

**TACHINIDAE (DIPTERA) REARED FROM CLEARWING MOTHS
(LEPIDOPTERA: SESIIDAE) IN SLOVENIA**Željko PREDOVNIK¹ & Hans-Peter TSCHORSNIG²¹Polzela 68c, 3313 Polzela, Slovenia; e-mail: zeljko99@volja.net²Staatliches Museum für Naturkunde, Rosenstein 1, 70191 Stuttgart, Germany;
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Abstract – Host data are given for four Tachinidae (Diptera) species which are recorded for Slovenia for the first time: *Bithia demotica* (Egger, 1861), *B. glirina* (Rondani, 1861), *B. proletaria* (Egger, 1860) and *Leskia aurea* (Fallén, 1820). *Bembecia megillaeformis* (Hübner, [1813]) and *Pyropteron* (*Pyropteron*) *chrysidiformis* (Esper, 1782) [or *Pyropteron* (*Synansphecica*) *triannuliformis* (Freyer, 1845)] are first host records for *Bithia proletaria*. The following hosts are new records for the respective tachinids: *Bembecia ichneumoniformis* ([Denis & Schiffermüller], 1775) and *Pyropteron* (*Synansphecica*) *affinis* (Staudinger, 1856) for *Bithia demotica*; *Synanthedon melliniformis* (Laspeyres, 1801) and *Synanthedon loranthi* (Králíček, 1966) for *Leskia aurea*.

KEY WORDS: Diptera, Tachinidae, parasitoids, Lepidoptera, Sesiidae, Slovenia.

Izvešček – MUHE GOSENIČARKE (DIPTERA: TACHINIDAE) VZREJENE NA STEKLOKRILCIH (LEPIDOPTERA: SESIIDAE) V SLOVENIJI

Navedeni so podatki o gostiteljih štirih vrst muh goseničark (Diptera: Tachinidae), ki so prvič ugotovljene v Sloveniji: *Bithia demotica* (Egger, 1861), *B. glirina* (Rondani, 1861), *B. proletaria* (Egger, 1860) in *Leskia aurea* (Fallén, 1820). *Bembecia megillaeformis* (Hübner, [1813]) in *Pyropteron* (*Pyropteron*) *chrysidiformis* (Esper, 1782) [ali *Pyropteron* (*Synansphecica*) *triannuliformis* (Freyer, 1845)] sta prva znana gostitelja vrste *Bithia proletaria*. Sledeči gostitelji so novi podatki za ustrezne goseničarke: *Bembecia ichneumoniformis* ([Denis & Schiffermüller], 1775) in *Pyropteron* (*Synansphecica*) *affinis* (Staudinger, 1856) za *Bithia demotica*; *Synanthedon melliniformis* (Laspeyres, 1801) in *Synanthedon loranthi* (Králíček, 1966) za *Leskia aurea*.

KLJUČNE BESEDE: Diptera, Tachinidae, parazitoidi, Lepidoptera, Sesiidae, Slovenija.

Introduction

The present paper gives new records of Tachinidae reared from clearwing moths larvae. The hosts were collected and reared by the first author between the years 2000 and 2005, the Tachinidae were identified by the second author. *Bithia demotica* and *B. proletaria* are from the southwestern (Mediterranean and Submediterranean [Karst]), *B. glirina* from the northern and *Leskia aurea* from the southwestern, northern and eastern parts of Slovenia. Unless indicated otherwise, the date means the date of the eclosion of the tachinid flies; a date in brackets refers to the date of the collection of the host material. The nomenclature of the hosts follows Laštůvka & Laštůvka (2001).

The majority of the material (38 specimens) is stored in the collection of the first author, two specimens of *Bithia proletaria* are preserved in the Naturkundemuseum Stuttgart.

Methods

Collecting and rearing of larvae of clearwing moths requires a detailed knowledge of the species' life histories and symptoms of infestation. It is normally advantageous to collect last instar larvae or pupae. Larvae of most species collected in autumn or winter require a winter diapause under artificial conditions, otherwise a high rate of mortality may occur (Špatenka et al., 1999). The larvae are found in the respective parts of their host plants (Laštůvka & Laštůvka, 2001).

Xylophagous larvae can be collected during winter and early spring. Their presence is usually revealed by larval frass and/or sawdust. Larvae may be found in galls and in damaged or injured parts of the plants (see Špatenka et al., 1999).

