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Report on three unrecognised European species of Anthomyiidae described by O. Ringdahl (Insecta: Diptera)

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Abstract. Examination of 'missing' type material of three anthomyiid taxa described by O. Ringdahl in 1934 revealed the existence of three valid, but subsequently unrecognised European species: *Alliopsis stackelbergi* (Ringdahl, 1934), comb. nov., from Russia: St. Petersburg area; *Alliopsis kuntzei* (Ringdahl, 1934), comb. nov., from France: Dauphiné; and *Botanophila subbrunneilinea* (Ringdahl, 1934), sp. rev., from Ukraine: Crimea. Illustrated descriptions and notes on relationships, biology and distribution are given to ensure their future identification.

Key words: entomology, taxonomy, Diptera, Anthomyiidae, *Alliopsis*, *Botanophila*, Europe.

INTRODUCTION

The Swedish dipterist Oscar Ringdahl (1885–1966) in 27 publications from 1916–1959 proposed 116 new species-group names in the present family Anthomyiidae, based to a large extent on material collected by himself within his home country. The type material of Ringdahl's new anthomyiid taxa from Sweden was as a rule placed in his own collection of Diptera that presently belongs to the Museum of Zoology, Lund University. Ringdahl anthomyiid type specimens from outside Sweden are mainly deposited in the zoological museums of Stockholm and Helsinki, but even the zoological museums of London (see below), Copenhagen, Oslo, and probably even Vienna (coll. H. Franz) and Berlin (coll. P. Stein) contain a few type specimens.

Hennig (1966–1976) has confirmed or clarified the identities of most species of Anthomyiidae described by Ringdahl, usually through studies of authentic type

specimens. Therefore, only the status of two species and one subspecies described from non-Scandinavian specimens by RINGDAHL (1934) have remained totally unresolved up to the present. This was because RINGDAHL subsequently forgot about the whereabouts of the type material that also included new species of Fanniidae and Muscidae. Fortunately, Adrian C. PONT found out in 1997 (see PONT, 2005: 203) that many of RINGDAHL's non-Scandinavian Diptera including type specimens stood in the private collection of Richard DAHL, a collection that soon after went to the Natural History Museum, London. On my request Nigel WYATT, curator of Diptera at the London museum, located and arranged a loan of the previously missing anthomyiid type specimens in the DAHL Collection which allowed me to prepare the following report.

ABBREVIATIONS

Depositories:

BMNH – The Natural History Museum, London;

HNHM – Hungarian Natural History Museum, Budapest;

ZMUC – Zoological Museum, University of Copenhagen.

Chaetotaxy: *ad* – antero-dorsal; *av* – antero-ventral; *pd* – postero-dorsal; *p* – posterior; *pv* – postero-ventral.

Alliopsis stackelbergi (RINGDAHL, 1934), comb. nov.

(Figs. 1– 8)

Hylemyia stackelbergi RINGDAHL, 1934: 98 (♂). '1♂ aus der Leningrader Gegend (leg. A. v. STACKELBERG)' [Russia: St. Petersburg area].

MATERIAL EXAMINED

Holotype ♂ [in Coll. R. DAHL, BMNH], labelled: (1) 'Sablino. Petrograd 31.iii.33. Stackelberg' [my translation of printed label in Cyrillic lettering]; (2) 'Hylemyia stackelbergi n.sp.' in RINGDAHL's hand; and (3) a printed accession label 'R. Dahl coll. BMNH(E) 1997-240'.

