

Myrsidea agarwali sp. n. (Phthiraptera: Menoponidae) from *Garrulax lineatus lineatus* (Passeriformes: Timaliidae)

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Abstract: A new species of chewing louse, *Myrsidea agarwali*, is described from *Garrulax lineatus lineatus* (Passeriformes: Timaliidae) from the Rampur district (India). A key is provided for the identification of males and females of *Myrsidea* from birds of the genus *Garrulax*.

Key words: Phthiraptera; new species; *Myrsidea*; *Garrulax* host

Introduction

Twenty six species of *Myrsidea* Waterston, 1915 have been described infesting the avian family Timaliidae (Aves: Passeriformes). Tandan & Clay (1971) described five new species of *Myrsidea* found on the host genus *Turdoides* Cretzschmar, 1826 and also redescribed two species previously described by Ansari (1951). Tandan (1972) described 12 more new species (11 from host the genus *Garrulax* Lesson, 1831 and one from *Pomatorhinus* Horsfield, 1821) and redescribed one species from the genus *Garrulax* described by Ansari (1951). Rai (1978) described one more new species of *Myrsidea* from *Garrulax phoeniceus bakeri* (Hartert, 1909). Price et al. (2006) illustrated five new species of *Myrsidea* from babblers of five different genera. In this report, we describe *Myrsidea agarwali* sp. n. from *Garrulax lineatus lineatus* (Vigors, 1831).

Material and methods

Lice were cleared in 10% potassium hydroxide, dehydrated through a series of ethanol (of ascending concentration), cleared in xylene/clove oil and mounted in Canada balsam/DPX. Specimens were measured with a calibrated eyepiece, fitted into an Olympus CH20i microscope. Host identification is based on Ali & Ripley (1983). All the measurements are in millimeter (mm.). Abbreviations used are: TW = temple width; HL = head length; PW = prothorax width, MW = metathorax width, AW (IV) = abdominal width of segment IV, TL = total length. We include the number of specimens from which quantified characters were taken within parentheses. A thorough characterization of

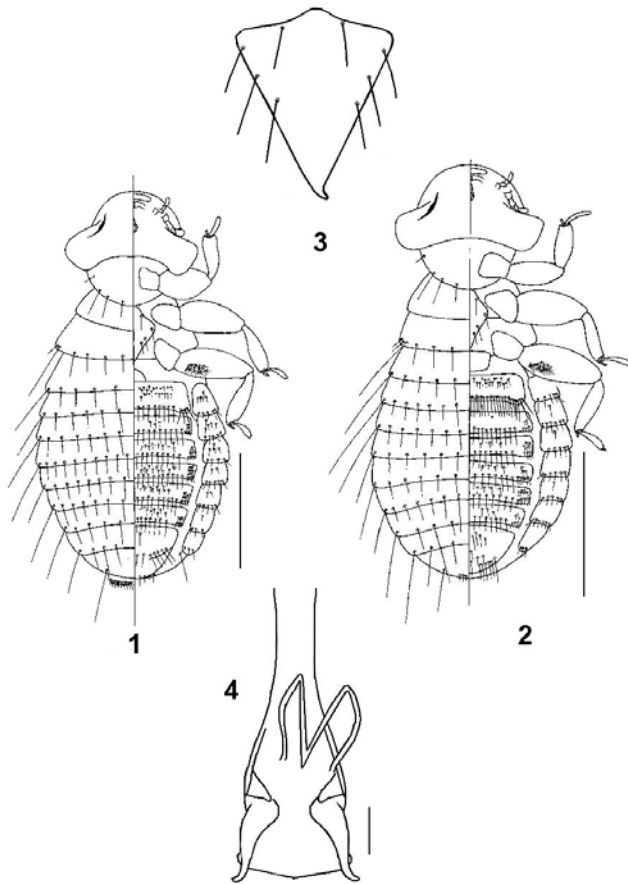
the genus *Myrsidea* has been given by Clay (1966). Here, we provide only the diagnostic characters for the new species.

Myrsidea agarwali sp. n. (Figs 1–8)

Description. Female (7) (Figs 1, 5). Hypopharynx is reduced and apices of metasternal plate are comparatively flat (Fig. 3). Metanotal setae 4+4(2), metapleural setae 1+1(2), metasternal setae 3+3(1), 4+4(1), outer dorsal setae on tibia I 5+5(2) femoral brush 16–26. All abdominal segments with continuous row of tergal setae across each segment without well-defined median gap in these rows. Tergum I very slightly but perceptibly enlarged and tergum II very slightly modified (Fig. 1).

