Chewing lice (Phthiraptera) from buntings, cardinals and tanagers (Passeriformes: Emberizidae, Cardinalidae, Thraupidae) from Costa Rica, with descriptions of two new species of the genus *Myrsidea* (Phthiraptera: Menoponidae)

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Abstract

Descriptions and illustrations are given for two new species of *Myrsidea* Waterston, 1915 from cardinals and tanagers from Costa Rica. They and their type hosts are: *Myrsidea poliogasteri* ex *Caryothraustes poliogaster* (Cardinalidae) and *M. larvatae* ex *Tangara larvata* (Thraupidae). The male of *Myrsidea mitrospingi* is also described. New host records are *Sporophila corvina* for *Ricinus diffusus*; *Mitrospingus cassini* for *Menacanthus eurysternus*; *Tachyphonus luctuosus* for *Myrsidea spizae*; *Euphonia gouldi* for *Myrsidea violaceae*; and *Tachyphonus delattrii* for *Machaerilaemus laticorpus*. Records of two other louse species of the genus *Myrsidea* from tanagers are also discussed. This paper includes the first record of *Myrsidea* from members of the passerine family Cardinalidae, and a number of additional new host-louse associations.

Key words: *Myrsidea, Menacanthus, Machaerilaemus, Ricinus*, new host-louse associations

Introduction

Buntings (Emberizidae), cardinals (Cardinalidae) and tanagers (Thraupidae and the ensuing “Genera Incertae Sedis”) are among the most speciose families within the Passeriformes (Dickinson 2003). Of the 623 known species within these passerine families, 103 species occur in Costa Rica (Stiles and Skutch 1989). Data concerning the chewing lice of these Costa Rican birds are scarce. To date, only nine species of chewing lice from nine host species have been reported (Carriker 1903; Nelson 1972; Price 1975; Cicchino 1983; Price et al. 2002; Price and Dalgleish 2006). In addition to the species listed by Price et al. (2003), 31 new species of *Myrsidea* Waterston, 1915 from Thraupidae and Emberizidae have been described, nine of these 31 species have been from Costa Rica (Price & Dalgleish 2006, 2007). It should be noted that Price et al. (2003) followed the avian classification scheme of Howard & Moore (1991) and, by doing so, included species now recognized as members of the Thraupidae and Cardinalidae within the Emberizidae. The aim of this paper is to present new data on the composition and distribution of species of chewing lice found on buntings, cardinals and tanagers in Costa Rica, including descriptions of two new species.
Material and methods

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

The taxonomy of the birds to the family level follows Dickinson (2003). Identification of the chewing lice was based on papers by Nelson (1972), Price (1977), Price et al. (2002), and Price & Dalgleish (2006, 2007).

The nomenclature of the lice follows Price et al. (2003). Price & Dalgleish (2006: 2) provided the diagnostic characters that define the genus Myrsidea from the Thraupidae. Because these characters are common to all Myrsidea species mentioned below, they will not be repeated in the species descriptions. In the following descriptions, all measurements are in millimeters. Abbreviations for dimensions are TW, temple width; HL, head length at midline; PW, prothorax width; MW, metathorax width; AW, abdomen width; TL, total length; ANW, female anus width; GL, male genitalia length; GW, male genitalia width; GSL, genital sac sclerite length. We include the number of specimens from which quantified characters were taken within parentheses after “Male” and “Female” for each description. The new species are attributed to the first author only.

The type specimens of the new species described in this paper are deposited in the National Biodiversity Institute, Santo Domingo de Heredia, Costa Rica (INBio). Other material will be deposited in the Moravian Museum, Brno, Czech Republic (MZM) and in the personal collection of the first author.

Results

A total of 135 individuals of 16 bird species belonging to the families Emberizidae, Cardinalidae and Thraupidae were examined. Forty five birds of 12 species were parasitised with chewing lice. Eleven species of chewing lice were determined (Table 1).