IDENTITY

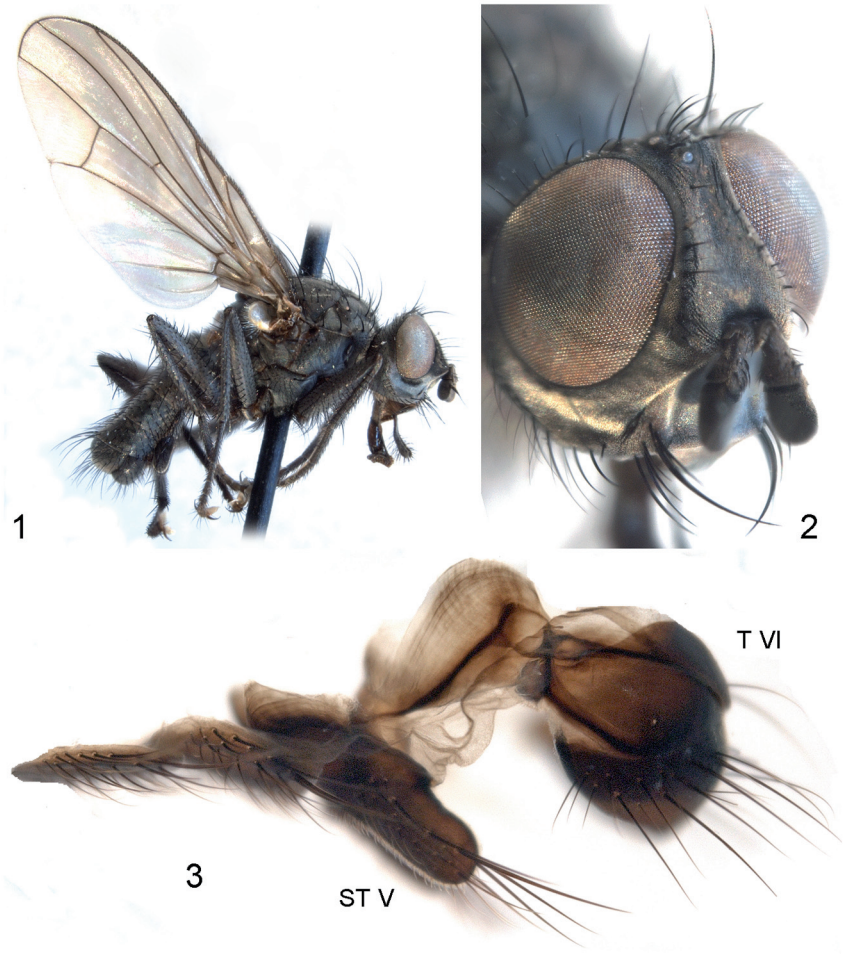
Examination of the holotype revealed rather unexpectedly that *Hylemyia stackelbergi* RINGDAHL represents an unrecognized species of *Alliopsis* SCHNABL.

DESCRIPTION

Based on ♂ holotype (Fig. 1). Medium sized, wing length 5.5 mm.