Rhizophagous larvae, especially of the genus *Bembecia*, are generally better to be collected shortly before pupation or in the pupal stage. Infested herbaceous plants often wilt and dry off partly or wholly. In some cases the aerial part of infested plant will dry off in autumn, fall off during winter and become hardly recognizable. Thus, it is more convenient to collect such species in autumn (Laštůvka & Laštůvka, 2001).

Infested pieces of wood were placed in a terrarium in/on wet sand or sawdust. Branches were kept with their lower parts in water to keep them fresh as long as possible. Roots or basal parts of last year's stems were implanted in wet sand.

All material was sprinkled with water every day in evenings, and watered moderately at least once a week. The right degree of humidity is important to avoid mould or desiccation. Some species prefer dry soil for their development, and for some extremely thermophile species it is necessary to keep the pupae on a sunny place.

Comparison of data showed that - under laboratory conditions - dipterous parasitoids hatched six or seven days earlier than the first adults of their host species.

Results

All except one of the four reared tachinid species were already known as parasitoids of Sesiidae, but a number of them represent new host records. The general information on hosts given below is derived from a database on Palaearctic host-parasitoid records of tachinids which is currently compiled by the second author. All four species are first records for Slovenia (see Tschorsnig et al. 2005).

Bithia demotica (Egger, 1861)

Material: *Bembecia ichneumoniformis* ([Denis & Schiffermüller], 1775), Vipava, Selo, 130 m (7.V.) 20.V. and 2.VI.2000, 2 ♀♀. – *Bembecia pavicevici* Toševski 1989 or *Bembecia uroceriformis* (Treitschke, 1834), from roots of *Hippocrepis* (or *Coronilla*) *emerus* (Fabaceae), Kraški rob, Zanigrad, 185 m, (2.V.) 23.V.2003, 1 ♂. – *Bembecia scopigera* (Scopoli, 1763), Kozina, Brezje, 445 m, (27.V.) 12.VII.2005, 1 ♂. – *Pyropterion* (*Synansphecchia*) *affinis* (Staudinger, 1856), Kozina, Prešnica, 445 m, (4.-6.IV.) V.2000, 1 ♂, 1 ♀.

Remarks: Known as a parasitoid of several species of *Bembecia*, *Chamaesphecchia* and *Pyropterion*. *Bembecia scopigera* was already recorded as host by Tschorsnig & Bläsius (2001). *Bembecia ichneumoniformis* and *Pyropterion* (*Synansphecchia*) *affinis* are new host records for *B. demotica*. There is an unpublished record for *Bembecia pavicevici* (from Greece) in the collection of the Naturkundemuseum Stuttgart.

Bithia glirina (Rondani, 1861)

Material: *Chamaesphecchia empiformis* (Esper, 1783), Velenje, Roperče, 490 m, (20.IX.2002) IV.2003, 1 ♀.

Remarks: Known from *Chamaesphecchia* spp. and one species of *Bembecia*. The host *C. empiformis* was already recorded by Herting (1960, under the name *Rhinotachina glirina*) and will be published also from Slovakia (see Mückstein et al., in press).

Bithia proletaria (Egger, 1860)

Material: *Bembecia megillaeformis* (Hübner, [1813]), Dragonja, Draga, 95 m, (2.VI.) VII.2002, 1 ♂, 1 ♀; Dragonja, Novi Brič, 90 m, (2.VI) 1.VII. and 9.VIII.2002, 1 ♂, 2 ♀♀; Koper, Gažon, 243 m, (9.-27.VI.) 28.VII.2004, 1 ♀. – *Pyropterion* (*Pyropterion*) *chrysidiformis* (Esper, 1782) or *Pyropterion* (*Synansphecchia*) *triannuliformis* (Freyer, 1845), Vipava, Selo, 130 m (7.V.) 13.VI.2000, 1 ♂.

Remarks: *Bithia proletaria* is very near to *B. modesta* (Meigen, 1824) (compare Herting 1971). It can be distinguished from this species by the arista hairs which are as long as or slightly longer than the basal diameter of the arista, the slightly wider male syncercus and the male tergite 6 which is intermediate in its position between *B. modesta* and *B. immaculata* (Herting, 1971), but it cannot be completely ruled out that *B. proletaria* might only represent a local form of *B. modesta*. *B. proletaria* was described from Trieste and is also known from Croatia. The hosts given above are the first host records for this species.

