

**Zeitschrift:** Mitteilungen der Schweizerischen Entomologischen Gesellschaft =  
Bulletin de la Société Entomologique Suisse = Journal of the Swiss  
Entomological Society

**Herausgeber:** Schweizerische Entomologische Gesellschaft

**Band:** 89 (2016)

**Heft:** 3-4

**Artikel:** New species of Lonchaeidae (Diptera) from Switzerland and Serbia with  
a revised checklist of the Swiss fauna

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**DOI:** <https://doi.org/10.5169/seals-696970>

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## New species of Lonchaeidae (Diptera) from Switzerland and Serbia with a revised checklist of the Swiss fauna

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Two new species within the genus *Lonchaea* Fallén are described, namely *Lonchaea baechlii* sp. nov. from Serbia and *Lonchaea lateralis* sp. nov. from Switzerland. The male genitalia of these two species are illustrated and comparisons are made with similar species. The checklist of the Lonchaeidae of Switzerland is reviewed in light of new information; the fauna now totals 45 species.

Key words: Lonchaeidae, new species, Switzerland, Serbia, checklist.

### INTRODUCTION

A study of the collection of Lonchaeidae of the second author has revealed two species in the genus *Lonchaea* Fallén new to science, one from Switzerland and one from Serbia. These add to the approximately 100 species of *Lonchaea* currently known from Europe. A further 9 species which are new national records for Switzerland were also identified. In light of this the checklist of Lonchaeidae for Switzerland, which has previously existed as several scientific publications and updates, is re-assessed and reviewed.

The previous Swiss checklist (Merz & Bächli 1998) and update (Merz *et al.* 2007) list 34 species of Lonchaeidae as occurring in Switzerland. MacGowan *et al.* (2007) added a further six. Compared with the knowledge and diversity in western and central European countries, for instance France, 52 species (Withers & MacGowan 2014); Germany, 47 species (Máca 1999); Hungary, 43 species (MacGowan 2007), it is therefore not too surprising that further species await to be discovered and added to the Swiss checklist. This current paper adds 9 species and removes records of 4 species which are considered as mis-identifications or dubious, giving a new total of 45.

