

## Chewing Lice (Phthiraptera) From Ovenbirds, Leaf-tossers and Woodcreepers (Passeriformes: Furnariidae: Furnariinae, Sclerurinae, Dendrocolaptinae) From Costa Rica, With Descriptions of Four New Species of the Genera *Rallicola* and *Myrsidea*

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**ABSTRACT.**—Descriptions and illustrations are given for one new species of *Rallicola* Johnston and Harrison, 1911 and three new species of *Myrsidea* Waterston, 1915 from ovenbirds, leaf-tossers, and woodcreepers from Costa Rica. These chewing lice and their type hosts are as follows: *Rallicola* (*Rallicola*) *ochrolaemi* and *Myrsidea* *ochrolaemi* ex *Automolus* *ochrolaemus* (Furnariidae: Furnariinae), *Myrsidea* *calvi* ex *Sclerurus* *guatemalensis* (Furnariidae: Scleruridae), and (*Myrsidea* *souleyetii* ex *Lepidocolaptes* *souleyetii* (Furnariidae: Dendrocolaptinae). Records of five other louse species of the genus *Myrsidea*, *Menacanthus* and *Rallicola* from dendrocolaptid hosts are also discussed. These are the first records of the genus *Menacanthus* and *Myrsidea* from members of the passerine subfamily Dendrocolaptinae.

**KEYWORDS.**—Chewing lice, *Menacanthus*, *Myrsidea*, *Rallicola*, birds, Costa Rica

### INTRODUCTION

The chewing lice from Central American birds are relatively well known as a result of several faunistic studies (e.g. Carriker 1903, 1944, 1957; Adams 2001). However, data concerning chewing lice from passerine birds occurring in Costa Rica, with some exceptions, are relatively scarce and incomplete. There is only one louse species, *Rallicola* (*Rallicola*) *cephalosa* (Carriker, 1944), reported from one of 34 species of ovenbirds (Furnariidae) from that country (Carriker 1944; Price and Clayton 1993, 1994).

This study presents new data on the species composition and distribution of chewing lice found on ovenbirds, leaf-tossers, and woodcreepers in Costa Rica, including description of four new species (see Table 1).

### MATERIAL AND METHODS

We conducted fieldwork during the 2004 rainy season at two localities in southeastern Costa Rica. These included (1) Hitoy Cerere BR (Biological Reserve) (9°40'N, 85°05'W) and (2) Barbilla NP (National Park) (9°59'N, 85°27'W). For detailed description of the sites and methods see Sychra *et al.* (2006).

Lice were collected using the fumigation chamber method described by Clayton and Drown (2001). To facilitate accurate identification, all lice were fixed in 70% ethanol and subsequently slide-mounted as permanent slides in Canada balsam as per the technique of Palma (1978). Identification of chewing lice was based on the criteria established by Adams (2001), Clay (1966), Eichler (1956), and Price and Clayton (1993, 1994). The nomenclature of the lice follows Price *et al.* (2003). The taxonomy of the birds follows Dickinson (2003). Where no etymology is given for the name of a new

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species, the name was taken from that of the type host.

All measurements are in millimeters for the following descriptions. Abbreviations for dimensions are TW, temple width; HL, head length at midline; DAPL, dorsoanterior plate length; DAPW, dorsoanterior plate width; PW, prothorax width; PSL, prosternal plate length; MW, metathorax width; MSL, metasternal plate length; AW-IV(V), abdomen width at level of segment IV (for *Myrsidea*) or segment V (for *Rallicola*); TL, total length; GL, male genitalia length; GW, male genitalia width; GPL, male genitalia paramere length; ANW, female anus width. Within parentheses and after "Male" and "Female" for each description, we include the number of specimens from which quantified characters were taken. The description of new species is attributed to the first author.

The types of all new species described in this paper are deposited at the National Biodiversity Institute Santo Domingo de Heredia, Costa Rica (INBIO). Other species will be deposited in the Moravian Museum Brno, Czech Republic (MZM).

## RESULTS

A total of 43 individuals of 8 bird species belonging to the subfamilies Furnariinae, Sclerurinae, and Dendrocolaptinae were examined. Thirteen birds of five species were parasitised with nine species of chewing lice (Table 1).

### FAMILY FURNARIIDAE

#### SUBFAMILY FURNARIINAE

**Host:** *Automolus ochrolaemus* (Tschudi, 1844)—Buff-throated Foliage-gleaner

Two species of lice were found on this host:

#### *Myrsidea ochrolaemi*, new species

(Figs. 1-4, 7)

**Male** (3). As in Fig. 1. Head without lateral notch or slit; hypopharyngeal sclerites strongly developed. Mean length of head seta 10, 0.052 (n = 6); seta 11, 0.100 (n = 6);

TABLE 1. List of hosts and their lice.