Family Emberizidae

Host: *Arremon aurantiirostris* Lafresnaye – Orange-billed Sparrow

One chewing louse species was found on this host:

*Myrsidea aurantiirostris* Price & Dalgleish 2007


Type host. *Arremon aurantiirostris* Lafresnaye


**Remarks.** Five of seven birds examined were parasitised by *M. aurantiirostris*.

Host: *Sporophila corvina* (Sclater) – Variable Seedeater

One chewing louse species was found on this host:

*Ricinus diffusus* (Kellogg, 1896)

*Physostomum diffusus* Kellogg, 1896

Type host. *Passerculus sandwichensis* (Gmelin)

Remarks. One of 29 birds examined was parasitised by *R. diffusus*. This is the first record of a chewing louse species from *Sporophila corvina*.

**TABLE 1.** List of hosts and their lice.

** denotes a new host-louse record

<table>
<thead>
<tr>
<th>Family Emberizidae</th>
<th><strong>Myrsidea aurantirostris</strong> Lafresnaye</th>
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<tr>
<td>Arremon aurantirostris</td>
<td>Price &amp; Dalgleish, 2007</td>
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<tr>
<td><em>Sporophila corvina</em> (Sclater)</td>
<td><strong>Ricinus diffusus</strong> (Kellogg, 1896)</td>
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<tr>
<th>Family Cardinalidae</th>
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<tr>
<td><em>Caryothraustes poliogaster</em> (Du Bus de Gisignies)</td>
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<tr>
<td><strong>Myrsidea poliogasteri</strong> Sychra, n. sp.</td>
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<tr>
<td><em>Cyanocompsa cyanoides</em> (Lafresnaye)</td>
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<tr>
<td><strong>Myrsidea sp.1</strong></td>
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<tr>
<td><em>Saltator maximus</em> (Müller)</td>
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<td><strong>Myrsidea sp.2</strong></td>
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<th>Family Thraupidae</th>
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<tr>
<td><em>Tangara larvata</em> (Du Bus de Gisignies)</td>
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<tr>
<td><strong>Myrsidea larvatae</strong> Sychra, n. sp.</td>
</tr>
<tr>
<td><em>Euphonia gouldi</em> Sclater</td>
</tr>
<tr>
<td><strong>Myrsidea violacea</strong> Price &amp; Dalgleish, 2006</td>
</tr>
<tr>
<td><em>Habia fuscicauda</em> (Cabanis)</td>
</tr>
<tr>
<td><strong>Myrsidea fuscicaudae</strong> Price &amp; Dalgleish, 2006</td>
</tr>
<tr>
<td><em>Ramphocelus passerinii</em> Bonaparte</td>
</tr>
<tr>
<td><strong>Myrsidea fusca</strong> (Carriker, 1903)</td>
</tr>
<tr>
<td><em>Tachyphonus luctuosus</em> d’Orbigny &amp; Lafresnaye</td>
</tr>
<tr>
<td><strong>Myrsidea spizae</strong> Price &amp; Dalgleish, 2006</td>
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<tr>
<td><strong>Ricinus sp.</strong></td>
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<tr>
<td><em>Tachyphonus delattrii</em> Lafresnaye</td>
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<tr>
<td><strong>Myrsidea sp.3</strong></td>
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<tr>
<td><strong>Machaelaemus laticorpus</strong> (Carriker, 1903)</td>
</tr>
<tr>
<td><strong>Mitrospingus cassini</strong> (Lawrence)</td>
</tr>
<tr>
<td><strong>Menacanthus eurysternus</strong> (Burmeister, 1838)</td>
</tr>
<tr>
<td><strong>Myrsidea mitrospingi</strong> Price &amp; Dalgleish, 2006</td>
</tr>
<tr>
<td><strong>Ricinus sp.</strong></td>
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</table>

**Family Cardinalidae**

**Host: Caryothraustes poliogaster** (Du Bus de Gisignies) – Black-faced Grosbeak

One chewing louse species was found on this host:

**Myrsidea poliogasteri** Sychra, new species (Figs. 1–4)

**Female** (6). Hypopharyngeal sclerites strongly developed. Mean length of head seta 10, 0.045 (n=4); seta 11, 0.110 (n=4); *ratio10/11*, 0.41. Gula with 5 setae on each side, most posterior much heavier and longer than others. Pronotum with 3 short spiniform setae of the same length on each lateral corner. Metanotum not enlarged, with very long corner setae (not included in setal count) and 11–17 setae on posterior margin. Metasternal plate large, triangular, with 6–8 long setae. First tibia with 3 outer lateral ventral and 4 dorsal setae; femur III with 14–17 setae in ventral brush.
FIGURES 1–4. Myrsidea poliogasteri. 1, Female dorsoventral metathorax and abdomen. 2, Male. 3, Male genitalia. 4, Male genital sac sclerite.