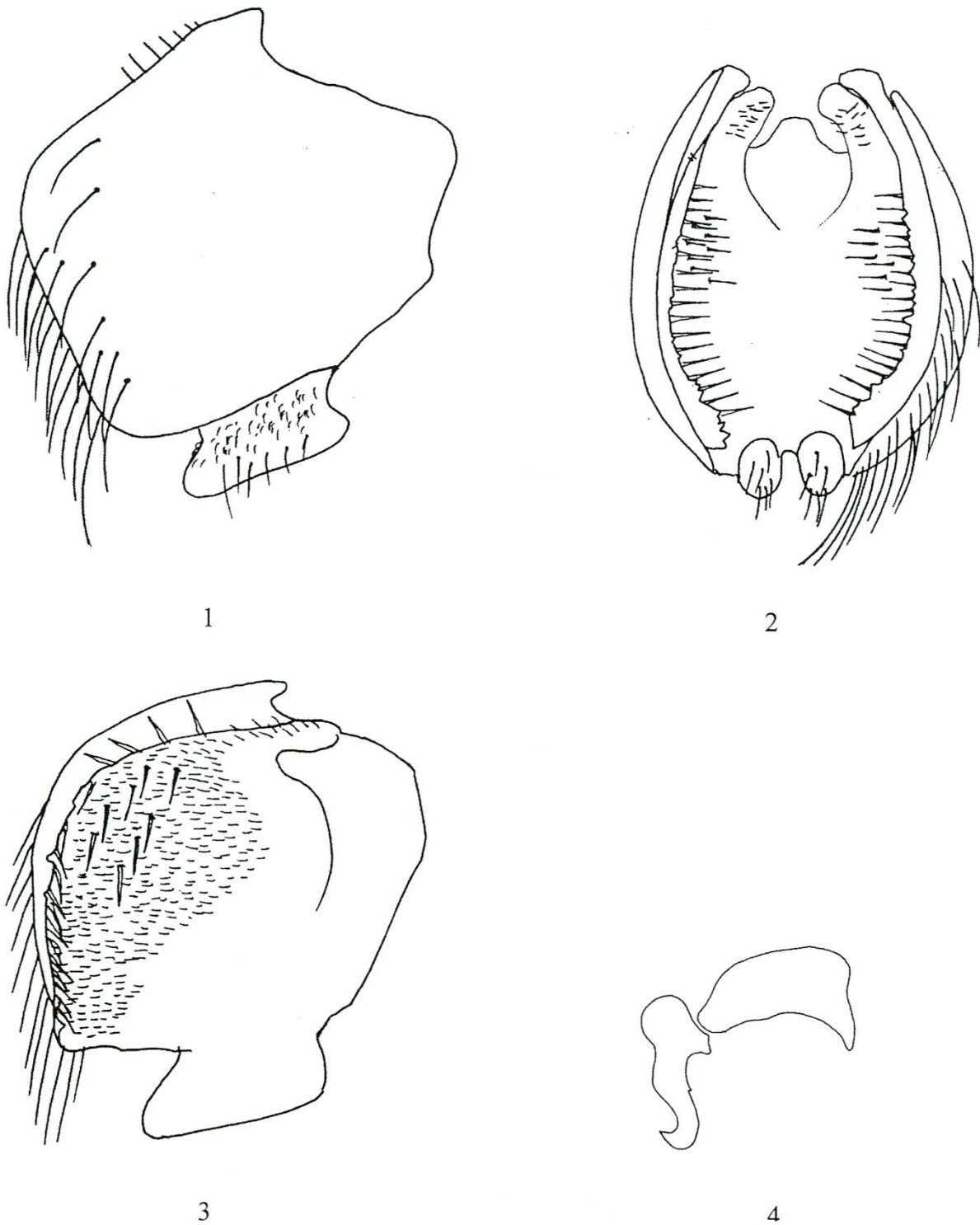
### SYSTEMATICS

LONCHAEA FALLÉN, 1820

#### *Lonchaea baechlii* MacGowan sp. nov.

(Figs 1–4)

*Description.* Male. Head: Eyes bare. Frons at narrowest point just above the lunule rather narrow, ratio at this point to width of an eye 1:2.8, velvet black, frontal and interfrontal setulae short and scattered, length no more than approximately 0.2x that



Figs 1–4. *Lonchaea baechlii* sp. nov. — 1. Epandrium and associated structures, lateral view. — 2. Same, ventral view. — 3. Internal view of surstylus and associated structure. — 4. Phallus, lateral view.



of orbital seta, longer on anterior margin above lunule. Orbital plate shining blue-black, bare apart from orbital seta. Lunule very dark brown, bearing setulae, face sub-shining black. Anterior genal setae the strongest setulae on the genae, forming a single regularly spaced row of 5–6 along mouth edge. Antennal flagellomere with length to depth ratio 1.7:1, black apart from an obscure orange area at medial base, arista black, microscopically pubescent.

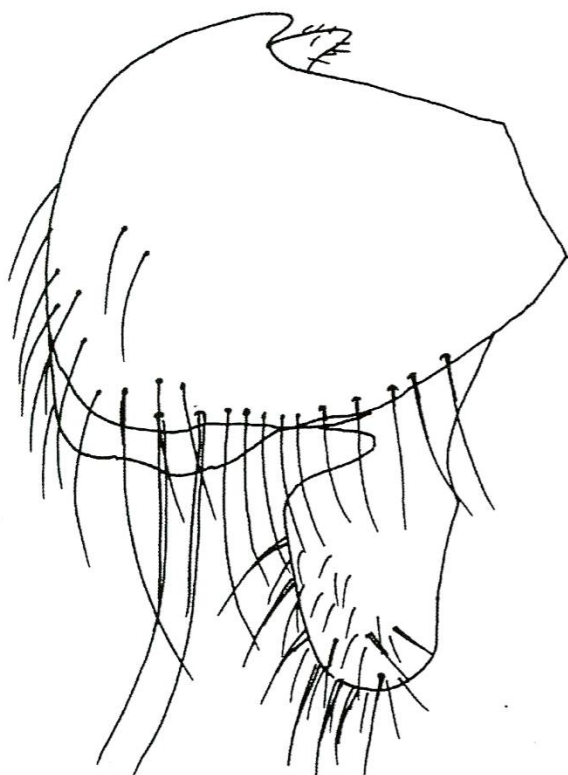
Thorax: Scutum shining blue-black, with a dense covering of black setulae which are approximately 30 % length of orbital seta. Anepisternum with 3 anterior setae (perhaps a fourth weak one at the ventral end of the row) and four posterior, other setulae on the sclerite long, almost the length of the anterior row of setae. Proepisternum with 1 seta, this longer and stronger than the single seta on the proepimeron. Katepisternum with two long setae on each side, anterior slightly weaker than posterior, a few short setulae lying anterior to these, and on left side with one small setula posterior to the seta. Scutellum pollinose on disc, on margin with 3 setulae on each side between lateral setae, none between apical setae. Calypteres pale, fringe short and light gold in colour. Wing clear slightly yellow tinged anteriorly. Wing length 3.6 mm. Legs, including all tarsomeres, entirely black.