Subfamily Furnariinae	
<i>Automolus ochrolaemus</i> (Tschudi, 1844)	
<i>Myrsidea ochrolaemi</i> Sychra, new species	
<i>Rallicola</i> ( <i>Rallicola</i> ) <i>ochrolaemi</i> Sychra, new species	
Subfamily Sclerurinae	
<i>Sclerurus guatemalensis</i> (Hartlaub, 1844)	
<i>Myrsidea calvi</i> Sychra, new species	
Subfamily Dendrocolaptinae	
<i>Lepidocolaptes souleyetii</i> (Des Murs, 1849)	
<i>Myrsidea souleyetii</i> Sychra, new species	
<i>Dendrocincla fuliginosa</i> (Vieillot, 1818)	
<i>Myrsidea</i> sp. 1	
<i>Rallicola</i> ( <i>Rallicola</i> ) <i>fuliginosa</i> (Carriker, 1963)	
<i>Glyphorhynchus spirurus</i> (Vieillot, 1819)	
<i>Menacanthus</i> sp.	
<i>Myrsidea</i> sp. 2	
<i>Rallicola</i> ( <i>Rallicola</i> ) <i>cephalosa</i> (Carriker, 1944)	

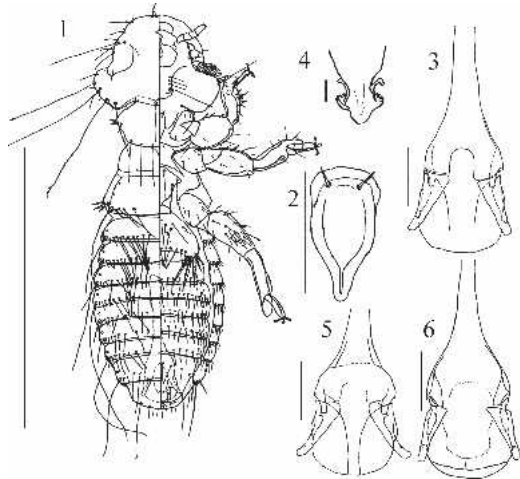


FIG. 1-6. *Myrsidea ochrolaemi* n. sp. 1—male; 2—prosternal plate; 3—male genitalia; 4—male genital sclerite; *Myrsidea souleyetii* n. sp. 5—male genitalia; *Myrsidea* sp.1 ex *D. fuliginosa*. 6—male genitalia.

ratio 10/11, 0.52. Latero-ventral fringe with 8-10 setae; inner occipital setae long, outer very short; each side of temple margin with 1 long and 3 very long setae; gula with 4 setae on each side, posteriormost much heavier and longer than others. Pronotum with 6 long posterior marginal setae and 3 short spiniform setae at each lateral corner; well-developed elongate prosternal plate rounded anteriorly, with pair of minute anterior setae (Fig. 2). Mesonotum with median division, with pair of minute setae ad-

jaacent to postnotum; segment ringed by sclerite, with large mesosternal plate. Metanotum not enlarged, with very long corner setae (according to Clay (1966) these setae are not included in setal counts) and 8-9 setae on posterior margin. Metapleurites with 3 (rarely 4) short and strong setae; metasternal plate large, triangular, with 3-4 long setae on each side. The first tibia with 3-4 outer lateral ventral and 4-5 dorsal setae; femur III with 11-14 setae in ventral setal brush.

Tergal setal (include the postspiracular setae and all setae between them): I, 20-22; II, 22-23; III, 21-22; IV, 20-21; V, 19-20; VI, 18-20; VII, 16-17; VIII, 10. Postspiracular setae extremely long on II, IV and VIII, very long on I and VII and much shorter on III and V-VI. Without anterior tergal or pleural setae; margin of pleurites I-IV with only short spiniform setae, pleurites V-VII with also 1-2 longer finer setae; margin of pleurite VIII with median long seta flanked on each side by shorter seta. Sternite I is small, without setae. Sternal setae on II, 20-21 marginal, including cluster of 5 heavy setae on each side; 5-6 medioanterior and 2 short latero-anterior setae on each side. Marginal setae of sternite: III, 16-21; IV-VI, 19-24; VII, 17-18; VIII of subgenital plate, 11-16; remainder of plate, 7-9. Lateral anterior sternal setae (lateral brushes, not including marginal setae, each side of abdomen considered separately): III, 1-2; IV-V, 3-6; VI, 3-4; VII, 1-2. Sternite VII separate from subgenital plate of fused VIII-IX; with 8 (rarely 9) internal anal setae. Mean length of inner posterior seta of last tergum 0.041 ( $n = 4$ ); short lateral marginal seta of last segment 0.025 ( $n = 4$ ). Character of genital sclerite and genitalia as in Figs. 3 and 4.

*Dimensions:* TW, 0.43-0.47; HL, 0.29-0.32; PW, 0.27-0.30; PSL, 0.11-0.12; MW, 0.38-0.43; MSL, 0.13; AWIV, 0.47-0.51; TL, 1.33-1.44; GL, 0.45-0.47; GW, 0.11-0.12; GPL, 0.09.