All abdominal segments with continuous row of tergal setae across each segment without well-defined median gap in these rows. Abdomen with tergites I–III enlarged; tergite I with straight posterior margin, II with gently curved posterior margin, III–V with slight medioposterior convexity (Fig. 1). Tergal setae (including postspiracular setae and all setae between them): I, 28–43; II, 36–45; III, 33–43; IV, 39–47; V, 40–52; VI, 42–49; VII, 35–41; VIII, 21–27. Postspiracular setae extremely long only on VIII (0.40–0.43), long on II, IV and VI–VII (0.20–0.27), and shorter on I, III and V (0.15–0.17). Abdomen without anterior tergal or pleural setae; margin of pleurites I–II with only short spiniform setae, pleurites III–VII also with 3–5 much longer finer setae; margin of pleurite VIII with median long seta flanked on each side by shorter seta. Sternite I without setae. Sternite II with 18–30 medioanterior; 18–21 marginal and aster of 4–5 robust setae on each side. Sternal setae counts include marginal and lateral anterior as well as medioanterior setae together in one setal count as in Price & Dalgleish (2006). Sternal setae: III, 47–65; IV, 45–53; V, 36–44; VI, 28–33; VII, 14–19; VIII–IX, 22–30 (including 10–16 marginal setae); with 8–17 medioanterior setae on III, rarely with 2–4 on IV. Subgenital plate formed by fusion of sternites VII–IX, with posterior margin finely serrated. Anal fringe of 44–48 dorsal and 33–45 ventral setae. Dimensions: TW, 0.48–0.50; HL, 0.31–0.33; PW, 0.32–0.34; MW, 0.50–0.53; AWIV, 0.64–0.67; TL, 1.56–1.66; ANW, 0.25–0.26.

Male (8). Fig. 2. Mean length of head seta 10, 0.039 (n=5); seta 11, 0.105 (n=5); ratio10/11, 0.37. Metanotum with 10–13 setae on posterior margin. Femur III with 15–22 setae in ventral brush. Tergal setae: I, 29–35; II, 36–41; III, 39–46; IV, 43–49; V, 41–48; VI, 40–46; VII, 34–40; VIII, 23–27. Sternite II with 19–23 medioanterior; 14–19 marginal and aster of 3–4 robust setae on each side. Sternal setae: III, 38–55; IV, 46–55; V, 40–49; VI, 32–42; VII, 24–29; VIII, 15–23; remainder of plate, 11–16; with 5–10 medioanterior setae on III and 1–5 on IV–VI. Sternite VII separate from subgenital plate of fused VIII–IX; with 8 internal anal setae. Genitalia and genital sac sclerite as in Figs. 3 and 4, respectively. Dimensions: TW,
0.43–0.45; HL, 0.27–0.30; PW, 0.29–0.32; MW, 0.39–0.42; AWIV, 0.47–0.51; TL, 1.32–1.37; GL, 0.41–0.43; GW, 0.11–0.12; GSL, 0.08.


**Remarks.** Both sexes of *M. poliogaster* are readily characterised by a unique combination of characters as follows: (1) abdominal segments with a continuous row of tergal setae, (2) presence of medioanterior setae on sternites III–VI, (3) relative lengths of the postspiracular setae, especially the extremely long seta only on tergite VIII, (4) large number of setae on tergites IV–VI, (5) female by its abdominal tergal configuration. Four birds were examined and all were parasitised by *M. poliogaster*. This is the first record of a chewing louse species from *Caryothraustes poliogaster*.

**Etymology.** The species name is derived from the specific name of the type host.

**Host:** *Cyanocompsa cyanoides* (Lafresnaye) – Blue-black Grosbeak

One chewing lice species was found on this host:

*Myrsidea* sp. 1


**Remarks.** Unlike *Myrsidea poliogaster*, *Myrsidea* sp. 1 from *C. cyanoides* is characterised by a well-defined median gap in the rows of tergal setae. Our specimens are practically inseparable from that of *M. zonotriciae* Price & Dalgleish 2007 described from *Zonotrichia capensis* (Emberizidae). Unfortunately, having no female specimens is insufficient for an adequate confirming *Myrsidea* sp. 1 either as a different new species or a new host-louse association for *M. zonotriciae*. Four of 12 birds examined were parasitised by *Myrsidea* sp. 1. This is the first record of chewing lice from *Cyanocompsa cyanoides*.

