

***Pseudohemitaxonus sharpi* (Cameron) (Hymenoptera: Symphyta: Tenthredinidae) in Finland**

Veli Vikberg

Vikberg, V. 2010: *Pseudohemitaxonus sharpi* (Cameron) (Hymenoptera: Symphyta: Tenthredinidae) in Finland. – Sahlbergia 16(1): 11-16, Helsinki, Finland, ISSN 1237-3273.

Pseudohemitaxonus sharpi (Cameron), a rare Transpalaeartic selandriine sawfly, is recorded from Finland for the first time. In 2000-2003 it was found in southern Finland, EH (= South Häme), Janakkala, Hangastenmäki. Its host plant and larva were not known with certainty until now. In ovipositing experiments, the females laid eggs into young fronds of *Athyrium filix-femina* (L.) Roth (Woodsiaceae) and the larvae fed on the leaves of the fern. The fourth instar larva is described. In 2009 the species was found in another locality in Finland, U (= Uusimaa): Sipoo, Sipoonkorpi (leg. M. Viitasaari).

Seloste. *Pseudohemitaxonus sharpi* (Cameron) on harvinainen Selandriinae alaheimon sahapistiäinen mikä on tunnettu Skotlannista, Englannista, Latviasta, Tšekin tasavalta-
lasta ja Hokkaidon saarelta Japanista. Lajin koiraita ja naaraita löytyi touko-kesäkuussa Janakkalan (EH) Hangastenmäen varjoisasta saniaislehdosta vuosina 2000-2003. Munituskokeissa naaras muni hiirenportaan nuoriin, avautumattomiin lehden kärkiösiin ja toukat söivät tämän saniaisen lehtiä. Lajin toukka kuvataan ensi kertaa. Laji on Suomen faunalle uusi, sen ravintokasvi ja toukka ovat olleet tuntemattomia. Touku-
kuussa 2009 laji löytyi Sipoon (U) Sipoonkorvesta (leg. M. Viitasaari).

Veli Vikberg, Liinalammintie 11 as. 6, FI-14200 Turenki, Finland; veli.vikberg@aina.net

Introduction

Pseudohemitaxonus was erected for *P. exsecutus* Conde, 1932 from Latvia by Conde (1932). Two years later Conde (1934), informed by R. B. Benson, reported that the same species had already been described from Scotland by Cameron (1879), as *Strongylogaster sharpi*. Naito (1969) described two new species from Japan: *P. parvus* (Hokkaido, Honshu) and *P. dryopteridis* (Honshu). The same author (Naito 1990) described one further species, *P. taiwanus*, from Taiwan. The hostplant and larva are known only for *P. dryopteridis*. The female lays eggs singly in the circinate fronds of *Dryopteris erythrosora* (Eaton) O. Kuntze. The larva has abdominal segments with 5 dorsal annulets. After the feeding period the mature larva bores into decayed wood on the ground where it makes a pupation chamber. There is one generation per year (Naito 1969).

The distribution of *P. sharpi* is Transpalaeartic. It has been recorded from Scotland, Dumfries, Crickhope Linn near Thornhill (Cameron 1879: the type locality, misspelt “Crickshope” in the original description and by Morice (1920)); Scotland, Berwickshire, Earlston (Benson 1958); England, Northumberland or Durham, around Ruffside near Hexham (Morice 1920); England, Worcestershire, Bewdley (Benson 1963); Latvia, Karpūschki (Kungu Druva) (Conde 1932); Latvia, near Gerkan (Gerkéni) (Conde 1934); Czech Republic, western Bohemia, Svatava (Macek 2006); and from Japan, Hokkaido, Kamikawa, Yukomanbetsu (Naito 1969). At most localities only one or two females have been captured. Only in Worcestershire four males and one female were reared from a log of *Betula* infested with larvae of *Xiphydria camelus* (L.).