Leskia aurea (Fallén, 1820)

Material: *Synanthedon cephiiformis* (Ochsenheimer, 1808), Vrhnika, Zaplana, 550 m (3.IV.), IV.2004 and 20.V.2004, 1 ♂, 2 ♀♀. – *Synanthedon culiciformis* (Linnaeus,

1758), Podvin pri Polzeli, Vinski Vrh, 410 m (20.XII.1999), I.2000, 1 ♂. – *Synanthedon formicaeformis* (Esper, 1783), Raduha, Kosmačeve rastke, 950 m (2.VI.), VI.2003 and 19.VI.2003, 2 ♂♂; Krško, 135 m (18.X.1999), I. and II.2000, 2 ♂♂, 3 ♀♀. – *Synanthedon loranthei* (Králíček, 1966), Maribor, Košaki, 350 m (21.IV.), V.2005, 1 ♀. – *Synanthedon melliniformis* (Laspeyres, 1801), Gračišče, Smokavska vala, 300 m (8.VI), 15.–20.VI.2000 and VI.2000, 1 ♂, 2 ♀♀; Središče ob Dravi, Obrež, 200 m, 6.II.2005, 1 ♂. – *Synanthedon vespiformis* (Linnaeus, 1761), Galicija, Železno, 375 m (14.-16.II.), III.2001, 7 ♀♀; Dragonja, Mačkujek, 60 m (15.XII.), I.2004, 1 ♂, 1 ♀. – *Synanthedon vespiformis* (Linnaeus, 1761) or *Synanthedon melliniformis* (Laspeyres, 1801), Krško, Brege, 140 m, (30.III.), 25.V.2003, 1 ♀.

Remarks: A parasitoid of *Synanthedon*, *Paranthrene* and *Sesia*. *Synanthedon cephiiformis* is already recorded as host by Tschorsnig & Herting (1997), *S. culiciformis* by Escher-Kündig (1909), *S. formicaeformis* by Wachtl (1882) and Falcoz (1930). *S. vespiformis* is an often recorded host of *L. aurea*. *S. loranthei* and *S. melliniformis* are new host records.

References

- Escher-Kündig, J.**, 1909: Gezogene Tachiniden in der Dipterensammlung von J. Escher-Kündig. 7 pp. Zürich.
- Falcoz, L.**, 1930: Observations biologiques sur divers insectes des environs de Vienne en Dauphiné. *Bulletin de la Société entomologique de France*, 1930: 148-154.
- Herting, B.**, 1960: Biologie der westpaläarktischen Raupenfliegen (Dipt., Tachinidae). *Monografien zur angewandten Entomologie*, 16: 188 pp.
- Herting, B.**, 1971: Beiträge zur Kenntnis der europäischen Raupenfliegen (Dipt. Tachinidae) XII. *Stuttgarter Beiträge zur Naturkunde* 237: 18 pp.
- Laštůvka, Z., Laštůvka A.**, 2001: The Sesiidae of Europe. Apollo Books, Stenstrup. 245 pp.
- Mückstein, P., Tschorsnig, H.-P., Vaňhara, J., Michalková, V.**, in press: Host records for some European Tachinidae (Diptera). *Entomol. Fennica*.
- Špatenka, K., Gorbunov, O., Laštůvka, Z., Toševski, I., Arita, Y.**, 1999: Sesiidae - Clearwing moths. *Handbook of Palaearctic Macrolepidoptera* 1, 569 pp., 57 pls.; Gem publishing company, Wallingford, England.
- Tschorsnig, H.-P., Bläsius, R.**, 2001: Neue oder interessante Wirtsbefunde von Raupenfliegen (Diptera: Tachinidae) aus Glasflüglern (Lepidoptera: Sesiidae). *Mitteilungen entomologischer Verein Stuttgart* 36: 23-24.
- Tschorsnig, H.-P., Herting, B.**, 1997: Tachinidae. In: Vidal, S. (ed.): Determination list of entomophagous insects, Nr. 13. *International Organization for biological and integrated control of noxious Animals and Plants/West Palaearctic regional Section Bulletin* 20: 28-38.
- Tschorsnig, H.-P., Richter, V. A., Cerretti, P., Zeegers, T., Bergström, C., Vaňhara, J., Van de Weyer, G., Bystrowski, C., Raper, C., Ziegler, J., Hubenov, Z.**, 2005: Tachinidae. In Fauna Europaea Service, version 1.2, <http://www.fauneur.org>
- Wachtl, F. A.**, 1882: Beiträge zur Kenntnis der Biologie, Systematik und Synchronie der Insekten. *Wiener entomologische Zeitung* 1: 275-279.

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