**Host:** *Saltator maximus* (Müller) – Buff-throated Saltator

One chewing lice species was found on this host:

*Myrsidea* sp. 2


**Remarks.** Although the male *Myrsidea* sp. 2 from *S. maximus* is similar to the male of *Myrsidea* sp. 1 from *C. cyanoides*, it probably represents a different species. It is characterised by tergite I with a continuous row of tergal setae, and postspiracular setae on VII distinctly shorter than those on II, IV and VIII. Unfortunately, having only male specimens is insufficient for an adequate description of a new species. Two of four birds examined were parasitised by *Myrsidea* sp. 2. This is the first record of chewing lice from *Saltator maximus*.

**Family Thraupidae**

**Host:** *Tangara larvata* (Du Bus de Gisignies) – Golden-hooded Tanager

One chewing louse species was found on this host:
Myrsidea larvatae Syhra, new species (Figs 5–6)

**Female** (4). Species is in the *bonariensis* species group (sensu Price & Dalgleish 2006). Mean length of head seta 10, only 0.041 (n=7); seta 11, 0.100 (n=7); ratio 10/11, 0.41. Gula with 5 setae on each side. Pronotum with 3 short spiniform setae of same length on each lateral corner. Metanotum not enlarged, with 10–13 setae on posterior margin. Metasternal plate with 6 (rarely 7) long setae. Femur III with 15–17 setae in ventral brush.

Abdomen with tergites I–III enlarged; tergite I with straight posterior margin, II with slight medioposterior convexity, III with conspicuous medioposterior convexity and IV–V with gently curved posterior margin (Fig. 5). Tergal setae: I, 30–36; II, 34–36, III, 35–38; IV, 39–40; V, 35–43; VI, 34–39; VII, 33–36; VIII, 25–27. Postspiracular setae extremely long only on VIII (0.38–0.47), long on II, IV and VII (0.23–0.30), and shorter on I, III and V–VI (0.15–0.20). Margin of pleurites III–VII with 2–3 finer setae much longer than other pleural spiniform setae. Sternite II with 15–18 medioanterior; 16–21 marginal and aster of 4 (less often 3) robust setae on each side. Sternal setae: III, 28–35; IV, 35–44; V, 37–43; VI, 32–36; VII, 17–18; VIII–IX, 18–21 (including 10–13 marginal setae); without medioanterior setae. **Dimensions**: TW, 0.42–0.43; HL, 0.29–0.30; PW, 0.27–0.30; MW, 0.43–0.46; AWIV, 0.58–0.59; TL, 1.45–1.49; ANW, 0.21–0.22.

**Male** (3). Mean length of head seta 10, only 0.040 (n=6); seta 11, 0.096 (n=6); ratio 10/11, 0.42. Tergal setae: I, 27–30; II, 31–36; III–IV, 35–40; V–VI, 37–43; VII, 32–38; VIII, 26–27. Sternite II with 12–15 medioanterior; 15–17 marginal and aster of 4 (less often 3) robust setae on each side. Sternal setae: III, 24–28,
IV, 32–34; V, 34–35; VI, 29–33; VII, 21–26; VIII, 9–11; remainder of plate, 9–10; without medioanterior sternal setae. Genital sac sclerite as in Fig. 6. Dimensions: TW, 0.39–0.40; HL, 0.27–0.28; PW, 0.26–0.27; MW, 0.35–0.36; AWIV, 0.42–0.44; TL, 1.15–1.17; GL, 0.33–0.35; GW, 0.10–0.11; GSL, 0.07–0.09.