**Female** (4). Metanotal margin and abdomen as in Fig. 7. Most features as in male. Mean length of head seta 10, 0.056 ( $n = 8$ ); seta 11, 0.110 ( $n = 8$ ); ratio 10/11, 0.51. Gula with 4-5 setae on each side. Setae of femoral brush, 15-19. Posterior margin of metanotum with 12-13 setae. Abdomen without

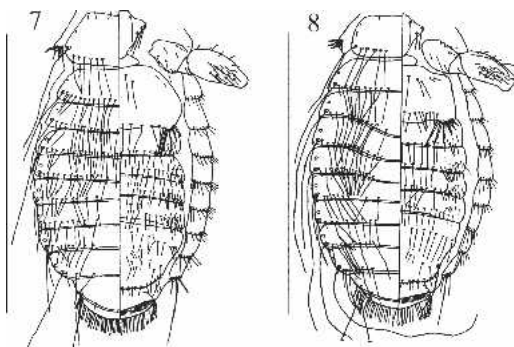


FIG. 7-8. Female metanotal margin and dorsoventral abdomen. 7—*Myrsidea ochrolaemi* n. sp.; 8—*Myrsidea calvi* n. sp.

conspicuously enlarged tergites; with tergal setae: I, 22-28; II-III, 27-30; IV, 22-26; V, 19-24; VI, 19-20; VII, 14-18; VIII, 8-10. Sternal setae on II, 4-6 medioanterior; 19-21 marginal, including cluster of 5 (one with 6 on one side) heavy setae on each side. Marginal setae of sternite: III, 18-24; IV, 28-31; V-VI, 26-30; VII of subgenital plate, 17-19; remainder of plate with 15-18 marginal, 21-28 anterior setae. Posterior margin of subgenital plate is finely serrated. Lateral anterior sternal setae: III, 1-3; IV, 4-8; V-VI, 6-10; VII, 1-3; with 1-6 medioanterior setae on sternites IV-VII. Anal fringe of 37-48 dorsal and 38-43 ventral setae. Mean length of inner posterior seta of last tergum 0.024 ( $n = 5$ ; one with length of this seta 0.055 and 0.067); short lateral marginal seta of last segment 0.052 ( $n = 7$ ).

*Dimensions:* TW, 0.48-0.51; HL, 0.32-0.33; PW, 0.30-0.33; PSL, 0.13; MW, 0.48-0.52; MSL, 0.17; AWIV, 0.63-0.69; TL, 1.59-1.68; ANW, 0.26-0.28.

*Type material.* Female holotype, male allotype, ex *Automolus ochrolaemus*, COSTA RICA: Hitoy Cerere BR, Provincia Limón (9°40'N, 85°05'W), 17-31 August 2004, Literák, Čapek & Havlíček coll. Deposited in INBIO—O. Sychra CR01. Paratypes: 3 females, 2 males, same data as holotype, O. Sychra CR02-03.

*Remarks.* *Myrsidea ochrolaemi* n. sp. differs from *M. strobilisternata* Eichler, 1956 in several important features. The most obvious distinguishing feature is the strongly developed hypopharynx of *M. ochrolaemi*. By contrast, *M. strobilisternata* has a reduced

hypopharynx. The female of *M. ochrolaemi* is separated from that of *M. strobilisternata* and *M. calvi* n. sp. by a lack of enlarged abdominal tergites and the presence of medioanterior setae on sternites IV-VII. Both sexes of *M. ochrolaemi* are separated from those of *M. calvi* by a combination of a small number of setae in the femoral brush, a large number of setae on abdominal tergites I-II, a small number of setae on abdominal tergite VIII, a different length ratio of head setae 10 and 11, and the relative lengths of the postspiracular setae on tergite III. Two of three birds examined were parasitised by *M. ochrolaemi*.

***Rallicola (Rallicola) ochrolaemi*, new species**

(Figs. 9-11)

**Male** (2). As in Fig. 9. Head broadly triangular with shallow medioanterior concavity. Dorsal anterior plate nearly square, with a "U-shaped" extension posteriad beyond center of plate. Each eye with two setae, one slightly longer than the other. Pronotum with only single seta near each lateroposterior corner. Each side of metanotum with a cluster of four short to very long setae laterally and two long setae grouped medially of the former. Abdomen with ter-

gal plate II (first apparent tergum) medially divided; remaining tergal plates undivided. Two short median marginal setae on tergites II-VIII; length of these setae on abdominal tergum V, 0.037. Short lateral marginal seta on tergum VII laterad of spiracle. Without seta on the lateral margin of abdominal segment II; a single short lateral seta on III; short, medium setae on lateral margin of IV; two long lateral setae on V; three long setae on lateral margins of VI-VIII. Internal pleural thickenings not darkly pigmented. Sternal plates undivided. Sternite II (first apparent sternite) through V bearing two setae; sternite VI with four setae; subgenital plate with sternites VII-VIII fused, with two setae. Male terminalia as shown in Fig. 9. Genitalia (Fig. 10) with basally broadened parameres each bearing relatively short pointed, inwardly directed median process extending beyond end of mesosome. Parameres curved apically; each having terminal minute seta and single small sensillum about half of way from end. Oval mesosome 0.058 long, with thickened lateral margin.

