

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

**Herausgeber:** Schweizerische Entomologische Gesellschaft

**Band:** 80 (2007)

**Heft:** 1-2

**Artikel:** Six species of Lonchaea Fallén (Diptera, Lonchaeidae) new to Switzerland

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**DOI:** <https://doi.org/10.5169/seals-402933>

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## Six species of *Lonchaea* Fallén (Diptera, Lonchaeidae) new to Switzerland

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Examination of material from the collections of the Muséum d'histoire naturelle, Genève, and of reared material collected by the Swiss Federal Institute WSL Birmensdorf has led to six new species of *Lonchaea* (Diptera, Lonchaeidae) being recorded from Switzerland. The male genitalia of one of these species, i. e. *Lonchaea hyalipennis* Zetterstedt, 1847, are illustrated for the first time.

Keywords: Diptera, Lonchaeidae, *Lonchaea*, Switzerland, new records.

### INTRODUCTION

The Lonchaeidae are a small family of acalyptrate Diptera with a total European fauna of approximately 100 species. The larvae inhabit various substrates ranging from conifer seeds in developing cones, figs, compost or decaying vegetables, or induce galls on grass stems. However, the larvae of the largest genus, *Lonchaea*, are almost exclusively saproxylic living in the phloem of fallen trees or in the fungus-decayed heartwood, whereas larvae of some species are predators of scolytid beetles.

The collection and rearing of larvae from breeding sites, such as dead wood, or the trapping of the emerging adults is an effective means of surveying Lonchaeidae, in particular members of the genus *Lonchaea*. The adults, especially the males which are important in species determination, are seldom caught in numbers by net collecting or Malaise traps, whereas by rearing or emergence trapping both sexes are caught in equal numbers and autecological information can be gained regarding the larval habitats of individual species.

Merz & Bächli (1998) and Merz *et al.* (2007) listed 34 species of Lonchaeidae as occurring in Switzerland. Compared with the knowledge and diversity in other western and central European countries (Germany 47 species; Great Britain 46 species; Hungary 43 species; Czech Republic 61 species; Slovakia 30 species) it is therefore not too surprising that further species await to be discovered and added to the Swiss checklist. In this paper six species are newly recorded from Switzerland. They have been discovered in recent years both by obtaining adults emerging from their breeding sites and by examination of specimens in museum collections. The material studied was mainly collected in the canton Valais (= Wallis), an inner Alpine valley running from west to east, and characterized by a continental climate.

This part of Switzerland, and in particular the region of the three localities of Leuk, Salgesch and Stalden (where most specimens of this study were collected, cf. Wermelinger *et al.*, submitted), is the driest region in Switzerland. Nights are usually cool even in summer, but day temperatures may be high with strong sunshine and radiation. The vegetation and fauna reflect these particular climatic conditions and a considerable number of eastern European species occur in this part of Switzerland.

The specimens studied are deposited in the following collections:

MHNG Muséum d'histoire naturelle, Genève

NMS National Museums of Scotland, Edinburgh

#### SPECIES NEW TO THE FAUNA OF SWITZERLAND

##### *Lonchaea caledonica* MacGowan & Rotheray, 2000

Originally described on the basis of material reared from *Pinus sylvestris* in Scotland this species has subsequently been recorded from Finland, Germany, Netherlands and Norway. As a larva it is primarily associated with pine but it has also been recorded from spruce *Picea abies*. The male genitalia and the apical segment of the female ovipositor are illustrated in MacGowan & Rotheray (2000).

*Material examined:* Switzerland: Valais, Salgesch, CH coordinates 611000/130200, 950 m a.s.l., 10.iv–17.v.2002, leg. Wermelinger, 5 ♂♂, 3 ♀♀; 1.vi–15.vi.2005, leg. Wermelinger, 8 ♂♂, 9 ♀♀ (NMS apart from 3 ♂♂ in MHNG).

The specimens were captured in emergence traps containing trunk pieces of *Pinus sylvestris* from a dry *Pinus sylvestris* forest with some scattered broadleaves.

##### *Lonchaea carpathica* Kovalev, 1974

This species was described from Kvasy in the Ukraine where the adults were reared from larvae and puparia collected in a rotting beech, *Fagus* sp. This is a little known species in western Europe having previously only been recorded in small numbers from Denmark (MacGowan & Petersen 2001), the Czech Republic and Slovakia (Máca 1997) and Hungary (Papp 2003). The male genitalia are illustrated in Kovalev (1974).

*Material examined:* Switzerland: ZH (= Zürich), Dietikon, 26.vi–21.vii.1997, leg. G. Bächli, 1 ♂ (MHNG).