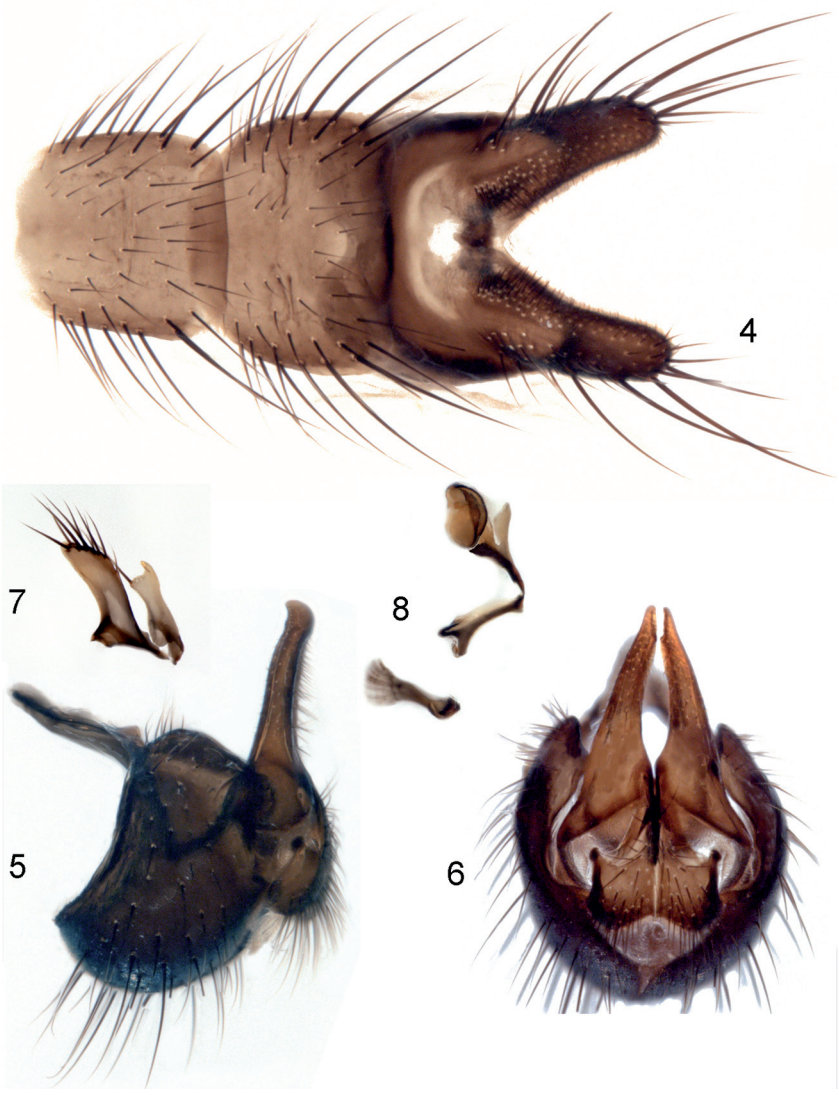
Head, body and appendages wholly dark, all parts except for polished prementum covered in dark grey or (dorsally) dark brownish grey dusting. Anterior parts of head, except for dark brown dusted frontal vitta, with a silky yellowish white shine. Mesonotum with dark reflections largely obscuring pattern of dark striping. Wing with a dark brown tinge; calyptrae yellowish white; haltere dark brownish at knob. Abdomen with a medium-wide mid-dorsal dark stripe rather obscured by dark reflections.

Eye sparsely, but distinctly haired. Frons relatively wide (Fig. 2), at narrowest point c. 0.2 x total head width; frontal vitta at this point c. 4 x as wide as each parafrontal. Frontal angle distinctly projected beyond facial angle. Parafacial in middle about same width as postpedicel. Gena in profile c. 0.3 x as deep as eye height. Inner vertical seta strong, outer ditto not developed. Upper occiput with a row of setulae behind fine postorbital setae. Orbital setae or setulae absent; frontals 5–6 setae with additional setulae mostly standing outside line of setae. Pair of interfrontal setae inserted high up on frontal vitta, near tip of ocellar triangle. Genal setae few but tending to stand in two irregular rows. Antennal postpedicel short, rounded apically; arista short, strongly thickened basally, extremely short-pubescent. Palpus same length as fore tarsomere 1; haustellum shorter, 0.8 x length of fore tarsomere 1, thicker than fore tibia.



1–3. *Alliopsis stackelbergi* (Ringdahl), ♂ holotype: 1 – habitus, lateral aspect; 2 – head, antero-dorsal aspect; 3 – tergo-sternal complex, left lateral aspect. T = tergite; ST = sternite; different scales

Acrostichals setulose except for slightly enlarged presutural pair, without setulae in between close-set rows; distance between presutural acr-rows only half of that between acr-rows and adjacent dc-rows. Outer posthumeral setulose, but slightly stronger than surrounding setulae. Notopleural depression without setulae in addition to notopleural setae. Prealar seta present but finer than posterior notopleural seta. Prosternum bare. Proepisternals 2 setae; proepimerals 1 seta, 8–9 setulae. Anepisternum on upper anterior part with setulae only. Katepisternal setae 1+2. Katepimeron with 0–1 setula;



4–8. *Alliopsis stackelbergi* (Ringdahl), ♂ holotype: 4 – sternites III–V; 5, 6 – hypopygium, lateral and caudal aspects; 7 – pre- and postgonites; 8 – phallus and ejaculatory apodeme. Same scale

meron with 1 setula. Lower calypter smaller than upper calypter. Vein C on basal half or more with irregular row of fine ventral setulae; enlarged spinules at subcostal break inconspicuous, shorter than cross-vein r–m. Cross-vein m–m weakly sigmoid.