*Dimensions:* TW, 0.360; HL, 0.423; DAPL, 0.084; DAPW, 0.079; PW, 0.205; MW, 0.307; AWV, 0.415; TL, 1.308; GL, 0.248; GW, 0.068; GPL, 0.093-0.113.

**Female** (4). Most features as in male (Fig. 11). One ocular seta quite longer than other. Sternite VII fused to VIII forming large subgenital plate, with posterior margin almost straight laterally and convex centrally with 8 short submarginal spiniform setae and 18 short fine marginal setae and lateral margin with one slit. Both sides of ventral terminalia with two prominent heavy setae laterad to seven short and one medium seta.

*Dimensions:* TW, 0.398; HL, 0.452; DAPL, 0.088; DAPW, 0.092; PW, 0.230; MW, 0.344; AWV, 0.510; TL, 1.587.

*Type material.* Male holotype, female allotype and paratype male, ex *Automolus ochrolaemus*, COSTA RICA: Hitoy Cerere BR, Provincia Limón (9°40'N, 85°05'W), 17-31 August 2004, Literák, Čapek & Havlíček coll. Deposited in INBIO—O. Sychra CR23.

*Remarks.* In the key to the species of *Rallicola* from Antbirds, Ovenbirds and Tapauculos (Price and Clayton 1994), *Rallicola*

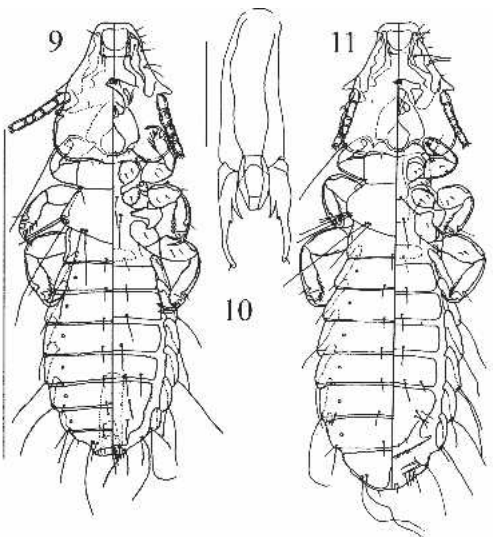


FIG. 9-11. *Rallicola ochrolaemi* n. sp. 9—male; 10—male genitalia; 11—female.

(*Rallicola ochrolaemi* n. sp. keys to couplets 11-12, coming closest to matching the description of *Rallicola (Rallicola) tompkinsi* Price and Clayton, 1994 and *Rallicola (Rallicola) inexpectata* (Carriker, 1966). *Rallicola (R.) ochrolaemi* is distinguished from both species by features of the male terminalia and especially by the configuration of the male genitalia. The basally broadened parameres of *R. (R.) ochrolaemi*, each bearing a median process extending beyond end of mesosome, differ from the relatively narrow parameres of *R. (R.) inexpectata*, each bearing a shorter process not extending to the tip of the mesosome. On the other hand, this character is similar to that in *R. (R.) tompkinsi*. *Rallicola (R.) ochrolaemi* may be separated from this latter species by its parameres, which curve apically, and the oval shape of the mesosome. The female of *R. (R.) ochrolaemi* is distinguished from both *R. (R.) inexpectata* and *R. (R.) tompkinsi* by the shape of the subgenital plate—posterior margin almost straight laterally and convex centrally and lateral margin with only one slit (Fig. 11) (*R. (R.) inexpectata* and *R. (R.) tompkinsi* have posterior margin of subgenital plate broadly rounded and lateral margin with two conspicuous slits (Price & Clayton, 1994: 651, Fig 1) and from the female of *R. (R.) tompkinsi* also by its larger dimensions of head and body contrary to smaller dorsal anterior plate. One of the three birds examined was parasitised by *Rallicola (R.) ochrolaemi*. This species is described from single male and female specimens collected from single captured host individual. Further studies of chewing lice from the type host are needed to document the intra specific variation for this louse.

#### SUBFAMILY SCLERURINAE

**Host:** *Sclerurus guatemalensis* (Hartlaub, 1844)—Scaly-throated Leaf-tosser

One louse species was found on this host:

#### *Myrsidea calvi*, new species

(Fig. 8)

**Male** (9). Similar to *M. ochrolaemi*, except as follows. Mean length of head seta 10, 0.040 (n = 12); seta 11, 0.103 (n = 12);

ratio10/11, 0.39. Setae of femoral brush, 15-22.