Pseudohemitaxonus sharpi was unknown to Konow (1905), Enslin (1914) and Tsinovskiy (1953). They listed *Strongylogaster sharpi* as a synonym of *Taxonus albipes* Thomson, 1871 or *Ametastegia albipes*. Later E. Enslin (in Morrice 1920) wrote that it could be identical with *Sahlbergia struthiopteridis* Forsius, 1910. Zhelochovtsev (1951) was unable to study specimens of *P. sharpi* and he placed the species in *Hemitaxonus* Ashmead, 1898.

Material and methods

Measurements were made as in Vikberg (2010).

Occurrence in Finland

Material examined: Finland, EH (= South Häme), Janakkala, Hangastenmäki (6755:3369), 24.5.2000 1♀; 25.5.2000 1♂ 2♀; 3.6.2000 1♀; 14.5.2001 1♂; 15.5.2001 5♂ 2♀; 16.5.2001 16♂; 18.5.2001 5♂ 1♀; 23.5.2001 1♀; 27.5.2001 1♂ 1♀; 31.5.2001 1♂; 1.6.2001 2♀; 15.5.2002 1♀; 26.5.2003 1♀ (all leg. V. Vikberg).

Altogether 30 males and 14 females were swept or caught in flight with a net on or near *Athyrium filix-femina* (L.) Roth, which was numerous in shady, damp to wet places in a deciduous forest with a rich herbaceous plant layer.

The second to last observation of the species in Janakkala was made in 2003. I have visited Hangastenmäki every spring and summer since, but no adults of *P. sharpi* were seen or swept until May 2010, when one male was again found in Hangastenmäki and one male in Laurinmäki, Janakkala. On 23 May 2009 the species was found in another locality in Finland, U (= Uusimaa), Sipoo, Hindsby, Sipoonkorpi (6694:3401) (leg. & det. M. Viitasaari). One male and two females were captured in a shady depression along a brook, on Lady Fern. I have recently studied one male and one female from this locality and they belong to *P. sharpi*.

Characters of adults

The single European species of *Pseudohemita-*

xonus can be identified using Benson (1952), Zhelochovtsev (1988) or Blank (1998). The most detailed description of the female has been given by Conde (1932). The penis valve of *P. sharpi* was figured by Benson (1963) and the apical part of lancet of the female by Naito (1969). Conde (1932) studied one female and gave its body length as 5.5 mm; this was cited by many later authors.

Length of body (all measurements in mm): Finnish females (without sawsheath) 4.2-5.0 (mean 4.6, n=14), and males 4.3-5.1 (mean 4.6, n=28). Photos of adults: Female (Fig. 1, male (Fig. 2).

Head width: Finnish females 1.26-1.38 (mean 1.34, n=14), and males 1.19-1.33 (mean 1.26, n=28).

Upper tentorial pits separated from antennal toruli by transverse ridge. Upper head faintly tuberculate, not punctured as described by Conde (1932).

Mesoscutum with dense pubescence; notauli barely perceptible and only developed anteriorly.

Both spurs of foretibia simple.

Terga 3-4 yellow on midline (not terga 2-3, as described by Conde 1932).

Measurements of a female of *Pseudohemitaxonus sharpi*. Body 4.7. Fore wing 5.4, costa 2.9. Head width 1.38, head height 1.00, head length 0.75. Malar space 0.10. Compound eye 0.61 x 0.45. Distance between eyes on face 0.80. Intertorular width 0.18. POL 0.18, OOL 0.30, OD 0.12. Postocellar area 0.25 x 0.38. Flagellomeres 1-7: 0.46 (height 0.13), 0.47, 0.45, 0.36, 0.33, 0.31, 0.39 (height 0.09); total 2.77. Hind femur 1.40, height 0.26. Hind tibia 1.60, apical width 0.18, inner hind spur 0.25, outer spur 0.22. Hind tarsomeres 1-5: 0.72, 0.33, 0.24, 0.08, 0.25; total 1.62. Hind claw 0.11. Ovipositor sheath 0.75. Sawsheath 0.45 x 0.07. Cercus 0.11 x 0.06.