Fore tibia with 0–1 *ad* and 2 *pv* setae, apically without *ad* seta but with *pd* seta. Mid femur with fine *av* setae on basal half and stronger *pv* setae on basal two-thirds. Mid tibia with 1 *ad*, 2 *pd* and 2 *p* setae. Hind femur with entire row of *av* setae and 2–3 *pv* setae on basal half. Hind tibia with 3–4 *av*, 3 *ad*, 3–4 *pd* and (on basal half) 2–3 fine *p* setae. Pulvilli nearly as long as respective distal tarsomeres.

Abdomen moderately depressed; tergites II–V with fine hind marginal setae, without discal setae; tergite VI (Fig. 3) relatively large, with a few hind marginal setulae. Sternite I with some setulae; sternite IV wider than long; alpha-sensilla at fore margins of sternites II–V absent. Sternite V (Figs. 3, 4) unremarkable, lobes without raised inner margins, setation simple. Terminalia distinctive in respect to shape and vestiture of surstyli (Figs. 5, 6) and gonites (Fig. 7); also phallus (Fig. 8) peculiar in having a reduced epiphallus and large acrophallus.

Relationships

A very distinctive species, possibly most closely related to a species group described from China: *Alliopsis heterophalla* (Fan *in* Fan *& al.*, 1983), *A. rectiforceps* (Fan *in* Fan *& al.*, 1983) and *A. subsinuata* (Fan, 1986). The relatively wide male frons, strong surstyli with almost parallel-sided margins in profile view, abundant setulae on pregonite and large acrophallic sclerite in combination with an unremarkable male sternite V point in that direction, but *A. stackelbergi* deviates from the Chinese species in the absence of setulae on notopleuron and the structure of phallus.

Biology

Adults of *Alliopsis* have enlarged, sharply pointed prestomal teeth that allow them to be predatory on other invertebrates, usually Diptera. Many species of *Alliopsis* are found almost exclusively near flowing waters, using boulders and rocks as ground for hunting and mating. Some species are even regularly seen on wet surfaces in the splash-zone of mountain torrents and waterfalls. The only known finding place (see below) suggests an environment of that kind for *A. stackelbergi*.

Distribution

Only known by the holotype from Russia, St. Petersburg area. Sablino, the type locality lies south from St. Petersburg and is today a nature and tourist resort at the Tosna River with caves and waterfalls. It would be interesting to see if this distinctive species still maintains a population in the area.