Male terminalia: In lateral view epandrium slightly square shape, as wide as it is high, with a row of strong setae along posterior and ventral margins, surstylus not protruding beyond shell of epandrium, cerci relatively small and rectangular bearing only a few short setulae. Inner surface of surstylus medially and ventrally covered in fine setulae, antero-ventral corner with approximately 8 strong setae in a loose double row, ventral margin of surstylus also bearing a marginal row of strong setae. Phallus two segmented, in lateral view basiphallus a broad tube, distiphallus as long and wide as basiphallus, forming a broad sinuous tube, apex with an outward broad hook, base with a large rounded lobe.

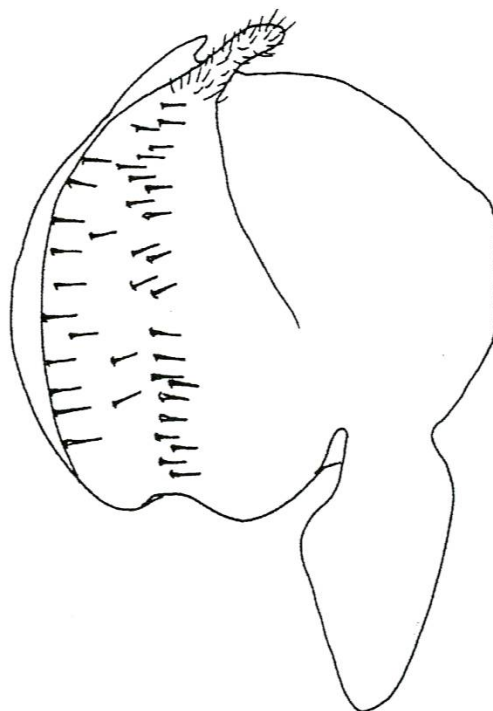
*Differential diagnosis.* This species has two katepisternal setae but the surstylus does not bear any prenisetae indicating that it is a true *Lonchaea* species and does not belong to the genus *Silba* Macquart, 1851. It is unclear whether the two katepisternal setae in the holotype are a characteristic feature of this species. With bare eyes, uniserial setulae on the anterior part of the genae, black tarsomeres, pale calypteres, a single seta on the proepimeron and bare orbital plate this species lies near species such as *Lonchaea chorea* (Fabricius, 1781) in the European fauna. The antennal flagellomere is however much shorter than in *L. chorea* in which the length to depth ratio is on average 2.0–2.3 to 1 (1.7 to 1 in *L. baechlii*). The frons is wider in *L. chorea* (Fabricius, 1781) with the frons width to eye width ratio ranging from 1 to 1.8–1 to 1.22 (1 to 2.8 in *L. baechlii*). This species is however easily differentiated by examination of the male genitalia, in particular the characteristic two segmented phallus. This shows some similarities to the phallus shape in *Lonchaea bukowskii* Czerny, 1934 and *Lonchaea ragnari* Hackman, 1956 but both of these species have partly yellow tarsomeres and more than one seta on the proepimeron.

*Material examined.* **Holotype** ♂, **SERBIA**: Goč, 4–7.viii.1980. G. Bächli; deposited in the National Museums of Scotland.

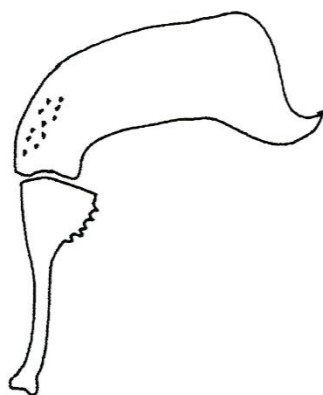
*Etymology.* the specific epithet refers to the captor of the Holotype.