Measurements of a male of *Pseudohemitaxonus sharpi*. Body 5.2. Fore wing 4.7, costa 2.8. Head width 1.31, head height 0.93, head

length 0.72. Malar space 0.08. Compound eye 0.56 x 0.45. Distance between eyes on face 0.75. Intertorular width 0.16. POL 0.18, OOL 0.27, OD 0.105. Postocellar area 0.21 x 0.35. Flagellomeres 1-7: 0.50 (height 0.19), 0.49, 0.47, 0.41, 0.34, 0.33, 0.32 (height 0.10); total 2.86. Hind femur 1.30, height 0.25. Hind tibia 1.45, apical width 0.17, inner hind spur 0.24, outer spur 0.22. Hind tarsomeres 1-5: 0.70, 0.30, 0.24, 0.10, 0.25; total 1.59. Hind claw 0.11. Hypopygium 0.62 x 0.56.

Hostplant and larva

The hostplant and the larva of *Pseudohemitaxonus sharpi* were not known with certainty until now. Lacourt (1999) reported *Dryopteris* spp. as food plants of *P. sharpi*. Probably this statement originates from Cameron (1882, p. 40) where *S. sharpi* is listed in the "List of Foodplants" under *Polystichum Filix-mas* [now *Dryopteris filix-mas* (L.) Schott]. However, neither in this publication nor other works by Cameron, has it been possible to find a comment on why he thought this fern species was the host. In Janakkala, Hangastenmäki all adults were found near to or on Lady Fern, *Athyrium filix-femina* (Woodsiaceae). Young plants of the Lady Fern were offered to two females. These ovipositing experiments (OE) confirmed *Athyrium filix-femina* as a hostplant at least in southern Finland. As a result of these experiments it was possible to rear and describe the larva.

OE 12/2000. One female was swept from *Athyrium* on 3.6.2000. In the evening of the same day she laid eggs in young, still unopened, yellow fronds. She also oviposited in green, freshly opened fronds. It took about 45 seconds to lay one egg. On 11 June one larva was found on the leaf, which had already moulted; width of frons of first instar 0.22 mm. The larva moulted again on the morning of 14.6. and on the evening of 16.6. On 20.6. it was put into alcohol.

Larva of 2nd instar 4.6 mm long, width of frons 0.29 mm. Head pale, with dark brown co-

lour on frons and laterad of frons towards the dark ocularium. Body pale green. Abdominal segments with 7 dorsal annulets.

Larva of 3rd instar 6.6-7.8 mm long, width of head 0.8 mm, width of frons 0.40 mm. Head brownish, frons dark brown, with brown stripes laterad of frons. Body pale, with very short setae.

Larva of 4th instar 9.4-10.5 mm long, head about 1.0 mm wide. Head brownish, with brown stripes on both sides of coronal suture and from behind ocularium towards middle of vertex. On lateral frons and laterad of frons dark brown spots. Body grey. Prothorax dorsally slightly inflated, head often drawn slightly inside it. Spiracles black. Setae on apex of anal tergum numerous, short.

OE 4/2001. One female was found on *A. filix-femina* on 18.5.2001. On the same day 17.30-21.00 local time she laid several eggs at or near the apex of the frond through the upper surface into unopened leaflets. The eggs are positioned on the lower surface of the leaflets, with their long axis more or less parallel to the plane of the leaflet. The egg was pale, yellowish, and measured 0.7 x 0.4 mm.

Larvae emerged on evening of 22.5. (one larva), 23.5. (5 larvae) and 24.5. (one larva). Larva of 1st instar 3.2-4.0 mm long, head width 0.46 mm.