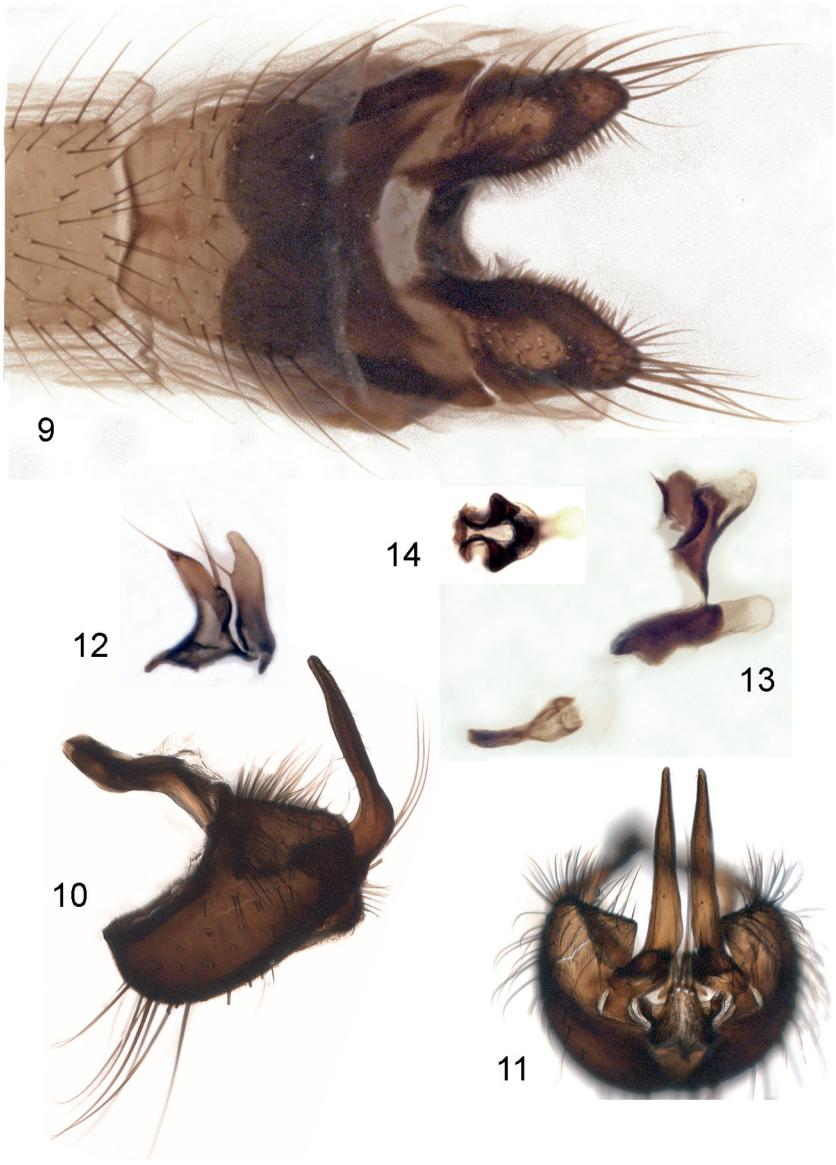
Alliopsis kuntzei (Ringdahl, 1934), comb. nov.

(Figs. 9–14)

Hylemyia kuntzei Ringdahl, 1934: 100 (♂).‘1♂ aus der Dauphiné, 7. August 1908 (leg. Alb. Kuntze)’ [France].

Material examined

Holotype ♂ [in Coll. R. Dahl, BMNH], labelled: (1) 'Dauphiné VII-VIII 08.' [printed]; (2) 'Hylemyia kuntzei n.sp.' in Ringdahl's hand; and (3) a printed accession label 'R. Dahl coll. BMNH(E) 1997-240'.



9–14. *Alliopsis kuntzei* (Ringdahl), ♂ holotype: 9 – sternites III–V; 10, 11 – hypopygium, lateral and caudal aspects; 12 – pre- and postgonites; 13 – phallus and ejaculatory apodeme; 14 – distiphallus, apical aspect. Same scale

Identity

Examination of the holotype revealed that even *Hylemyia kuntzei* Ringdahl represents an unrecognized species of *Alliopsis* Schnabl.

Description

Based on ♂ holotype. Medium sized, wing length 5.2 mm.

Head, body and appendages dark, all parts except for polished prementum covered in light bluish grey dusting. Anterior parts of head with a matt, silvery white shine. Mesonotum on middle part with three narrow, faintly demarcated brown stripes between acrostichal rows and along dorsocentral rows. Wing with a brown tinge; calyptrae white; haltere ochreous yellow at knob. Abdomen without a mid-dorsal dark stripe.

Head fully feminized. Eye sparsely but distinctly haired. Frons at narrowest point nearly one-third of total head width; parafrontals relatively broad, yet at this point separated by a 3 x broader frontal vitta. Frontal and facial angles equally projected. Parafacial in middle about same width as postpedicel. Gena broad, in profile > 0.4 x as deep as eye height. Inner and outer vertical setae both strong. Upper occiput with setulae behind fine postorbital setae. Orbitals 2 pro- and exclinate setae; frontals 4 setae with a few interspersed short setulae; pair of interfrontal setae inserted high up on frontal vitta, near tip of ocellar triangle. Genal setae few but tending to stand in two irregular rows. Antennal postpedicel short, rounded apically; arista short, strongly thickened basally, extremely short-pubescent. Palpus and haustellum about same length as fore tarsomere 1, haustellum barely thicker than fore tibia.