Posterior margin of metanotum with 8-10 setae. Tergal setae: I, 11-14; II, 19-21; III, 16-24; IV, 19-23; V, 18-28; VI-VII, 17-20; VIII, 12-17. Postspiracular setae extremely long on II, IV and VIII, very long on I, III and VII, much shorter on V-VI. Sternal setae on II, 4-7 medioanterior; 23-27 marginal, including cluster of 5-6 heavy setae on each side. Marginal setae of sternite: III, 16-23; IV-VI, 21-26; VII, 16-19; VIII of subgenital plate, 17-26; remainder of plate, 5-9. Lateral anterior sternal setae: III, 2-5; IV-V, 3-8; VI, 3-7; VII, 1-2, with 1-7 medioanterior setae on sternites VI-VII. Mean length of inner posterior seta of last tergum 0.028 (n = 14); short lateral marginal seta of last segment 0.022 (n = 14).

**Dimensions:** TW, 0.41-0.43; HL, 0.28-0.31; PW, 0.27-0.29; PSL, 0.11; MW, 0.35-0.38; MSL, 0.13-0.14; AWIV, 0.46-0.47; TL, 1.27-1.34; GL, 0.33-0.44; GW, 0.10-0.12; GPL, 0.08-0.09.

**Female** (7). Metanotal margin and abdomen as in Fig. 8. Most features as in male. Mean length of head seta 10, 0.040 (n = 11); seta 11, 0.108 (n = 11); ratio10/11, 0.37. Setae of femoral brush, 19-24.

Posterior margin of metanotum with 10-12 setae. Abdominal tergite II enlarged, compressing III-IV at midline; with tergal setae: I, 17-20; II-III, 22-26; IV, 19-23; V, 19-25; VI, 18-23; VII, 17-21; VIII, 13-17. Sternal setae on II, 8-11 medioanterior; 26-29 marginal, including cluster of 6 (rarely 5) heavy setae on each side. Marginal setae of sternite: III, 18-24; IV-V, 22-27; VI, 19-24; VII of subgenital plate, 15-20; remainder of plate with 13-16 marginal, 14-17 anterior setae. Lateral anterior sternal setae: III, 3-7; IV, 5-9; V, 6-10; VI, 3-7; VII, 1-2; without medioanterior setae (only one specimen with 2 medioanterior setae on sternites VI-VII). Anal fringe of 31-38 dorsal and 33-38 ventral setae. Mean length of inner posterior seta of last tergum 0.031 (n = 14); short lateral marginal seta of last segment 0.050 (n = 12).

**Dimensions:** TW, 0.45-0.47; HL, 0.30-0.33; PW, 0.30-0.31; PSL, 0.12-0.13; MW, 0.43-0.46; MSL, 0.16-0.17; AWIV, 0.63-0.66; TL, 1.52-1.60; ANW, 0.23-0.24.

*Type material.* Female holotype and male allotype ex *Sclerurus guatemalensis*, COSTA RICA: Hitoy Cerere BR, Provincia Limón (9°40'N, 85°05'W), 17-31 August 2004, Literák, Čapek & Havlíček coll. Deposited in INBIO—O. Sychra CR04. Paratypes: 6 females and 8 males with same data as holotype—O. Sychra CR05-07.

*Remarks.* This species is characterized by an enlarged abdominal tergite II, compressing III-IV at midline. *Myrsidea calvi* differs from *M. strobilisternata* by having a strongly developed hypopharynx, a small number of setae on the lateral corners of the pronotum (*M. strobilisternata* has 3 short spiniform setae and one longer one on each side) and a large number of setae in the femoral brush (*M. strobilisternata* have 16-17 setae). The male of *M. calvi* is also separated from *M. ochrolaemi* by a larger number of setae on the subgenital plate as well as the presence of medioanterior setae on sternites VI-VII. Two of 3 birds examined were parasitised by *M. calvi* n. sp.

*Etymology.* This species is named in honour of Bernardo Calvo Rodríguez in recognition of his friendship and constant help in many ways.

#### FAMILY DENDROCOLAPTINAE

**Host:** *Lepidocolaptes souleyetii* (Des Murs, 1849)—Streak-headed Woodcreeper

One species of louse was found on this host:

#### *Myrsidea souleyetii*, new species

(Figs. 5, 12)

**Male** (1). Similar to *M. ochrolaemi*, except as follows: mean length of head seta 10, 0.059 (n = 2); seta 11, 0.100 (n = 2); ratio10/11, 0.59. Pronotum with 3 short spiniform setae at each lateral corner. Setae of femoral brush: 12.

Posterior margin of metanotum with 6 setae. Tergal setae: I, at least 7 visible; II, 16; III, 20; IV, 16; V, 17; VI, 15; VII, 10; VIII, 7. Postspiracular setae extremely long on II, IV and VIII, very long on I and VII and much shorter on III and V-VI. Sternal setae on II, 4 medioanterior; 18 marginal, including cluster of 4-5 heavy setae on each side.