**Remarks.** In the key to *Myrsidea* males from Thraupidae (Price & Dalgleish 2006: 23), *M. larvatae* n. sp. keys to couplet 11, being closest to *M. bonariensis* Malcomson, 1929. While the male of *M. larvatae* is practically inseparable from that of *M. bonariensis* (except by having distinctly shorter postspiracular setae II, IV and VII), the female is readily distinguished by its different abdominal tergal configuration and its much larger number of setae on tergite I. In addition, in the key to females of *Myrsidea* from thraupid hosts (Price & Dalgleish 2006: 22) the female of *M. larvatae* keys to couplet 5, being closest to that of *M. seminuda* Eichler, 1951. The pattern of abdominal tergal development, a larger number of setae on tergite VIII, a postspiracular seta II distinctly shorter than that on VIII but similar to those on IV and VII, and the temple width separate *M. larvatae* from *M. seminuda*. Two birds were examined and both were parasitised by *M. larvatae*.

**Etymology.** The species name is derived from the specific name of the type host.

**Host: Euphonia gouldi* Sclater – Olive-backed Euphonia**

One chewing louse species was found on this host:

*Myrsidea violaceae* Price & Dalgleish, 2006

Type host. *Euphonia violacea* (Linnaeus)


**Remarks.** Our female differs a little from original description of *M. violaceae* by having smaller dimensions, especially MW, 0.38; AWIV, 0.46 and TL, 1.33. Two of seven birds examined were parasitised by *M. violaceae*. This is the first record of a chewing louse species from *Euphonia gouldi*.

**Host: Habia fuscicauda* (Cabanis) – Red-throated Ant-Tanager**

One chewing louse species was found on this host:

*Myrsidea fuscicaudae* Price & Dalgleish, 2006

Type host. *Habia fuscicauda* (Cabanis)


**Remarks.** Ten birds were examined and all were parasitised by *Myrsidea fuscicaudae*. This louse species had the highest intensity of parasitism among all the species dealt with in this paper. Mean intensity was 16, while range of intensity was 2–31 lice per bird (n=10).

**Host: Ramphocelus passerinii* Bonaparte – Passerini’s Tanager**

One chewing louse species was found on this host:

*Myrsidea fusca* (Carriker, 1903)

*Menopon thoracicum fusca* Carriker, 1903: 187.


Type host. *Ramphocelus passerinii* Bonaparte

Remarks. Six of ten birds examined were parasitised by *M. fusca*.

Host: *Tachyphonus luctuosus* d’Orbigny & Lafresnaye – White-shouldered Tanager

Two louse species were found on this host:
*Ricinus* sp.


Remarks. One of two birds examined was parasitised by *Ricinus* sp. This and the next species are the first records of chewing lice from *Tachyphonus luctuosus*.

*Myrsidea spizae* Price & Dalgleish, 2006


Type host. *Chlorophanes spiza* (Linnaeus)

**Female** (2). Mean length of head seta 10, 0.041 (n=3); seta 11, 0.092 (n=3); ratio10/11, 0.45. Metasternal plate with 6 setae. Tergal setae: I, 11–12; II, 13–15; III, 13–16; IV, 14; V, 11–13; VI, 10–11; VII, 11; VIII, 9. Postspiracular setae extremely long on II, IV, VII and VIII (0.40–0.46), long on I (0.27) and shorter on III and V–VI (0.16–0.20). Sternal setae: II, 4–5 medioanterior, 14 marginal and aster of 3–4 robust setae on each side; III, 22–26; IV, 32–35; V, 35–37; VI, 30–31; VII, 13–15; VIII–IX, 19–22. **Dimensions**: TW, 0.46–0.47; HL, 0.31–0.32; PW, 0.27–0.29; MW, 0.43–0.44; AWIV, 0.55–0.59; TL, 1.41–1.47; ANW, 0.22–0.23.


Remarks. One of two birds examined was parasitised by *M. spizae*.

Host: *Tachyphonus delatrii* Lafresnaye – Tawny-crested Tanager

Two louse species were found on this host:
*Myrsidea delatrii* sp. 3


Remarks. *Myrsidea* sp. 3 from *T. delatrii* is closest to those of *M. spizae* and *M. mitrospingi* Price & Dalgleish, 2006. Price & Dalgleish (2006: 21) described *M. mitrospingi* based on a single female, and *M. spizae* from three females and two males. Although we have two females of *Myrsidea* sp. 3 collected from one host individual, we believe that, at present, it is unwise to name yet another new species. Further collections of *Myrsidea* from both the type hosts of *M. spizae* and *M. mitrospingi* as well as from *Tachyphonus delatrii* are needed to study further the intra-specific and inter-specific variation of these lice. Such study may show whether the differences between these species lie within the range of variability of *M. spizae* or *M. mitrospingi*, or lie outside such ranges, thus confirming *Myrsidea* sp. 3 as a different new species. Four of 22 birds examined were parasitised by *Myrsidea* sp. 3. This is the first record of chewing lice from *Tachyphonus delatrii*.
**Machaerilaemus laticorpus** (Carriker, 1903)

*Menopon laticorpus* Carriker, 1903: 190, pl. 7, fig. 5.