Acrostichals setulose, without setulae between rows; distance between presutural acr-rows slightly less than that between acr-rows and adjacent dc-rows. Outer posthumeral indiscernible from surrounding setulae. Notopleural depression without setulae in addition to notopleural setae. Prealar setulose, almost indiscernible from surrounding setulae. Prosternum bare. Proepisternals 2 setae; proepimerals 1–2 setae, 6 setulae. Anepisternum on upper anterior part with setulae only. Katepisternals 1+2, lower posterior setulose and only half as long as upper posterior seta. Katepimeron and meron bare. Lower calypter smaller than upper calypter. Vein C without ventral setulae even basally; enlarged spinules at subcostal break inconspicuous, shorter than cross-vein r–m. Cross-vein m–m upright and straight.

Fore tibia with 1 *ad* and 1 *pv* setae, apically without *ad* and *pd* setae. Mid femur with short *av* setae on basal third and longer, hair-like *pv* setae on basal two-thirds. Mid tibia with 1 *ad*, 2 *pd* and 1 *p* setae. Hind femur with entire row of *av* setae, on *pv* surface mainly with fine, hair-like setae standing in multiple rows towards base. Hind tibia with 2–3 *av*, 3 *ad*, 3 *pd* and (on basal half) 1 fine *p* seta. Pulvilli small, about half as long as respective distal tarsomeres.

Abdomen moderately depressed; tergites II–V with fine hind marginal setae, without discal setae; tergite VI bare. Sternite I with some setulae; sternite IV (Fig. 9) wider than long. Sternite V (Fig. 9) with short, broad lobes that at mid-length are raised along their inner margins; raised part with a bare area separating numerous lateral setae from dense rows of short, curved spinules on inner marginal edge. Alpha-sensilla at fore margins of sternites II–V absent. Terminalia (Figs. 10–14): shape and proportions of epandrium

and surstyli in lateral view (Fig. 10) and phallus (Figs. 13, 14) with a disc-like sclerite ventrally on acrophallus are diagnostic.

Relationships

Alliopsis kuntzei is no doubt closely related to *A. simulivora* Ackland, a species described recently (*in* Ackland & Werner, 2006) from Armenia and Georgia. The latter species, according to the original description, differs most obviously in the following aspects: smaller, wing length up to 5.0mm; frons wider, >0.4 x head width; 3–4 orbital setae; notopleural depression with a few setulae on posterior part; mid- and hind femora on basal halves or more without numerous hair-like *pv* setae; surstyli in lateral view less strongly and abruptly angled downwards on distal two-thirds; postgonite narrower; epiphallus thinner in profile view; distiphallus less sclerotized on distal parts; acrophallus without a disc-shaped sclerite ventrally.

A third species, *Alliopsis aertaica* (Qian & Fan, 1981) from China, agrees in the male sex with *A. kuntzei* and *A. simulivora* in having a feminized head, slender and curved surstyli with nearly parallel opposite margins, cerci with two pairs of very long apical setae, and a sternite V with short, broad lobes having inner margins raised in the middle part. Male *A. aertaica* is readily distinguished by the absence of interfrontal setae, enlarged epandrium and shortened cerci.

Biology

The life habits described by Ackland & Werner (2006) for *A. simulivora* probably applies even for the closely related *A. kuntzei*. In that case the species should be looked for along turbulent mountain streams, where simuliid larvae and pupae – the preferred diet of the adult flies – tend to be exposed in the splash zone on cliffs and boulders.

Distribution

Only known by the holotype from the Dauphiné province, SE France. The original label indicates that it was collected in July–August rather than on 7 August as stated in Ringdahl's (1934) original description.

