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A. Czylok^a & R.L. Blackman^b

^a Department of Zoology, Silesian University, Katowice, Bankowa 9, Poland

^b Department of Entomology, The Natural History Museum, Cromwell Road, London, SW7 5BD

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A new species of *Stomaphis* Walker (Homoptera: Aphididae) from Czechoslovakia

A. CZYLOK

Department of Zoology, Silesian Univeristy, Katowice,
Bankowa 9, Poland

and R. L. BLACKMAN

Department of Entomology, The Natural History Museum,
Cromwell Road, London SW7 5BD

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Stomaphis bratislavensis sp. nov. is described from *Quercus petraea* near Bratislava. The apterous viviparous female, the apterous oviparous female and the apterous male are described. A key to European representatives of the genus *Stomaphis* is provided.

KEYWORDS: Homoptera, Aphidadae, *Stomaphis*, Bratislavensis, Key.

Introduction

Aphids of the genus *Stomaphis* Walker (subfamily Lachninae) are remarkable for their large size, and especially for their extremely long rostrum, which enables them to probe down through cracks in the bark of oak and other trees. Seven representatives of this genus are reported from Europe: *S. acerina* Mamontova, *S. betulae* Mamontova, *S. cupressi* (Pintera), *S. graffii* Cholodkovsky, *S. longirostris* (F.), *S. quercus* (L.) and *S. radicolica* Hille Ris Lambers.

The first author collected the specimens described below in the vicinity of the field research station of the Department of Zoology, University of Bratislava which is situated near Sur nature reserve. The aphids were found in crevices of bark of an oak tree (*Quercus petraea*); they were accompanied by ants. The insects clearly differed from other oak-feeding *Stomaphis* in having a less elongate, more oval body shape and a mat coating of grey powder.

There being no recent comprehensive account of European *Stomaphis*, a key to the European species is provided.

Stomaphis bratislavensis sp. nov.

(Figs 1–2)

Apterous viviparous female (Fig. 1; from six specimens). Specimens in life fuscous, coated with distinct mat powdery substance. Body large, oval, 4.27–4.78 mm long and 2.7–3.4 mm maximum width, covered with dense, short pubescence. Head short, wide, pigmented, sclerotized, with a well-defined median keel. Compound eyes with a triommatidium. Antennae about 0.5–0.6 of body length, covered with dense pubescence. Antennal hairs a little shorter than those on body; the longest ones less than

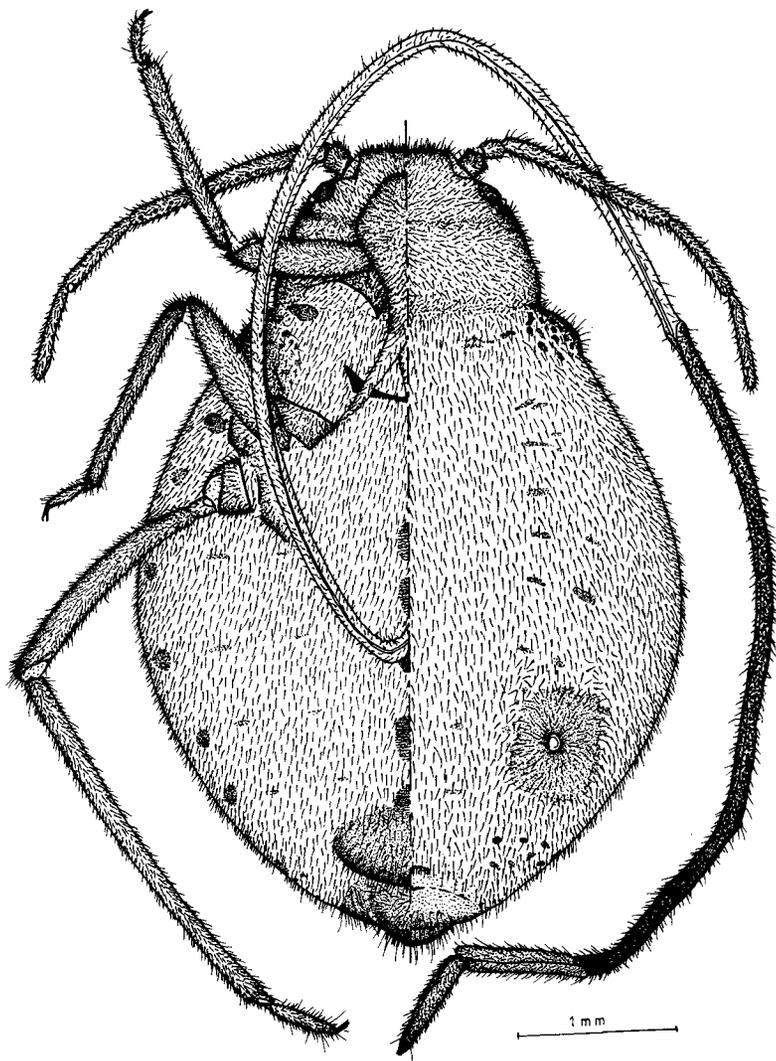


FIG. 1. *Stomaphis bratislavensis* sp. nov.: apterous viviparous female.

