

Two new species of Lonchaeidae (Diptera: Schizophora) from the Republic of Mordovia, Russia

Два новых вида Lonchaeidae (Diptera: Schizophora) из Республики Мордовия, Россия

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КЛЮЧЕВЫЕ СЛОВА: новые виды, *Earomyia*, *Lonchaea*, Lonchaeidae, Мордовский заповедник.

ABSTRACT. Two species in two genera of Lonchaeidae, namely *Earomyia mordovia* **sp.n.** and *Lonchaea cryptica* **sp.n.** are described from material collected in the Republic of Mordovia. Both species were trapped in fermenting beer.

РЕЗЮМЕ. Описываются два новых вида в двух родах Lonchaeidae, а именно *Earomyia mordovia* **sp.n.** и *Lonchaea cryptica* **sp.n.** Виды описаны на материале, собранном в Республике Мордовия. Оба вида были отловлены в ловушки на бродящее пиво.

The Lonchaeidae are a small family of Diptera which includes some 600 species world-wide with approximately 140 species known from the Palearctic. The Lonchaeid fauna of Mordovia was almost unknown until recently when specimens were captured mainly within the territory of Mordovia State Nature Reserve using beer traps and sweep nets [Ruchin et al., 2020]. This led to the identification of 8 species of Lonchaeidae of which two were recorded from Russia for the first time [MacGowan et al., 2021]. Examination of further samples collected in 2020 identified two species new to science which are described here.

Specimens are micro-pinned and staged with accompanying data labels. Dissected genitalia were cleared in 10% KOH before examination, they were subsequently stored in glycerol filled micro-vials attached to the specimen pin. The figures of male genitalia included within this paper follow the standard orientation adopted in the Manuals of Palearctic and Nearctic Diptera.

Taxonomic terminology used follows that of MacGowan and Rotheray [2021]. The specimens listed here are deposited in the National Museum of Scotland (NMS), Edinburgh.

Taxonomic descriptions

Earomyia Zetterstedt, 1842.

Earomyia mordovia MacGowan et Ruchin, **sp.n.**
Figs 1–4.

TYPE MATERIAL. Holotype ♂. RUSSIA: Mordovia, Mordovia State Nature Reserve, quarter 384, 54.762N 43.219E, 25.V–5.VI.2020, pine-birch, leg. A. Ruchin. Specimen number NMS-10005536.

DESCRIPTION. Holotype, ♂. Head: Eyes bare. Frons at narrowest point above lunule approximately 0.5x width of an eye, matt black, frontal setulae approximately 0.4x length of orbital seta, only a few scattered interfrontal setae. Orbital plate black, dulled by microsculpture, bare apart from the orbital seta. Lunule ground colour black, grey dusted. Face and parafacials sub-shining black slightly grey dusted. Anterior genal setulae forming a single regularly spaced row of 4 along mouth margin. Palpi black, with numerous setae. Antennae entirely black, pedicel with a strong seta as long as the length of the postpedicel, postpedicel; length to depth ratio 1.0:1.0, obscurely orange at extreme medial base. Arista microscopically pubescent, entirely black.

Thorax: Scutum sub-shining black, light grey dusted with a covering of scattered black setulae. Anepisternum grey dusted with 3 setae in a vertical row along posterior margin, anterior row consisting of one anterior seta with 2 long setulae above and one below, remainder of the sclerite with

scattered setulae approximately 0.5x length of the marginal setae. Proepisternum and proepimeron each with a single seta. Katepisternum, sub-shining black, the row of setae located near dorsal margin consisting of 2 posterior setae with 3 strong setulae anterior to these, remainder of sclerite bare. Anepimeron bare. Scutellum dusted greyish, on margin with a pair of lateral and apical setae, one setula situated between lateral and apical setae on left side, two on right side, a pair of tiny setulae between apical setae, no setulae anterior to the lateral setae. Calypteres pale with a black margin and short black fringe of uniform length. Wing: length 3.0 mm, veins yellow, membrane clear, covered in pale microtrichia, intercostal section of wing, between insertion of Sc and R1, approximately 2x length of cross vein r - m. Legs, black, basal and second tarsomeres of all legs brownish yellow, apical segments brownish, all covered in black setulae, basal tarsomere of fore and hind legs with a ventral fringe of short, stiff black setulae.