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7



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Figs 5–8. *Lonchaea lateralis* sp. nov. — 5. Epandrium and associated structures, lateral view. — 6. Internal view of surstylus and associated structures. — 7. Phallus, lateral view. — 8. Phallus, anterior view.



*Lonchaea lateralis* MacGowan sp. nov.

(Figs 5–8)

*Description.* Male. Head: Eyes bare. Frons at narrowest point just slightly less than the width of an eye, ratio 1 to 1.1, matt black, slightly dulled by dusting, margins shining as is upper third, frontal and interfrontal setulae approximately 0.3x length of orbital seta, longer on anterior margin above lunule. Orbital plate shining, bare apart from orbital seta. Lunule black, bearing approximately 6 setulae, face and parafacials slightly grey dusted. Antennal flagellomere with length to depth ratio 2.6:1, black apart from orange area basally on inner surface, arista microscopically pubescent. Anterior genal setae in a single row of 9–10 along mouth edge, these becoming progressively stronger posteriorly where they are the strongest setulae on the gena.

Thorax: Scutum and scutellar disc shining blue black. Anepisternum with 3 anterior setae and four posterior, remainder of sclerite covered with rather numerous setulae almost half as long as the setae. Katepisternum with one long, strong seta, no setulae posterior to this. Prosternum bare. One seta on proepimeron and one on proepisternum. Calypteres pale with a slight yellowish tinge as has the fringe. Scutellum on margin with 5 setulae on each side between lateral setae, 4 between apical setae, these long, approximately 0.5x as long as the marginal setae. Wing slightly yellow tinged on anterior half, veins yellow brown. Wing length 3.9 mm. Legs black apart from the yellowish basal, 2<sup>nd</sup> and 3<sup>rd</sup> tarsomeres of each leg.

Male terminalia: In lateral view epandrium broadly rectangular in shape, slightly wider than it is high, with a row of strong setae along posterior and ventral margins, most of these at least half as long as the depth of the epandrium, two on the posterior margin noticeably longer than the others, surstylus protruding beyond ventral margin of epandrium as a low process, slightly concave ventroapically, protruding anteriorly as a small setulose process, cerci relatively large, their height almost equalling the depth of the epandrium, bearing a fringe of long setulae along the ventral and posterior margins. Inner surface of surstylus with a scattered vertical row of approximately 25 setae, a few scattered between this and the row along the ventral margin, anterior process covered in short fine setulae. Phallus two segmented, in lateral view basiphallus simple and boat-shaped, distiphallus orientated at a right angle to it and almost as long as basiphallus, forming a simple slightly sinuous tube, apex slightly flared, basally with a flange like lateral process on each side, these slightly serrated along their outer margins.

*Differential diagnosis.* With bare eyes, uniserial setulae on the anterior part of the genae, yellow tarsomeres, pale calypteres, a single seta on the proepimeron and bare orbital plate, this species lies near the species such as *L. nitidissima* Kovalev, 1978 within the European fauna. It is however easily differentiated by the shape of the phallus, in particular the distiphallus which has characteristic basal lateral processes.

*Material examined.* **Holotype** ♂, **SWITZERLAND**: TI: Bodio, iv–xi.2007, leg. G. Roggero, deposited in the National Museums of Scotland. 1 Paratype ♂, **TI**: Gentilino, iv–xi.2007, 469 m, leg. G. Roggero.

*Etymology.* the specific epithet refers to the lateral processes at the base of the distiphallus.

REVISED CHECKLIST OF SWISS LONCHAEIDAE.

DASIOPINAE

DASIOPINI

*Dasiops* Rondani, 1856

- *appendiculus* Morge, 1959 1
- *calvus* Morge, 1959 4
- *facialis* (Collin, 1953) 4
- *latifrons* (Meigen, 1826) 4
- *mucronatus* Morge, 1959 4
- *solivagus* Morge, 1959 1

LONCHAEINAE

EAROMYIINI

*Protearomyia* McAlpine, 1962

- *nigra* (Meigen, 1826) 4
- *withersi* MacGowan, 2014 1

*Chaetolonchaea* Czerny, 1934

- *dasyops* (Meigen, 1826) 3
- *pallipennis* (Zetterstedt, 1855) 4

*Earomyia* Zetterstedt, 1842

- *crystallophila* (Becker, 1895) CPD 4
- *impossibile* Morge, 1959 4
- *lonchaeoides* Zetterstedt, 1848 4
- *schistopyga* Collin, 1953 1
- *viridana* (Meigen, 1826) 4