Tergal setae: I 8–10 (\bar{x} = 9), II 10–12 (\bar{x} = 11), III 12–14 (\bar{x} = 13), IV 17–18 (\bar{x} = 17.5), V 12–14 (\bar{x} = 13), VI 12–13 (\bar{x} = 12.5), VII 6–8 (\bar{x} = 7), total 77–89 (\bar{x} = 83), VIII 7–8 (\bar{x} = 7.5), two longest setae may just cross posterior margin of tergum, IX = 2. Two central setae long but shorter than postspiracular setae. Pleural Setae: anterior setae occurring on pleurites II–VII, II 3–5, III 4–6, IV 3–4, V 2–3, VI 1–3 and VII 0–1 on each side. Sternal setae. Anterior setae: II 18–20 (\bar{x} = 19), III 0–4 (\bar{x} = 2), IV 7–10 (\bar{x} = 8.5), V 7–11 (\bar{x} = 9), VI 8–10 (\bar{x} = 9) and VII 6–8 (\bar{x} = 7) each side. Marginal setae: II 8–9 (\bar{x} = 8.5) and aster of spines: 4+4 (4) and 4+3 (2) robust setae (Fig. 8), III 8–10 (\bar{x} = 9), IV 8–10 (\bar{x} = 9), V 8–10 (\bar{x} = 9), VI 8–10 (\bar{x} = 9) and VII 7–10 (\bar{x} = 8.5) each side, genital region 16–24, vulval margin 42–50. Sternal brushes. Anterior setae: III 3–5 (\bar{x} = 4), IV 4–6 (\bar{x} = 5), V 8–10 (\bar{x} = 9), VI 4–6 (\bar{x} = 5) and VII 2–4 (\bar{x} = 3) each side. Marginal setae: III 2–3 (\bar{x} = 2.5),

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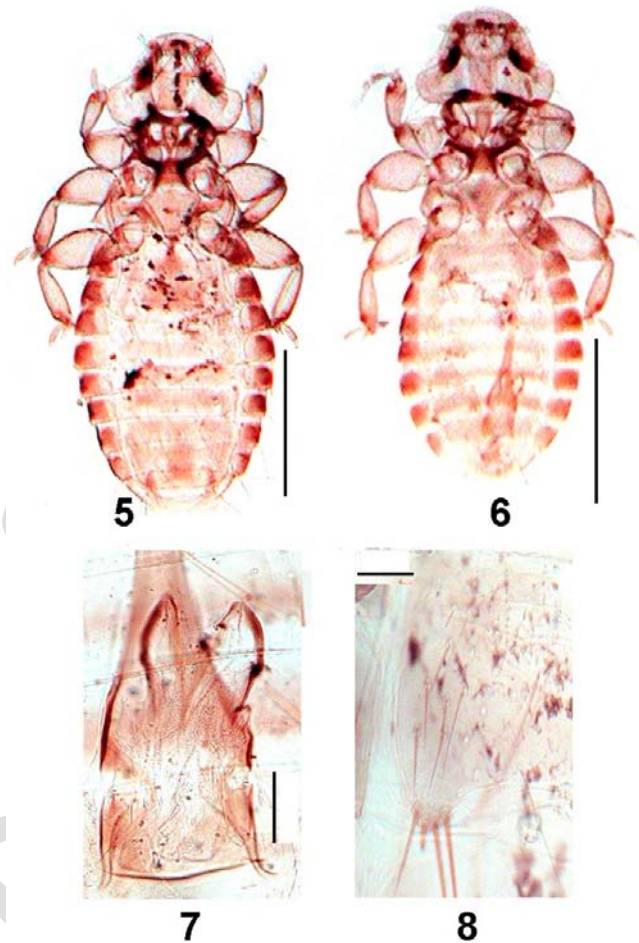
Figs 1–4. *Myrsidea agarwali* sp. n.: 1 – female; 2 – male; 3 – female sternal plate; 4 – male genitalia. Scales 0.5 mm (Figs 1–3), 0.05 mm (Fig. 4).

IV 3–4 (\bar{x} = 3.5), V 3–4 (\bar{x} = 3.5), VI 3–5 (\bar{x} = 4) and VII 2–3 (\bar{x} = 2.5) each side.

Measurements. TW = 0.48 (0.45–0.50), HL = 0.32 (0.31–0.32), PW = 0.33 (0.31–0.33), MW = 0.55 (0.52–0.59), AW IV = 0.69 (0.67–0.74), TL = 1.79 (1.76–1.82). The length of postspiracular setae I = 0.25, II = 0.22, III = 0.27, IV = 0.29, V = 0.16, VI = 0.28, VII = 0.24, VIII = 0.29.