Marginal setae of sternite: III, 16; IV-V, 22-23; VI, 20; VII, 17; VIII of subgenital plate, 8; remainder of plate, 12. Lateral anterior sternal setae: III, 2; IV-VI, 3-4; VII, 1-2, without medioanterior setae. Mean length of inner posterior seta of last tergum 0.046 (n = 2); short lateral marginal seta of last segment 0.023 (n = 2). Genitalia as in Fig. 5. Parameres conspicuously outwardly directed.

*Dimensions:* TW, 0.40; HL, 0.30; PW, 0.23 (deformed); PSL, 0.11; MW, 0.31 (deformed); MSL, 0.13; AWIV, 0.47; TL, 1.25; GL, 0.44; GW, 0.12; GPL, 0.1.

**Female** (1). Metanotal margin and abdomen as in Fig. 12. Most features as in male. Mean length of head seta 10, 0.057 (n = 2); seta 11, 0.111 (n = 1); ratio10/11, 0.51. Setae of femoral brush, 16-19.

Posterior margin of metanotum with 7 setae. Abdomen without conspicuously enlarged tergites; with tergal setae: I, 12; II, 15; III, 17; IV, 16; V, 18; VI, 20; VII, 13; VIII, 8. Margin of pleurites II-IV with 9-10 setae. Sternal setae on II, 20 marginal, including cluster of 5 heavy setae on each side. Marginal setae of sternite: III, 19; IV-V, 26; VI, 22; VII of subgenital plate, 17; remainder of plate with 16 marginal, 18 anterior setae. Lateral anterior sternal setae: III, 1-2; IV-VI, 6-7; VII, 2-3; with 4 medioanterior setae on sternite VII. Anal fringe of 38 dorsal and 33 ventral setae. Mean length of inner posterior seta of last tergum 0.021 (n = 2); short lateral marginal seta of last segment 0.035 (n = 2).

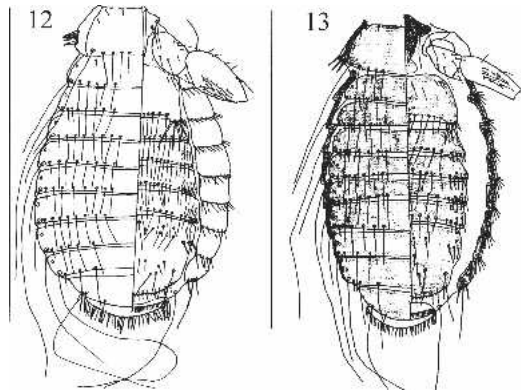


FIG. 12-13. Female metanotal margin and dorsoventral abdomen. 12—*Myrsidea souleyetii* n. sp.; 13—*Myrsidea* sp.2 ex *G. spirurus*.

*Dimensions:* TW, 0.47; HL, 0.32; PW, 0.26 (deformed); PSL, 0.13; MW, 0.38 (deformed); AWIV, 0.59; TL, 1.47; ANW, 0.25.

*Type material.* Female holotype and male allotype, ex *L. souleyetii*, COSTA RICA: Hitoy Cerere BR, Provincia Limón (9°40'N, 85°05'W), 17-31 August 2004, Literák, Čapek & Havlíček coll. Deposited in INBIO—O. Sychra CR08.

*Remarks.* *M. souleyetii* is very similar to *M. ochrolaemi* but the female of the former species can be separated from *M. ochrolaemi* by its small dimensions, a lack of medioanterior setae on sternites IV-VII and a small number of setae on abdominal tergites I-II. Only one bird was examined.

**Host:** *Dendrocincla fuliginosa* (Vieillot, 1818)—Plain-brown Woodcreeper

Two species of louse were found on this host:

### *Myrsidea* sp.1

(Fig. 6)

**Male** (1). Similar to *M. souleyetii*, except as follows. Mean length of head seta 10, 0.040 (n = 2); seta 11, 0.107 (n = 2); ratio10/11, 0.37. Pronotum with 2 short spiniform setae and 1 finer seta at each lateral corner. Setae of femoral brush, 12.

Posterior margin of metanotum with 10 setae. Tergal setae: I, at least 7 visible; II, at least 11 visible; III, 20; IV-V, 17; VI, 18; VII, 15; VIII, 13. Postspiracular setae extremely long on II, IV and VIII, very long on I and VII and much shorter on III and V-VI. Sternal setae on II, 5 medioanterior; at least 16 marginal, including cluster of 4-5 heavy setae on each side. Marginal setae of sternite: III, 18; IV-V, 20; VI, 19; VII, 15; VIII of subgenital plate, 6; remainder of plate, 9. Lateral anterior sternal setae: III, 2; IV-VI, 4; VI, 5; VII, 2-3, without medioanterior setae. Length of inner posterior seta of last tergum 0.073 (n = 1); short lateral marginal seta of last segment 0.023 (n = 2). Genitalia as in Fig. 6.

*Dimensions:* TW, 0.41; HL, 0.26; PW, 0.25; PSL, 0.10; MW, 0.36; MSL, 0.11; AWIV, 0.44; TL, 1.20; GL, 0.35; GW, 0.10; GPL, 0.08.