Abdomen: 1st sternite bare. Male terminalia: (Figs 1–4): Epandrium boot-shaped, the apical section laying at approximately 90° with respect to the basal, apically with 5 long, thick setae, and 2-3 subsidiary setae on margin anterior to these, the long apical setae as long as the apical section. Cerci large and well developed, almost as high as

the epandrium, with a group of approximately 10 short setae medially, apex slightly chitinised and densely setulose, stronger setulae on medial surface. Postgonites rather finely spiculate medially. Pregonites apically swollen, with a single medially directed seta, stem bare. In lateral view surstyli projecting from beyond shell of epandrium as a rather rounded-rectangular lobe, 2-3 long strong setae, and 1–2 shorter setae apically, no other significant marginal setae, surstyli setulose apically, both internally and externally. Surstylus basally with 4-5 setae, almost as long and strong as the apical setae. Phallus sinuous with a small pointed apical section.

Female: Unknown.

ETYMOLOGY. The specific epithet refers to the Republic of Mordovia, the locality of the holotype.

REMARKS. Genus *Earomyia* is one of the most taxonomically difficult within the Lonchaeidae, with few distinguishing external characters identification to species level depends largely on the characters of the male genitalia.

With bare eyes, partly yellow tarsomeres, katepisternum bare apart from the row of setae and setulae along dorsal margin and male terminalia with the epandrium sickle-shaped this species falls into a group within the Palearctic fauna which includes *E. grusia* Morge, 1959, *E. schistopyga* Collin, 1953 and *E. bazini* (Séguy, 1932). The key specific features of *E. mordovia* sp.n. are found in the structures of the male terminalia, in particular the cerci which are large and well-developed in comparison to the other three species in this group in which they are small and insignificant. In addition, both *E. grusia* and *E. bazini* have a rather short, stout phallus when compared to *E. mordovia* sp.n. In *E. schistopyga* the phallus is generally similar but the cerci, which protrude ventrally beyond the shell of the epandrium, are little developed.

Lonchaea Fallén, 1820.

Lonchaea cryptica MacGowan et Ruchin, sp.n.

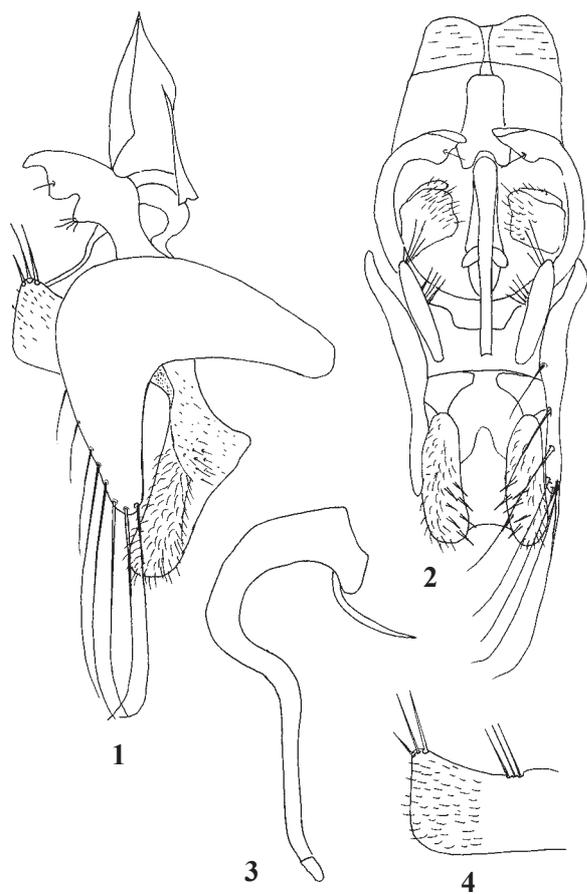
Figs 5–9.

TYPE MATERIAL. Holotype ♂. RUSSIA: Mordovia, Zubova Polyana District, 3 km W of Marlyay, beer trap, 53.8287N 42.8365E, 15–28.V.2020, leg A. Ruchin. Specimen number NMS-10005537.

Paratypes: Mordovia, Mordovia State Nature Reserve, quarter 172, on pine, 54.847N 43.205E, 20.VI–4.VII.2020, 1♂, NMS-10005551. quarter 287, beer trap, 54.801N 43.364E, 16.V–1.VI.2020, 1♂, NMS-10005552. quarter 342, beer trap, 54.776N 43.385E, 25.V–6.VI.2020, 2♂, NMS-10005554 & 10005555. quarter 362, beer trap, 54.770N 43.252E, 25.V–5.VI.2020, 1♂, NMS-10005556. quarter 375, beer trap, 54.785N 43.466E, 14–27.V.2020, 1♂, NMS-10005557. quarter 398, beer trap, 54.776N 43.442E, 27.V–6.VI.2020, 1♂, NMS-10005558. All leg. A. Ruchin.