LONCHAEINI

*Lonchaea* Fallén, 1820

- *affinis* Malloch, 1920 1
- *albitarsis* Zetterstedt, 1837 3
- *bruggeri* Morge, 1967 4
- *caledonica* MacGowan & Rotheray, 2000 2
- *carpathica* Kovalev, 1974 2
- *caucasica* Kovalev, 1974 1
- *chorea* (Fabricius, 1781) 4
- *contigua* Collin, 1953 4
- *collini* Hackman, 1956 2
- *contraria* Czerny, 1934 4
- *deutschii* Zetterstedt, 1837 4
- *fugax* Becker, 1895 4
- *helvetica* MacGowan, 2002 3
- *hirticeps* Zetterstedt 1837 1
- *hyalipennis* Zetterstedt, 1847 2
- *lateralis* sp. nov. 1
- *mallochi* MacGowan & Rotheray, 2000 2
- *nitens* (Bigot, 1885) 4



- *nitidissima* Kovalev, 1978    **2**
- *palposa* Zetterstedt, 1847    **4**
- *patens* Collin, 1953    **4**
- *peregrina* Becker, 1895    **4**
- *postica* Collin, 1953    **4**
- *scutellaris* Rondani, 1874    **4**
- *seitneri* Hendel, 1928    **4**
- *spicata* MacGowan, 2008    **1**
- *sylvatica* Beling, 1873    **4**
- *tarsata* Fallen, 1820    **4**
- *zetterstedti* Becker, 1902    **4**

*Silba* Macquart, 1851

- *fumosa* (Egger, 1862)    **4**

#### *Explanatory codes*

- 1:** new data included in this paper.
- 2:** from MacGowan *et al.* (2007).
- 3:** from Merz *et al.* (2007).
- 4:** from Merz & Bächli (1998).

#### *Species removed from the checklist:*

- *Lonchaea laxa* Collin, 1953.    **4.** This record almost certainly relates to *Lonchaea affinis*.
- *Lonchaea sororcula* Hackman, 1956.    **4.** The original record, which was noted as uncertain in Merz & Bächli (1998) was based on a female specimen. Until a male can be found to confirm the identity the species is removed from the list.
- *Lonchaea stackelbergi* Czerny, 1934.    **4.** This is apparently a literature reference derived from Meier & Sauter (1989). *L. stackelbergi* is an uncommon species which is mostly known from Scandinavia. I have not seen any material of this species from Switzerland or neighbouring countries, as a result it is removed from the checklist until its presence can be confirmed.
- *Lonchaea stigmatica* Czerny, 1934.    **4.** This is an eastern Palearctic species and has been mistakenly recorded in European checklists. The record most probably relates to one of the *L. fraxina* MacGowan & Rotheray, 2000 group of species, such as *L. spicata*.

#### *Data for described species added to the Swiss checklist.*

- *Dasiops appendiculatus*: **BL**: 5 ♂♂, Bubendorf, 20.vii–7.ix.2000, leg. M. Wolf.
- *Dasiops solivagus*: **BL**: 1 ♂, Bubendorf, 13–20.vii.2000, leg. M. Wolf.
- *Protearomyia withersi*: **NE**: 1 ♂, St.-Blaise, Les Riedes, 19.v.2001, leg. G. Bächli.
- *Earomyia schistopyga*: **ZH**: 1 ♂, Dietikon/canopy, 27.v–18.vi.2001, leg. G. Bächli. **AG**: 1 ♂, Habsburg, 3.v.2004, leg. B. Wermelinger.
- *Lonchaea affinis*: **GR**: 1 ♂, Nationalpark, 2001, leg. P. Duelli.



- *Lonchaea caucasica*: **BE**: 1 ♂, Brienz/canopy, vi.1996, leg. C. Besuchet.
- *Lonchaea hirticeps*: **GR**: 1 ♂, Nationalpark, 2004, leg. P. Duelli.
- *Lonchaea spicata*: **SO**: 1 ♂, 1 ♀, Rickenbach, 24.v.1995, leg. P. F. Flückiger.

#### ACKNOWLEDGMENTS

The critical review if three colleagues is acknowledged.

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(received September 20, 2016; accepted October 24, 2016; published December 31, 2016)