First moult on 25.5.-27.5. Larva of 2nd instar larva 4.6-4.9 mm long, head width 0.65 mm, frons width 0.31-0.32 mm.

Second moult on 27.5.-29.5. Larva of 3rd instar 7.6-8.8 mm long, head width 0.87 mm, frons width 0.43-0.45 mm.

The third moult on 30.5.-2.6. The 4th instar 12-14 mm long, head width 1.05-1.10 mm, frons width 0.50 mm. The larvae were rather slowly moving, they fed on the leaf margin. When they were disturbed, they coiled up and became immobile.

On 4.6. two larvae had emptied their gut, the last faeces were slimy. All larvae were put into alcohol. Two of them were later treated in

KOH for 2-3 hours. Their heads were then cut from their bodies, the skin cut open, spread on a microscope slide and studied in glycerol, with subsequent fixation in Polyviol 17.

Description of the 4th instar larva.

Head in anterior view (Fig. 3). Vertex and upper part of occiput with very short setae. Frons (Fig. 4) with 23 setae; setae longer near lower margin. Dark brown stripe laterad of frons. Antenna with 5 articles, basal article weakly sclerotized, rather pale, articles ring-like, apical article narrowly conical, apex truncate. Clypeus with 2 setae, labrum with 3-4 setae. Mandibles with 2 setae; left mandible of one specimen with 3 setae. Stipes with 1 seta, palpi-fer with 3 setae, 2nd article of maxillary palpus with 1 small seta.

Body (Fig. 5) sub-cylindrical, with thorax slightly broader than abdomen. Tibia of thoracic legs with 9-10 setae (Figs 6-7).

Abdominal segments 1-8 with seven dorsal annulets. Annulet 1 with 3 microsetae or glandubae at spiracular level, 3 microsetae or glandubae dorsolaterally, 2 of them near anterior margin and one near posterior margin. Annulet 2 with one microseta near spiracle slightly anterior of it. Annulet 3 with 5 short setae, annulet 4 without setae. Annulet 5 with 4 short setae, 2 small glandubae. Annulets 6-7 without setae. Spiracle dark, black brown. 1st postspiracular lobe with 1 seta, 1 glanduba; 2nd postspiracular lobe with 3 setae and 1 glanduba or 2 setae and 2 glandubae. Subspiracular lobe with 5-6 short setae; surpedal lobe with 5-6 setae, 2-3 glandubae. Proleg with outer side glabrous, near base on inner side with 4-5 stout setae.

Anal tergum with very small setae and glandubae, apical margin truncate, laterally rounded, medially with numerous short setae directed slightly upwards.

Discussion

According to Naito (1969), the larva of *Pseudohemitaxonus dryopteridis* has only five annulets on the abdominal segments. Larvae of *P. shar-*

pi reared from my two ovipositing experiments had 7 annulets. Within Selandriinae, intrageneric variability of the number of abdominal annulets has also been observed among *Strongylogaster* species. Here, *S. macula* (Klug, 1817) bears 6 but other *Strongylogaster* species 7 dorsal annulets (Lorenz & Kraus 1957).

The outer side of the prolegs of *P. sharpi* are not equipped with setae. This character state is similar to that observed in *Aneugmenus*, *Brachythops*, *Nesoselandria*, and *Selandria*, which are placed in Selandriini like *Pseudohemitaxonus* (Blank 1998). Opposite to Selandriini, the Strongylogastrini, *Dolerus* s.l., *Heptamelus* have setose prolegs (Lorenz & Kraus 1957; larvae of *Rocalia* remain undescribed). The association of *P. sharpi* with Selandriini is also supported by the presence of a transverse ridge between antennal torulus and upper tentorial pit, i.e., below the tentorial pit. Strongylogastrini may have a ridge above the tentorial pit. *P. sharpi* shares the simple fore tibial spurs with Heptamelini, whereas the spurs of other Selandriinae agree with the groundplan of Hymenoptera, i.e., they have a subapical tooth present on the anterior spur.