*Material studied.* One male, ex *Dendrocincla fuliginosa*, COSTA RICA: Barbilla NP, Provincia Limón (9°59'N, 85°27'W), 2-11

September 2004, Literák, Čapek & Havlíček coll. Deposited in INBIO—O. Sychra CR09.

*Remarks.* Although the male *Myrsidea* from *Dendrocincla fuliginosa* is similar to the male of *M. souleyetii*, it probably represents a different species. This male differs from the male of *M. souleyetii* in several important features: (1) a conspicuously dark pattern of pigmentation in the male from *D. fuliginosa*; (2) presence of two short spiniform setae and one finer seta at each lateral corner of the pronotum; (3) shorter and straight parameres; (4) different ratio of head setae 10/11 lengths; (5) quite long inner posterior seta of last tergum. Unfortunately, having only one male is insufficient for an adequate description of a new species. One of two birds examined was parasitised by *Myrsidea* sp.

### *Rallicola (Rallicola) fuliginosa* (Carriker, 1963)

*Material studied.* Two males ex *Dendrocincla fuliginosa*, COSTA RICA: Barbilla NP, Provincia Limón (9°59'N, 85°27'W), 2-11 September 2004, O. Sychra CR24.

One of two birds examined was parasitised by *Rallicola (R.) fuliginosa*.

**Host:** *Glyphorhynchus spirurus* (Vieillot, 1819)—Wedge-billed Woodcreeper

Three species of lice were found on this host:

### *Menacanthus* sp.

*Material studied.* Two nymphs ex *Glyphorhynchus spirurus*, COSTA RICA: Barbilla NP, Provincia Limón (9°59'N, 85°27'W), 2-11 September 2004, O. Sychra CR22.

Unfortunately having only nymphs is inadequate for a proper determination to the species level. One of 19 birds examined was parasitised by *Menacanthus* sp.

### *Myrsidea* sp.2

(Fig. 13)

**Female** (1). Metanotal margin and abdomen as in Fig. 13. Similar to *M. souleyetii*, except as follows: conspicuous pattern of pigmentation involving gular and ventral thoracic plates, as well as all abdominal

tergites. Gula with 5-6 setae; with a central "hole", i.e. a small central unpigmented portion. Pronotum with 3 short spiniform setae at each lateral corner. Mean length of head seta 10, 0.065 (n = 2); seta 11, 0.102 (n = 2); ratio 10/11, 0.64. Setae of femoral brush: 13-14.

Posterior margin of metanotum with at least 7 setae. Abdomen without conspicuously enlarged tergites; with tergal setae: I, at least 12; II-V, 16; VI, 11; VII-VIII, 8. Postspiracular setae extremely long on II, IV and VIII, very long on I, III and VII, much shorter on V-VI. Margin of pleurites II-IV with 7-8 setae. Sternal setae on II, 21 marginal, including cluster of 4 heavy setae on each side. Marginal setae of sternite: III-V, 20; VI, 18; VII of subgenital plate, 10; remainder of plate with 10 marginal, 10 anterior setae. Lateral anterior sternal setae: III, 1; IV-VI, 2-4; VII, 1; without medioanterior setae. Anal fringe of 34 dorsal and 28 ventral setae. Mean length of inner posterior seta of last tergum 0.093 (n = 2); short lateral marginal seta of last segment 0.034 (n = 2).

*Dimensions:* TW, 0.42; HL, 0.28; PW, 0.26; PSL, 0.11; MW, 0.39; MSL, 0.16; AWIV, 0.53; TL, 1.36; ANW, 0.19.

*Material studied.* One female, ex *Glyphorhynchus spirurus*, COSTA RICA: Barbilla NP, Provincia Limón (9°59'N, 85°27'W), 2-11 September 2004, Literák, Čapek & Havlíček coll. Deposited in INBIO—O. Sychra CR10.

*Remarks.* The conspicuous pattern of pigmentation described above, the gula, the long inner posterior seta of last tergum, and a small number of setae in the femoral brush, on abdominal tergites VI-VII, on pleurites II-V, and on the subgenital plate distinguish the female *Myrsidea* ex *Glyphorhynchus spirurus* from the female of *M. souleyetii*. Other characters, such as: (1) a different number of setae on gular plate; (2) a different setae at lateral corners of pronotum; (3) a different number of setae on abdominal tergite VIII; and (4) a different ratio of head setae 10/11 lengths, indicate that the female *Myrsidea* from *G. spirurus* probably represents a new species, which can also be distinguished from *Myrsidea* sp.1 ex *Dendrocicla fuliginosa*. Unfortu-

nately, having only one female is insufficient for an adequate description of a new species. One of 19 birds examined was parasitised by *Myrsidea* sp 2.