##### *Lonchaea collini* Hackman, 1956

The larvae of this species are apparently confined to conifers having been reared from *Pinus sylvestris* and *Picea abies*. It is relatively well distributed in central and northern Europe having been recorded from Austria, the Czech Republic, France, Finland, Germany, Great Britain, Norway, Sweden and Ukraine. The male genitalia are illustrated in Hackman (1956).

*Material examined:* Switzerland: Valais, Salgesch, CH coordinates 611000/130200, 950 m a.s.l., 1.vii.2002, leg. Wermelinger, 1 ♀; 15.vi.2005, leg. Wermelinger, 1 ♂, 1 ♀ (MHNG).

The specimens were captured in emergence traps containing trunk pieces of *Pinus sylvestris* from a dry *Pinus sylvestris* forest with some scattered broadleaves.

*Lonchaea hyalipennis* Zetterstedt, 1847

This is a little known species. The holotype is from Denmark and there are records from Sweden and Russia in Kovalev & Morge (1984), the Czech Republic (Jan Máca, pers. comm.), and Carles-Tolrá (2005) also lists its presence in Poland. However, as illustrations of the male genitalia have never been published, there may be some doubt about these records. Illustrations of the male genitalia of the holotype deposited in the Zoological Museum, University of Copenhagen are provided in Figs 1–2. The genitalia are characterised by the large finger-like ventral projection of the surstyli beyond the margin of the epandrium, this process is chitinated and bears numerous small black spicules. The aedeagus is complex for a European *Lonchaea* species, it bears a pair of curved, finely serrated, lateral processes one on each side of the intromittent organ. The combination of these characters on the surstyli and aedeagus make this species clearly distinct in the European fauna.

*Material examined:* Switzerland: Valais, Leuk-Platten, 630 m a.s.l., 22.iv.1998, leg. Merz & Botta; 1 ♂; Valais, Leuk-Brentjong, 900 m a.s.l., 16.v.1996, leg. Merz & Bächli, 1 ♂ (MHNG).

The specimens were collected on the southern slope of the main valley. The vegetation is a mixture of deciduous forest dominated by *Quercus pubescens* (but also *Q. petraea* and *Q. robur*) and at some places by *Pinus sylvestris*. A few other tree species such as *Fraxinus excelsior* or *Acer* spp. are also present, especially along small streams. Along the river Rhône (locality Leuk-Platten) there are many *Salix* and *Populus*. From the collecting data *L. hyalipennis* would seem to be an early spring species and this may have contributed to the lack of modern records, but whether it is associated as a larva with conifers or broadleaves is not yet clear.