**Type host.** *Thamnophilus doliatus* (Linnaeus)


**Remarks.** One of 22 birds examined was parasitised by *M. laticorpus*. This is the first record of *M. laticorpus* from *Tachyphonus delatriii*.

**Host: Mitrospingus cassini** (Lawrence) – Dusky-faced Tanager

Three louse species were found on this host:

*Menacanthus eurysternus* (Burmeister, 1838)


**Type host.** *Pica pica* (Linnaeus)


**Remarks.** One of four birds examined was parasitised by *M. eurysternus*. This is the first record of *M. eurysternus* from *Mitrospingus cassini*.

*Myrsidea mitrospinigi* Price & Dalgleish, 2006

(Figs 7–9)

*Myrsidea mitrospinigi* Price & Dalgleish, 2006: 21, fig. 30. Female only.

**Type host.** *Mitrospingus cassini* (Lawrence)

**Male** (2). This species belongs to the *fusca* species group (sensu Price & Dalgleish 2006: 12). Mean length of head seta 10, 0.044 (n=4); seta 11, 0.099 (n=4); ratio 10/11, 0.45. Gula with 4 setae on each side. Pronotum with 2 short spiniform setae and 1 finer longer one on each lateral corner. Metanotum not enlarged, with 7–8 setae on posterior margin. Metasternal plate with 4–5 long setae. Femur III with 14–17 setae in ventral setal brush.

Abdominal segments with a well-defined median gap in rows of tergal setae except tergite VIII with continuous row of tergal setae (Fig. 7). Tergal setae: I, 14–15; II, 15–16; III, 16–18; IV–VIII, 17–21. Postspiracular setae extremely long on II, IV and VIII (0.45–0.47), long on I, III and VII (0.30–0.35) and shorter but still quite long on V–VI (0.25–0.27). Margin of pleurites III–VII with 2–3 finer setae as long as other pleural spiniform setae. Sternal setae: II, 3–6 medioanterior, 16–17 marginal and aster of 5–6 robust setae on each side; Pronotum with 2 short spiniform setae and 1 finer longer one on each lateral corner. Metanotum not enlarged, with 7–8 setae on posterior margin. Metasternal plate with 4–5 long setae. Femur III with 14–17 setae in ventral setal brush.

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**Remarks.** This is the first description of the male of *Myrsidea mitrospinigi*. In the key to *Myrsidea* males from Thraupidae (Price & Dalgleish 2006: 23), *M. mitrospinigi* keys to couplet 19, being similar to the male of *M. rufi* Price & Dalgleish, 2006. However, males of *M. mitrospinigi* are distinguished from those of *M. rufi* by having larger number of setae on tergites VI–VIII, tergite VIII with a continuous row of tergal setae, and especially by the configuration of the male genital sac sclerite (compare Fig. 16 in this paper with Fig. 23 in Price & Dalgleish 2006). One of four birds examined was parasitised by *M. mitrospinigi*. 

LICE OF BUNTINGS, CARDINALS AND TANAGERS  
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Remarks. One of four birds examined was parasitised by *Ricinus* sp. This is the first record of *Ricinus* from *Mitrospingus cassini*.

Discussion

In the course of this study, species of four louse genera – *Myrsidea, Menacanthus, Machaerilaemus* and *Ricinus* — were identified from birds of the families Emberizidae, Cardinalidae and Thraupidae. This paper includes first records of chewing lice from seven of the 12 bird species examined, i.e. *Sporophila corvina*, *Caryothraustes poliogaster*, *Cyanocompsa cyanoides*, *Saltator maximus*, *Euphonia gouldi*, *Tachyphonus lucu tusus* and *Tachyphonus delatrii*, as well as ten new host-louse associations (see above and Table 1). In addition, the species of *Myrsidea* described in this paper represent the first records of this louse genus from the Cardinalidae. With regard to similarity of the structure of the male genital sac sclerite, as we supposed, *Myrsidea* from the Cardinalidae are anatomically close to those from Thraupidae and Emberizidae. It is especially evident in the case of the male of *Myrsidea* from *C. cyanoides* which is practically inseparable from that of *M. zonotrichiae* Price & Dalgleish 2007 described from *Zonotrichia capensis* (Emberizidae).