Male (5) (Figs 2, 6). Metanotal setae 3+3(2), metapleural setae 2+2(2), metasternal setae 4+4(2), outer dorsal setae on tibia I 3+3(2), femoral brush 18–24. Male genitalia (Figs 4, 7) with a more or less straight mesosomal arch, paramere broader at base and genital sclerites as in Fig. 4.

Tergal setae: I 6–7 (\bar{x} = 6.5), II 9–12 (\bar{x} = 10.5), III 12–14 (\bar{x} = 13), IV 10–14 (\bar{x} = 12), V 10–12 (\bar{x} = 11), VI 10–12 (\bar{x} = 11), VII 6–8 (\bar{x} = 7) total 68–75 (\bar{x} = 71.5), VIII 4–6 (\bar{x} = 5), two longest setae may just cross posterior margin of tergum, IX = 2. Two central setae long but shorter than postspiracular setae. Pleural setae: Number of anterior setae reduced (mostly single setae) on III–VI pleurites. Sternal setae. Anterior setae: II 12–17 (\bar{x} = 14.5), III 1–2 (\bar{x} = 1.5), IV 2–5 (\bar{x} = 3.5), V 4–5 (\bar{x} = 4.5), VI 3–5 (\bar{x} = 4) and VII 4–3 (\bar{x} = 3.5) each side. Marginal setae: II 14–16 (\bar{x} = 15) and aster of spine 4+4 (3) and 4+3 (2) robust setae, III 8–10 (\bar{x}



Figs 5–8. *Myrsidea agarwali* sp. n.: 5 – female; 6 – male; 7 – male genitalia; 8 – aster of sternite II. Scales 0.5 mm (Figs 5, 6), 0.05 mm (Figs 7, 8).

= 9), IV 8–10 (\bar{x} = 9), V 7–9 (\bar{x} = 8), VI 7–10 (\bar{x} = 8.5) and VII 6–7 (\bar{x} = 6.5) each side, genital region 28. Sternal brushes. Anterior setae: III 1–3 (\bar{x} = 2), IV 3–5 (\bar{x} = 4), V 3–5 (\bar{x} = 4), VI 6–7 (\bar{x} = 6.5) and VII 1–2 (\bar{x} = 1.5) each side. Marginal setae: III 3–4 (\bar{x} = 3.5), IV 4–5 (\bar{x} = 4.5), V 6–7 (\bar{x} = 6.5), VI 5–6 (\bar{x} = 5.5) and VII 3–4 (\bar{x} = 3.5) each side.

Measurements. TW = 0.47 (0.46–0.51), HL = 0.33 (0.32–0.34), PW = 0.32 (0.31–0.33), MW = 0.42 (0.41–0.43), AW IV = 0.59 (0.59–0.58), TL = 1.47 (1.46–1.48). The length of postspiracular setae I = 0.30, II = 0.36, III = 0.29, IV = 0.23, V = 0.21, VI = 0.20, VII = 0.25, VIII = 0.29.

Type material. **Holotype** female and **paratype** male will be deposited in the National Zoological Survey of India, Calcutta. These specimens were collected in the district of Rampur (located at 28°48' N 79°00' E 28.8.1979; elevation of 88 m a.s.l.) India, leg. I. Khan, 22.05.2005. **Other paratypes** – 4 ♂♂ and 6 ♀♀, coll. Department of Zoology, Govt. Raza Postgraduate College, Rampur. This sample was collected in the district of Rampur (India), leg. V. Khan, 2005.

Type Host: *Garrulax lineatus lineatus* (Vigors, 1831).

Etymology. This species has been named in honor of Prof. G.P. Agarwal, Ex-Head Dept. of Zoology, Banaras Hindu University, Varanasi, India

Differential diagnosis. Both sexes of the new species closely resemble to *Myrsidea monilegeri* Tandan, 1972, *M. macraidoia* Tandan, 1972 and *M. assamensis* Tandan, 1972. It differs from these species by its different number of setae on metanotum, tergite I and VIII, and sternite II; also, by its male genital sclerite (see amended key below). Furthermore, it is distinguished from *M. patkaiensis* Tandan, 1972 due to the reduced hypopharyngeal sclerites. It differs from *M. monilegeri* and *M. assamensis* (Tandan, 1972) in the nature of mesosomal arch (more or less straight), parameres (broader at base) and genital sclerites (bulging laterally).