*Lonchaea mallochi* MacGowan & Rotheray, 2000

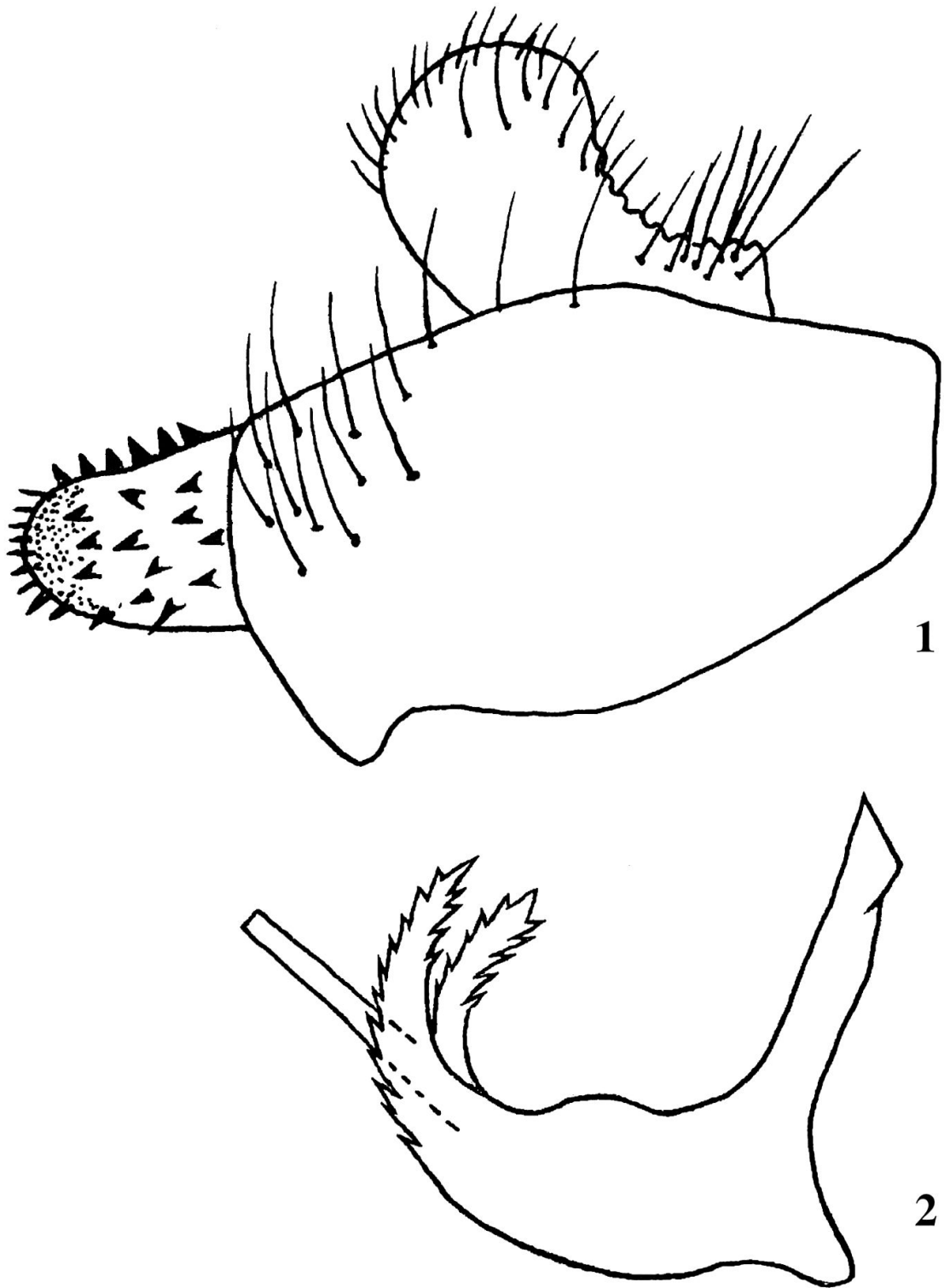
Originally described from material reared in the British Isles this is a species whose larvae are associated with a wide range of deciduous tree species but showing a preference for oaks. In Europe *L. mallochi* is a relatively common species in the British Isles and has also been recorded in small numbers from Denmark, France, Germany, The Netherlands, Spain and Sweden. The male genitalia and apical segment of the female ovipositor are illustrated in MacGowan & Rotheray (2000).

*Material examined:* Switzerland: Geneva, Corsier-Port, vitre véranda (= window of a veranda), 01–30.vi.2004, leg. C. Besuchet, 1 ♂ (MHNG).

*Lonchaea nitidissima* Kovalev, 1978

The type material of *L. nitidissima* was found in Russia near Moscow beneath the bark of a dead standing pine approximately 10 cm in diameter. Kovalev (1978) reported that the larvae fed on the mycelium of a fungus forming slimy films and a sooty deposit beneath the bark. The records from Switzerland are apparently the first records of this species since that time, but judging by the numbers of specimens taken it may well prove to be common and widespread in the coniferous areas of central Europe. The male genitalia and the apical section of the female ovipositor are illustrated by Kovalev (1978).

*Material examined:* Switzerland: Valais, Stalden, CH coordinates 634100/121200, 900m a.s.l., between 2.vii.2001 and 18.ix.2002, leg. Wermelinger,



Figs 1–2: *Lonchaea hyalipennis* Zetterstedt, 1847 —. 1, lateral view of male epandrium and associated structures. — 2, lateral view of aedeagus.

75 ♂♂, 124 ♀♀ (NMS apart from 2 ♂♂ and 2 ♀♀ in MHNG).

The specimens were captured in emergence traps containing trunk pieces of *Pinus sylvestris* from a dry *Pinus sylvestris* forest with some scattered broadleaves.

#### ACKNOWLEDGEMENTS

The first author is indebted to COBICE, the European Union-funded Integrated Infrastructure Initiative grant which supported a visit to the Zoological Museum, Copenhagen. The sampling of logs by B. Fecker, R. Köchli, I. Sedivy, and M. von Arx, as well as the insect rearing in the laboratory by D. Schneider Mathis (all WSL) is gratefully acknowledged. The project on pine decline (BW) was financially supported by the Federal Office for the Environment BAFU and the Canton Valais. We would further like to thank G. Bächli (Dietikon) and C. Besuchet (Geneva) for donation of interesting material.

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(received April 27, 2007; accepted May 2, 2007)