornithologen aus der DDR 1979. IX, zugleich Ergebnisse der Mongolisch-Deutschen Biologischen Expedition seit 1962, Nr. 107. *Mitteilungen aus dem Zoologischen Museum in Berlin*, 58, 155–195.
- Mey, E. (2004) Zur Taxonomie, Verbreitung und parasitophyletischer Evidenz des *Philopterus*-Komplexes (Insecta, Phthiraptera, Ischnocera). *Ornithologischer Anzeiger*, 43, 149–203.
- Najer, T., Sychra O., Nguyen M. H., Capek, M., Podzemny P. & Literak I. (2012) Chewing lice (Phthiraptera: Amblycera, Ischnocera) of bulbuls (Passeriformes: Pycnonotidae) in northern Vietnam. *Zootaxa*, 3357, 37–48.
- Piaget, E. (1880) *Les pediculines. Essai monographique*. E.J. Brill, Leide, xxxix + 714 pp., 56 pls.
- Price, R.D. (1975) The *Menacanthus eurysternus* complex (Mallophaga: Menoponidae) of the Passeriformes and Piciformes (Aves). *Annals of the Entomological Society of America*, 68, 617–622.
- Price, R.D. (1977) The *Menacanthus* (Mallophaga: Menoponidae) of the Passeriformes (Aves). *Journal of Medical Entomology*, 14, 207–220.
- Price, R.D., Hellenthal, R.A. & Palma, R.L. (2003) World checklist of chewing lice with host associations and keys to families and genera. In: Price, R.D., Hellenthal, R.A., Palma, R.L. Johnson K.P. & Clayton D.H. (Eds.), *The Chewing Lice: World Checklist and Biological Overview*. Illinois Natural History Survey, Champaign, IL USA, pp. 1–448.
- Sychra, O., Literak, I., Nguyen M. H., Podzemny, P. (2009) Chewing lice from wild passerines (Aves: Passeriformes) from Vietnam, with description of a new species of the genus *Brueelia* (Phthiraptera, Ischnocera, Philopteridae). *Acta Parasitologica*, 54, 154–157.
- Tandan, B.K. (1972) Contributions towards a revision of *Myrsidae* Waterston. VII. (Phthiraptera: Amblycera: Menoponidae). *Bulletin of the British Museum (Natural History) Entomology*, 27, 371–410.
- Uchida, S. (1926) Studies on amblycerous Mallophaga of Japan. *Journal of the College of Agriculture*, Tokyo, 9(1), 1–56.
- Złotorzycka, J. (1997) *Wszoly (Mallophaga) Czeszc szczegolowa Goniodidae i Philopteridae*. Acta Universitatis Wratislaviensis, 308 pp.