The eggs of *P. sharpi* are inserted through the upper epidermis and partly exposed on the lower epidermis. This type of oviposition, with at least part of the egg projecting from the host, is found in all Selandriinae so far studied except for the Heptamelini, whose eggs are fully inserted in the host's tissue (Vikberg & Liston 2009).

Acknowledgements

Matti Viitasaari told me about the find of *Pseudohemitaxonus sharpi* in Sipoonkorpi. Pekka Malinen took photos of adults of the species. Andrew Liston carefully checked the first version of the manuscript, made some useful comments and improved my English and Stephan M. Blank made several comments on the final version.



Fig. 1

Fig. 1. Female of *Pseudohermitaxonus sharpi* from Hangastenmäki. Photo by Pekka Malinen.

Fig. 2

Fig. 2. Male of *Pseudohermitaxonus sharpi* from Hangastenmäki. Photo by Pekka Malinen.

Fig. 3. Larva of *Pseudohermitaxonus sharpi*, head in anterior view.

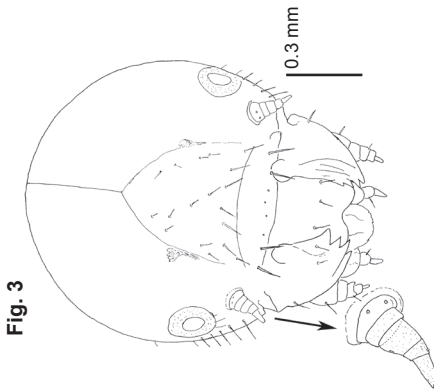


Fig. 3

Fig. 4. Larva of *Pseudohermitaxonus sharpi*, frons, clypeus and labrum.

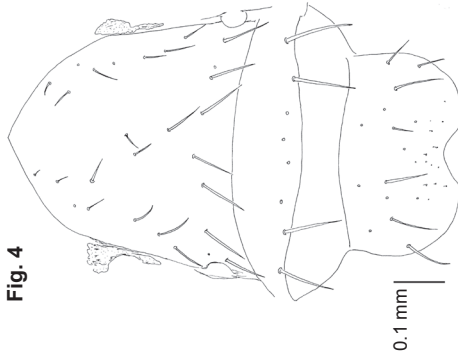


Fig. 4

Fig. 5. Silhouette of larva of *Pseudohermitaxonus sharpi* in lateral view.



Fig. 5

Figs 6-7. Larva of *Pseudohermitaxonus sharpi*, metathoracic leg and tibia.