0.06 mm long and shorter than the basal diameter of antennal segment III. Apical hairs on antennal segment VI without nodulose bases. Length of antennal segments in mm: III 0.69–0.75, IV 0.41–0.44, V 0.55–0.59, VI base 0.49–0.53 (+ processus terminalis, 0.07). Antennal segment III provided with 1–6 secondary rhinaria of varied sizes. Antennal segment IV with 5–6 such rhinaria antennal segments V and VI without secondary rhinaria. Primary rhinarium on antennal segment VI 0.09 mm long, oval in shape, accompanied by 4–5 small accessory rhinaria proximal and lateral to it. Rostrum very long, telescopic, when extended 2.5 times longer than body. Rostral segment II provided with many scleroites around hair-bases. Last rostral segment (IV + V) 0.72–0.74 mm long, with apical portion (segment V) longer than its basal width. Labrum with numerous hairs along its entire length.

Pronotum pigmented, sclerotized. Mesonotum with only marginal sclerites, metanotum with sclerotic precoxal processes. Trochanters, femora (except bases of

meso- and metathoracic pairs) and tibial bases dark. Femora and tibiae densely covered with hairs which are similar to those on antennae. Only tarsi and terminal portions of tibiae, especially of metathoracic legs, bear additional very long (up to about 0.18 mm) and thin hairs among the normal ones. Trochanters of mesothoracic legs 0.20–0.23 mm long and those of hind legs 0.26–0.31 mm long. Mesothoracic tibiae 1.24–1.34 mm and hind tibiae 2.20–2.46 mm long. Second segments of hind tarsi elongate (0.48–0.50 mm), about 1.6 times longer than second segments on mesothoracic tarsi (0.30–0.31 mm), and 1.48–1.50 times longer than last rostral segment.

Abdominal tergites without sclerites except for the siphuncular sclerites, those around the spiracles, and some minute sclerites around hair-bases on posterior tergites. Both dorsal and ventral abdominal hairs dense, rather short, of fairly uniform length (mostly about 0.07 mm). Intersegmental muscle insertions fuscous in colour. Abdominal sternites with five glabrous, weakly sclerotized and lightly pigmented areas in a medial longitudinal row, ornamented with finely spinulose microsculpture. Siphunculi on large, flat sclerites with very dense, short hairs (maximally 0.07 mm). Subgenital plate not divided. Cauda short, rounded, with numerous long hairs.

Apterous oviparous female (from four specimens). Similar to the apterous viviparous female, but the ovipara can be distinguished by the subgenital plate which is more intensely pigmented medially and has a deep medial groove. Body length 5.00–5.12 mm, maximum width 3.00–3.11 mm.

Apterous male (from one specimen). Body in life light brown in colour. Antennae 2.6 times longer than head width across eyes. Length of antennal segments in mm: III 0.51, IV 0.24, V 0.36, VI 0.41. Antennae lack secondary rhinaria. Compound eyes each with 16 facets and a triommatidium. Rostrum reduced. Abdomen weakly sclerotized, without siphunculi. Claspers deeply incised, the arms covered with bristly hairs and the base with long hairs. Basal sheath of penis with short bristly pubescence. Body length 2.86 mm, maximum width 1.35 mm.

Karyotype. *S. bratislavensis* has $2n$ (female) = 8. By comparison, *S. quercus* has $2n$ (female) = 10. The difference seems to be due to the presence in *S. quercus* of an additional very short pair of chromosomes. The male karyotype has not yet been observed in either *S. quercus* or *S. bratislavensis*, but in the closely related Japanese species, *S. japonica* Takahashi, which has a $2n = 10$ female karyotype indistinguishable from that of *S. quercus*, males have $2n = 8$ with two chromosomes unpaired, one long and one very short (Blackman, in press). Sex determination in *S. japonica*, and probably by analogy in *S. quercus* also, is thus $X_1X_1X_2X_2/X_1X_20$, whereas *S. bratislavensis* is perhaps lacking the second, short X chromosome and has $XX/X0$ sex determination. Differences in X chromosome number rather than autosome number between closely related species are unusual in aphids (Blackman, 1980) and studies of male cells will be necessary to confirm this.

Host plant. *Quercus petraea* Liebl.

Type material. Apterous viviparous females (holotype and five paratypes) collected 4.06.89; four apterous oviparous females and one male (paratypes) collected 5.10.88. All from the bark of a single oak at field research station of University of Bratislava, Czechoslovakia.

Taxonomic affinities. A recent phylogenetic study (Czylok, 1990) placed Stomaphidini as a sister-group to Tramini, which mostly live on roots of herbaceous plants.