***Rallicola (Rallicola) cephalosa*  
(Carriker, 1944)**

*Material studied.* One male, two females and one nymph ex *Glyphorhynchus spirurus*, COSTA RICA: Hitoy Cerere BR, Provincia Limón (9°40'N, 85°05'W), 17-31 August 2004, O. Sychra CR25-26; 7 males and 7 females ex *G. spirurus*, COSTA RICA: Barbilla NP, Provincia Limón (9°59'N, 85°27'W), 2-11 September 2004, O. Sychra CR27-31.

Five of 19 birds examined were parasitised by *Rallicola (R.) cephalosa*.

#### DISCUSSION

Recent studies (Irestedt et al. 2002, Ericson et al. 2003, Chesser 2004) support the position of the Woodcreepers as subfamily Dendrocolaptinae of the family Furnariidae. Based on analyses of nucleotide sequence data obtained from both nuclear and mitochondrial markers, this family contains three subfamily (Furnariinae, Sclerurine, and Dendrocolaptinae) and belongs to Furnariida within the parvorder Tyrannides, infraorder Suboscines, and suborder Eupasserres, together with the families Conopophagidae, Grallaridae, Rhinocryptidae, Thamnophilidae and Formicariidae (Irestedt et al. 2002, Ericson et al. 2003).

According to Dickinson (2003), there are 236 and 50 species recognized within the families Furnariidae (including genus *Sclerurus*) and Dendrocolaptidae, respectively. Despite that relatively high number of potential hosts, only 44 species of lice have been described from those bird families (Price et al. 2003). In the course of this study, species of three louse genera, *Menacanthus*, *Myrsidea* and *Rallicola*, were identified.

*Menacanthus*, with species parasitic on a very large number of hosts from seven orders of birds, is among the most speciose of menoponid genera. According to Price et al. (2003), there are 36 *Menacanthus* species recorded from 339 species of passerines be-



longing to 44 families occurring throughout the world. One of those species is *M. eurysternus* (Burmeister, 1838), a louse recorded from 168 species of birds—the largest number of hosts for any known louse. After comparing the nymphs of *Menacanthus* from *G. spirurus* recorded in this paper with those described by Price (1975) as well as with nymphs of *M. eurysternus* collected in Czech Republic, we believe that they do not belong to *M. eurysternus*. The nymphs of *Menacanthus* from *G. spirurus* represent the first record of *Menacanthus* from dendrocolaptid hosts. In the key to the species of *Menacanthus* from Passeriformes (Price 1977), these specimens key to couplet 6, coming closest to that group of species having each side of the metanotum bearing only 2 lateroanterior setae.

*Myrsidea*, with 272 recognized species, is the most speciose menoponid genus. Most of these are from passeriform hosts. There are 260 *Myrsidea* species parasitic on 329 species of passerine birds from 36 families occurring throughout the world (Price and Johnson 2006).

All currently recognized species of *Myrsidea* are restricted to one or, much less frequently, a few host species, with only a single instance of an overlap between host families (Price et al. 2003). Although there has been no comprehensive study of the entire genus due to the large number of species involved, all evidence to date suggests that each host species or group of closely related species is parasitised with one or more species of *Myrsidea*. Dalglish and Price (2003) suggest that the only practical manner by which to deal with the taxonomy of such a genus is to treat lice from each host family as a unit. Until now, there was only one known *Myrsidea* species occurring on ovenbirds: *M. strobilisternata* Eichler (1956) from *Lochmias nematura* (Lichtenstein, 1823). The species of *Myrsidea* described in this paper represent the first records of this louse genus from the woodcreepers and the first records from *A. ochrolaemus* and *S. guatemalensis* in the Furnariidae (Table 1).

*Rallicola* is one of the most widespread genera of ischnoceran chewing lice, mainly recorded from the Rallidae (Gruiformes),

but also from passerines (Passeriformes), kiwis (Apterygiformes), and jacanas (Charadriiformes) (Price et al. 2003). At present, 29 of 33 species of lice of the genus *Rallicola* described from passerines are known from members of the Furnariidae (including Dendrocolaptinae) (Price et al. 2003). *Rallicola* (*Rallicola*) *cephalosa* is the only species from furnariid and dendrocolaptid hosts, which has been previously recorded in Costa Rica (Carriker 1944). In this paper, two further species—*Rallicola* (*R.*) *ochrolaemi* and *Rallicola* (*R.*) *fuliginosa*—are recorded for the first time for Costa Rica.

Although our work has added new louse-host associations and distributions within the Furnariidae, our knowledge concerning lice from these families of birds is still very poor. It is highly likely that further collecting from these birds will produce many additional new louse species or new host records. As our results show, six of the nine collected species belong to the Amblycera. This is a relatively high number considering that only six of 44 louse species recorded from the Furnariidae (including Dendrocolaptinae) belong to Amblycera (Price et al. 2003). All *Myrsidea* species described here from furnariids and dendrocolaptids are very similar to each other, including the characteristic male genital sclerite. Although *Myrsidea* lice are known from only a small number of hosts within these bird groups, they do support the widely-held view that these birds are closely related.

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