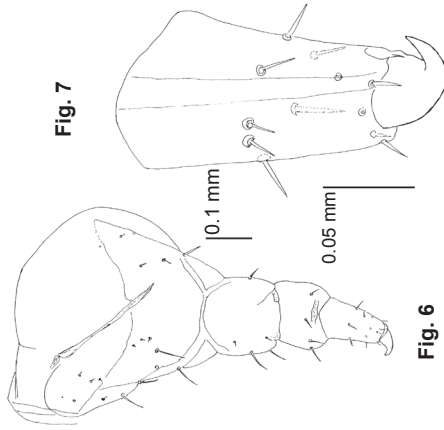


Fig. 7

Fig. 6

Figures

References

- Benson, R. B. 1952: Hymenoptera, Symphyta. – Handbooks for the identification of British insects, London 6(2b): 51-137
- Benson, R. B. 1958: Hymenoptera, Symphyta. – Handbooks for the identification of British insects, London 6(2c): 139-258, iii-vi: Supplement to section (b).
- Benson, R. B. 1963: *Pseudohemitaxonus sharpi* (Cameron) (Hym., Tenthredinidae) in Worcestershire. – The Entomologist's Monthly Magazine, Fourth series, London 98(23)[1962]: 251
- Blank, S. M. 1998: Die mittel- und nordeuropäischen Selandriinae (Hymenoptera: Tenthredinidae). Pp. 207-224. In: Taeger, A. & Blank, S. M. (eds): Pflanzenwespen Deutschlands (Hymenoptera: Symphyta). **Kommentierte Bestandsaufnahme.** – Keltern, Goecke & Evers
- Cameron, P. 1879: Description of a new species of *Strongylogaster* from Scotland. – The Entomologist's Monthly Magazine, London 16(183): 63-64
- Cameron, P. 1882: A Monograph of the British Phytophagous Hymenoptera. (*Tenthredo*, *Sirex* and *Cynips*, Linné.) – London 1: 1-340, 1-21
- Conde, O. 1932: Eine neue Selandriinen und Haplompinen-Gattung aus Lettland. (Hym. Tenthred.). – Notulae Entomologicae, Helsingfors 12: 9-15
- Conde, O. 1934: Ostbaltische Tenthredinoidea, II. Teil. – Korrespondenzblatt des Naturforschervereins zu Riga, Riga 61: 168-198
- Enslin, E. 1914: Die Tenthredinoidea Mitteleuropas III. – Deutsche Entomologische Zeitschrift, Berlin [1914](Beiheft 3): 203-309
- Konow, F. W. 1905: Hymenoptera, Fam. Tenthredinidae. In: Wytzman, P. (Hrsg.): **Genera Insectorum.** – Brüssel 29: 1-176
- Lacourt, J. 1999: Répertoire des Tenthredinidae ouest-paléarctiques (Hymenoptera, Symphyta). – Mémoires de la Société Entomologique de France, Paris 3: 1-432
- Lorenz, H. & Kraus, M. 1957: Die Larvalsystematik der Blattwespen (Tenthredinoidea und Megalodontoidea). – Abhandlungen zur Larvalsystematik der Insekten, Berlin 1: I-VII, 1-339
- Macek, J. 2006: Faunistic records from Czech Republic – 219 Hymenoptera: Symphyta. – Klapalekiana, Praha 42: 345-349
- Morice, F. D. 1920: Re-discovery of “*Strongylogaster sharpi*” Cameron, in the North of England. – The Entomologist's Monthly Magazine, Third series, London 56(6): 78-82
- Naito, T. 1969: The genus *Pseudohemitaxonus* of Japan, with descriptions of two new species (Hymenoptera, Tenthredinidae). – Kontyû, Tokyo 37(4): 403-408
- Naito, T. 1990: The tribe Strongylogasterini (Hymenoptera, Tenthredinidae) from Taiwan. – Proceedings of the Entomological Society of Washington 92(4): 739-745
- Tsinovskiy, J. P. 1953: Nasekomye Latviyskoy SSR, Rogochvosty i pilil'shshiki. – Akademiya Nauk Latviyskoy SSR, Institut Biologii, Riga: 1-209
- Vikberg, V. 2010: On the taxonomy of *Phyllocolpa scotaspis* (Förster, 1854) and *Phyllocolpa anglica* (Cameron, 1977) and notes on the species groups of *Phyllocolpa* (Hymenoptera: Tenthredinidae: Nematinae). – *Sahlbergia* 15(2)(2009): 3-13
- Vikberg, V. & Liston, A. D. 2009: Taxonomy and biology of European Heptamelini (Hymenoptera, Tenthredinidae, Selandriinae). – *Zootaxa*, Auckland 2112: 1-24
- Zhelochovtsev, A. N. 1951: Obsor pililshchikov podsemeystva Selandriinae (Hym., Tenthred.). – Sbornik trudov Zoologicheskogo Muzeja MGU, Moskva 7: 123-153
- Zhelochovtsev, A. N. 1988: Pereponchatokrylye. Shestaya chast. In: Medvedev, G. C. (ed.): **Opredelitel' nasekomykh evropeyskoy chasti SSSR.** – Nauka, Leningrad 3(6): 3-237