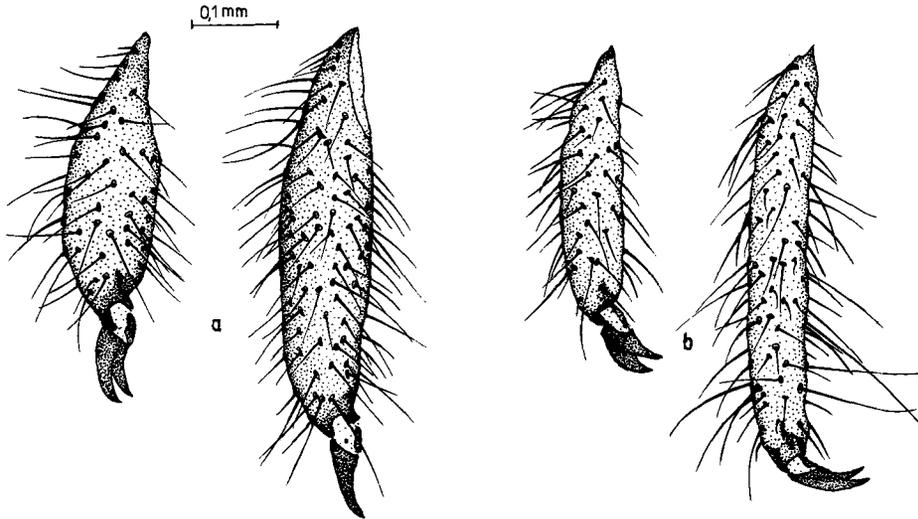


FIG. 2. Second tarsal segments of meso- and metathoracic legs of (a) *Stomaphis radiculicola*, (b) *S. bratislavensis*.

These two groups share the tendency for elongation of the second segment of the hind tarsus. In *S. bratislavensis* this tendency is more marked than in other European species, although not as great as in some eastern Palaearctic *Stomaphis* (Sorin, 1965).

The new species in life most resembles the birch root-feeding species *S. radiculicola* in having a powdery coating and no paired spinal sclerites on anterior abdominal segments (Hill Ris Lambers, 1947). In *S. japonica* on *Quercus* in Japan the spinal sclerites are also reduced or absent. *S. bratislavensis* differs from both these species in its considerably longer second hind tarsal segment and shorter antennal segment VI, as well as in the much denser, shorter hairs on body and appendages.

Key for identification of apterous viviparous females of the European species of *Stomaphis*

- 1 Subgenital plate divided medially into two parts. Antennal segment VI shorter than segment V. Processus terminalis constricted at the apex, forming tubercles at bases of apical hairs 2
- Subgenital plate not divided. Antennal segment VI as long as or longer than segment V. Processus terminalis rounded at apex, without tubercular bases to apical hairs 5
- 2 Second segment of hind tarsus at least 1.4 times longer than second segment of mesothoracic tarsus. Labrum covered with numerous hairs along its entire length. Living under bark on trunks of *Salix* and *Populus* spp. *S. longirostris*
- Second segment of hind tarsus at most 1.35 times longer than second segment of mesothoracic tarsus. Labrum covered with dense hairs only on basal part 3
- 3 Length of processus terminalis about equal to or less than greatest diameter of primary rhinarium. Living on trunks of *Cupressus* spp. *S. cupressi*
- Processus terminalis longer than greatest diameter of primary rhinarium. On other plants 4

- 4 Fifth rostral segment short, about as long as its basal width. Living on trunks of *Acer campestre* and *A. tataricum* *S. graffii*
- Fifth rostral segment longer than its basal width. Living in crevices of bark of *Acer pseudoplatanus* *S. acerina*
(A more significant difference between *S. acerina* and *S. graffii* is found in males. The antennae in males of *S. acerina* are approximately as long as the head width across the eyes; in males of *S. graffii* the antennae are more than twice as long as the head width.)
- 5 All abdominal tergites provided with large paired pigmented spinal sclerotic plates, often broken into small sclerites. In life shining 6
- Anterior abdominal tergites without pigmented spinal plates; paired sclerites sometimes present on tergites VII and VIII only. In life covered in grey powder 7
- 6 All dorsal abdominal hairs of similar length. Living in crevices of bark of *Quercus robur*, *Q. petraea*, *Betula pendula*; sometimes also on *Acer* spp. or *Alnus glutinosa* *S. quercus*
- Spinal hairs on abdominal tergites VI and VII very short in comparison with long, fine spinal hairs on other tergites. Living in crevices of bark of *Betula* spp. *S. betulae*
- 7 Second segment of hind tarsus at most 1.45 times longer than second segment of mesothoracic tarsus (Fig. 2 a). Antennal segment VI (including processus terminalis) distinctly longer than segment V. Living on roots of *Betula* spp. *S. radicola*
- Second segment of hind tarsus more than 1.55 times longer than second segment of mesothoracic tarsus (Fig. 2 b). Antennal segment VI approximately as long as segment V. Living on trunks of *Quercus petraea* *S. bratislavensis*

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