Price & Dalgleish (2006) reviewed the species of *Myrsidea* parasitic on birds belonging to the family Thraupidae, and included separate male and female keys to their identification. In order to add to those keys the new species and other material described in this paper, the following alterations should be made:

(1) In the key to females, change couplet 5 as follows:

5  Tergite I with >26 setae ................................................................. ................................................................. 5a
- Tergite I with <24 setae ................................................................. ................................................................. 6
5a Tergite VIII <23 setae; temple at least 0.45 wide .......................................................... *semindua* Eichler
- Tergite VIII at least 25 setae; temple <0.43 wide ............................................................ *larvatae* n. sp.

(2) In the key to males, change couplet 11 as follows:

11  Sternite VI with not >29 setae; genital sac sclerite as in Fig. 23 [in Price & Dalgleish 2006] ..............
- Sternite VI with at least 30 setae; genital sac sclerite as in Fig. 6 .................................................................11a
11a Postspiracular setae on II, IV and VII very long, and as long as on VIII ............ *bonariensis* Malcomson
- Postspiracular setae on II, IV and VII much shorter than on VIII.......................... *larvatae* n. sp.

(3) In the key to males, change couplet 19 as follows:

19  Sternite VIII with only 3 setae.............................................................. *phoenicii* Price & Dalgleish
- Sternite VIII with 5–9 setae .................................................................................................................. 20
20  Tergites V–VIII with <17 setae; genital sac sclerite as in Fig. 23 [in Price & Dalgleish 2006] ..............
- Tergites V–VIII with at least 18 setae; genital sac sclerite as in Fig. 9 ....... *mitrospingi* Price & Dalgleish
At present only one species of thraupid *Myrsidea* had been found parasitising two hosts, i.e. *M. seminuda* from two tanagers of the genus *Thraupis* (Price & Dalgleish 2006: 11). In this paper, there are two further species of *Myrsidea* from Thraupidae parasitising two hosts, i.e. *M. violaceae* which appears to be restricted to tanagers of the genus *Euphonia*, and *M. spizae*, originally described from *Chlorophanes spiza*, which was found on *Tachyphonus luctuosus*.

Prior to Price & Dalgleish (2006), only one known *Myrsidea* species was known from tanagers: *M. laciniaesternata* Eichler (1956) from *Habia rubica* (Vieillot). Price & Dalgleish (2006: 5) mentioned that they have not been able to examine type material of this louse species. Unlike them, we have borrowed the holotype of *M. laciniaesternata* for comparison with our specimens. We can confirm, that this specimen agrees in all characters to the description by Price & Dalgleish (2006: 3). Our records also include new louse-host associations for *Menacanthus eury sternus*, *Machaerilaemus laticorpus* and *Ricinus diffiusus* (see Table 1). Lice of genus *Ricinus* found on *Tachyphonous luctuosus* and *Mitrospingus cassini* the most probably belong to the species *R. complicatus* Carricker, 1964. This louse species is closely related to *R. ramphoceli* Nelson, 1972. The main diagnostic character separating these two louse species is the number of labial setae. Unfortunately, Nelson (1972) gave reversed numbers of setae in his descriptions (13 pairs of setae for *R. ramphoceli* and 14 pairs of setae for *R. complicatus*) and in his key (13 pairs of setae for *R. complicatus* and 14 pairs of setae for *R. ramphoceli*). Regardless of this Nelson (1972) error, we believe that this character is not useful because some of our specimens have 13 pairs of setae on one side of the labium, but 14 pairs of setae on the opposite side of the labium. It is probable that *R. ramphoceli* is a junior synonym *R. complicatus*. Obviously, more specimens and a more rigorous review of these two *Ricinus* species are needed before further material can be identified with certainty.

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Literature cited