DESCRIPTION. Holotype, ♂. Head: Eyes bare. Frons at narrowest point above lunule approximately 0.6x width of an eye, matt black, frontal and interfrontal setulae long, 0.6x length of orbital seta. Orbital plate black, dulled by microsculpture, bare apart from the orbital seta. Lunule ground colour black; face sub-shining black, parafacials slightly grey dusted. Anterior genal setulae forming a single regularly spaced row of 5–6 along mouth edge, these slightly stronger than other setulae on the genae. Palpi black, with numerous setae. Antennae entirely black, antennal postpedicel long, reaching mouth margin, length to depth ratio 3.0: 1. Arista entirely black.

Thorax: Scutum sub shining blue-black, light grey dusted with a covering of rather dense long black setulae approximately 0.75x length of orbital seta. Humeri densely covered in setulae. Anepisternum grey dusted with 4 setae in a row along posterior margin, anterior setae difficult to distinguish



Figs 1–4. *Earomyia mordovia* sp.n.: 1–2 — epandrium and associated structures; 3 — phallus; 4 — inner surface of the surstylus; 1, 3 — lateral view; 2 — ventral view.

Рис. 1–4. *Earomyia mordovia* sp.n.: 1–2 — эпандрий и прилежащие структуры; 3 — фаллус; 4 — внутренняя поверхность сурстилей; 1, 3 — сбоку; 2 — снизу.

from other numerous long setulae on the sclerite. Proepisternum with one seta on left, two on right, proepimeron with two setae, one weaker than the other on left, one on right. Katepisternum, sub-shining black, a single seta located near dorsal margin, remainder of sclerite, apart from posterior portion, covered in long setulae the majority of which are more than 0.5x the length of the seta, several setulae present posterior to the seta. Anepimeron bare. Scutellum sub-shining black, on margin with a pair of lateral and apical setae, six to seven setulae situated between lateral and apical setae, six between apical setae, these at least 0.5x as long as marginal setae, no setulae anterior to the lateral setae. Calypteres dark grey with a black margin and a dense, long black fringe of uniform length. Wing: length 3.9 mm, veins yellowish-brown, intercostal section of wing, between insertion of Sc and R1, approximately 4x length of cross vein r-m. Legs, black, basal tarsomere of fore legs and basal and second tarsomeres of hind legs yellow-brown ventrally with a ventral fringe of short, stiff golden setulae. Basal tarsomere of mid leg only very obscurely brownish at extreme ventral base, ventral fringe of setulae black.

Abdomen: 1st sternite without setulae. Male terminalia: (Figs 5–9): In lateral view epandrium slightly wider than high, with several strong setae on posterior and ventral margins. Cerci large and apically rounded, more than half height of epandrium; bearing numerous strong setae apically. Surstylus extending ventrally beyond shell of epandrium for all its length culminating in a large, rounded, slightly hooked, posterior process. Inner surface of surstylus with numerous strong black setae on ventral half, posterior process bare apart from a few setulae. Phallus un-segmented,

simple-J shape, base and stem darkened with sclerotization, apically divided into two equal processes, these lying at an angle to the main stem and serrated along their outer margins.