Tandan (1972) reviewed the species of *Myrsidea* parasitic on birds belonging to the genus *Garrulax*, and included separate male and female keys to their identification. In order to add the new species to those keys, the following amendments should be made:

- (1) In the key to females, change couplet 11 as follows:
- 11 On sternite II 2–4 anterior setae each side separated by a gap (total 6) *M. monilegeri*
 – On sternite II at least 17 anterior, centrally located setae **12**
- 12 On sternite II 17–20 setae, 13–16 setae on tergum VIII *M. macraidoia*
 – On sternite II 36–40 setae (Fig. 8), 7–8 setae on tergum VIII *M. agarwali*
- (2) In the key to males, change couplet 11 as follows:
- 11 Metanotum with at least 6 setae; genitalia and genital sclerite as in Figs 4 and 7 *M. agarwali*
 – Metanotum with not > 4 setae; genitalia and genital sclerite otherwise **12**
- 12 Genitalia and genital sclerite as in Fig. 50 (in Tandan 1972) *M. monilegeri*
 – Genitalia and genital sclerite as in Fig. 44 (in Tandan 1972) *M. assamensis*

Discussion

Twelve species of *Myrsidea* are known to infest the genus *Garrulax* (i.e., *M. sehri* Ansari, 1951, *M. erythrocephali* Tandan, 1972, *M. manipurensis* Tandan, 1972, *M. thailandensis* Tandan, 1972, *M. sikkimensis* Tandan, 1972, *M. singularis* Tandan, 1972, *M. bhutanensis* Tandan, 1972, *M. monilegeri*, *M. assamensis*, *M. patkaiensis* Tandan, 1972, *M. orientalis* Tandan, 1972 and *M. macraidoia*). *Myrsidea manipurensis*, *M. bhutanensis* and *M. patkaiensis* have a fully developed hypophar-

ynx. Among those which have a reduced hypopharynx, *M. singularis* has an enlarged metanotum. *Myrsidea sehri*, *M. erythrocephali*, *M. thailandensis* and *M. ananthakrishnani* have no anterior setae on pleurites II to VI. *Myrsidea orientalis* has 6 to 11 dorsal setae on tibia I. *Myrsidea monilegeri* and *M. macraidoia* have 7 to 16 marginal setae on tergum I. *Myrsidea agarwali* sp. n. appears closer to *M. assamensis* but differs in the characters indicated in the key below.

Ansari (1951) mentioned *Garrulax lineatus lineatus* as type host of *M. sehri*. *Myrsidea agarwali* n. sp. may be separated from *M. sehri* by not having anterior setae on pleurites II to VI. This is the first example of a timaliid sub species (*G. lineatus lineatus*) having more than one species of *Myrsidea*. The other host species is *Garrulax leucolophus* (Hardwicke, 1815), in which the subspecies *G. leucolophus leucolophus* is parasitised by *M. assamensis*, whereas *G. leucolophus patkaiensis* Reichenow, 1913 harbours *M. patkaiensis* (Price et al. 2003). Two species of *Myrsidea* sharing the same host species could be the result of intra host speciation or duplication (Price et al. 2003).

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References

- Ali S. & Ripley S.D. 1983. Handbook of the Birds of India and Pakistan. Oxford University Press, Oxford, New York, 737 pp.
- Ansari M.A. 1951. Mallophaga (Amblycera) infesting birds in the Panjab (India). Proc. Nat. Acad. Sci. **17**: 127–203.
- Clay T. 1966. Contributions towards a revision of *Myrsidea* Waterston. I. (Menoponidae: Mallophaga). Bull. Br. Mus. (Nat. Hist.) Entomol. **17**: 327–395.
- Price R.D., Arnold D.C. & Bush S.E. 2006. Five new species of *Myrsidea* (Phthiraptera: Menoponidae) from Asian babblers (Passeriformes: Timaliidae). J. Kans. Entomol. Soc. **79**: 369–377.
- Price R.D., Hellenenthal R.A., Palma R.L., Johnson K.P. & Clayton D.H. 2003. The Chewing Lice: World Checklist and Biological Overview. Illinois Natural History Survey Special Publication 24, x + 501 pp.
- Rai R.K. 1978. A new species of *Myrsidea* (Phthiraptera) on *Garrulax* (Aves) from north east India. Entomol. **3**: 281–285.
- Tandan B.K. 1972. Contributions towards a revision of *Myrsidea* Waterston. VII. (Phthiraptera, Amblycera: Menoponidae). Bull. Br. Mus. (Nat. Hist.) Entomol. **27**: 369–410.
- Tandan B.K. & Clay T. 1971. Contributions towards a revision of *Myrsidea* Waterston. VI. (Menoponidae, Amblycera: Mallophaga). Trans. R. Entomol. Soc. Lond. **123**: 209–246.

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