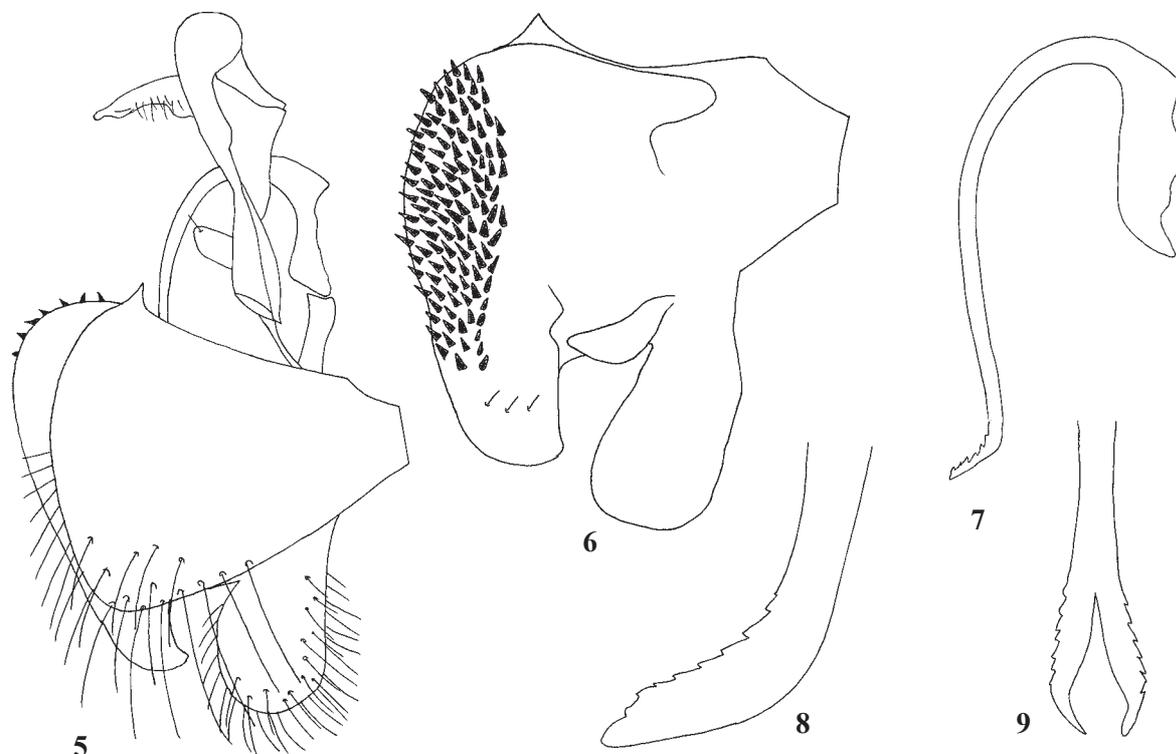
Female: Associated females are similar to the males apart from a wider frons and generally shorter pilosity. However, at present they are not distinguishable from females of *L. affinis*.

ETYMOLOGY. The specific epithet refers to the fact that this species has until now remained undetected within series of the very similar *Lonchaea affinis*.

REMARKS. With bare eyes, anterior genal setae in a single row, tarsomeres partly pale, calypteres dark fringed, scutellar disc bare and proepimeron, in most cases with more than one seta, this species belongs to the *L. affinis* Malloch, 1920 species-group within the Palearctic *Lonchaea*. This is a small group consisting of the widespread Holarctic *L. affinis* and the little-known *L. sorocula* Hackman, 1956. Two of the paratypes also have two setae on the proepisternum, the number of setulae on the proepimeron varies between one and four.

In external characters *L. cryptica* sp.n. is very similar to *L. affinis*, the general shape and structures of the male terminalia are similar apart from the phallus which is clearly distinct. In terms of chaetotaxy *L. cryptica* sp.n. tends to have fewer setae on the proepimeron with numbers in the paratypes ranging from one to four whereas in *L. affinis* there is a tendency for there to be a greater number.

In the past there was confusion between *L. affinis* and *L. laxa* Collin, 1953. The type series of *L. laxa* consists of two male and seven female syntypes [Pont, 1995], all except one male were from the Scottish Highlands. Examination of the



Figs 5–9. *Lonchaea cryptica* sp.n.: 5 — epandrium and associated structures; 6 — inner surface of the surstylus; 7 — phallus; 8–9 — detail of apex of phallus; 5, 7–8 — lateral view; 9 — ventral view.

Рис. 5–9. *Lonchaea cryptica* sp.n.: 5 — эпандрий и прилежащие структуры; 6 — внутренняя поверхность сурстилей; 7 — фаллус; 8–9 — детали строения вершины фаллуса; 5, 7–8 — сбоку; 9 — снизу.

male from Scotland confirmed that it was in fact a specimen of *L. affinis* and it was considered most likely that the associated females were also of this species. As a result, *L. laxa* was proposed as a junior synonym of *L. affinis* [MacGowan, 2020]. However, at the time of publication of the Lonchaeidae volume of the “*Handbooks for the Identification of British Insects*” *L. laxa* was still considered a separate species, and the figure of the male terminalia was based on the second syntype male which was captured in southern England [MacGowan, Rotheray, 2008: Fig. 242 on p.63]. That figure shows that the specimen was in fact a male of *L. cryptica* **sp.n.**, unfortunately the specimen has now been lost and at present it is not possible to confirm the presence of *L. cryptica* **sp.n.** in the British Isles.

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Competing interests. The authors declare no competing interests.

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