Botanophila subbrunneilinea (Ringdahl, 1934), sp. rev., new status

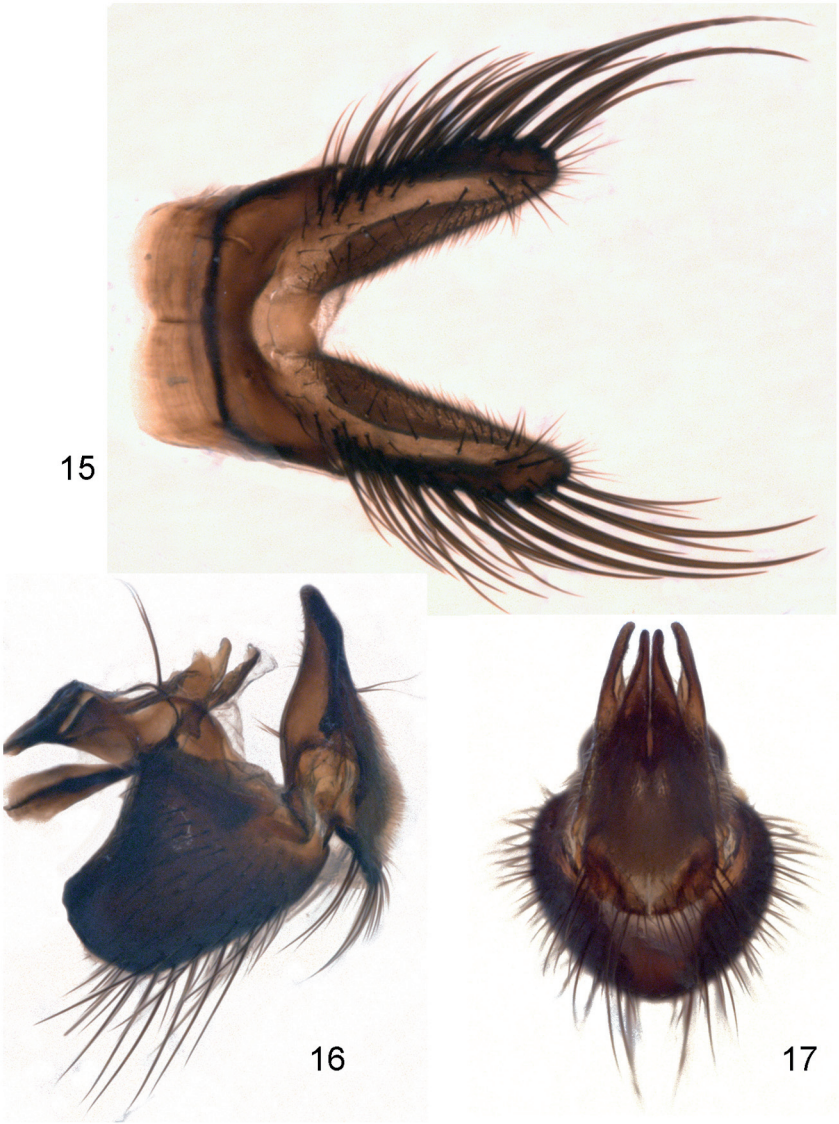
(Figs. 15–17)

Hylemyia brunneilinea ssp. *subbrunnelinea* Ringdahl, 1934: 100. '… einige Exemplare, die Herr W. Bukowski auf der Halbinsel Krim sammelte' [Ukraine, Crimea].

Material examined

A syntypic series of 3♂♂ 1♀ [in Coll. R. Dahl, BMNH], all with a printed accession label 'R. Dahl coll. BMNH(E) 1997-240'. One of the males bears a Ringdahl identification label 'Hylemyia subbrunneilinea n. sp.' and an original handwritten label in Cyrillic lettering saying that it was collected on 25.vi.1928 at the western foothills of Mount Chatyrdag by V. B[ukovski]. I have labelled and presently designate this

male as LECTOTYPE in order to fix the identity of the name *subbrunneilinea*. The remaining 2♂♂ 1♀ have been labelled as paralectotypes. They have original handwritten labels with the collecting dates 6.vii.1928, 12.vii.1930 and 30.vii.1930 and some illegible text.



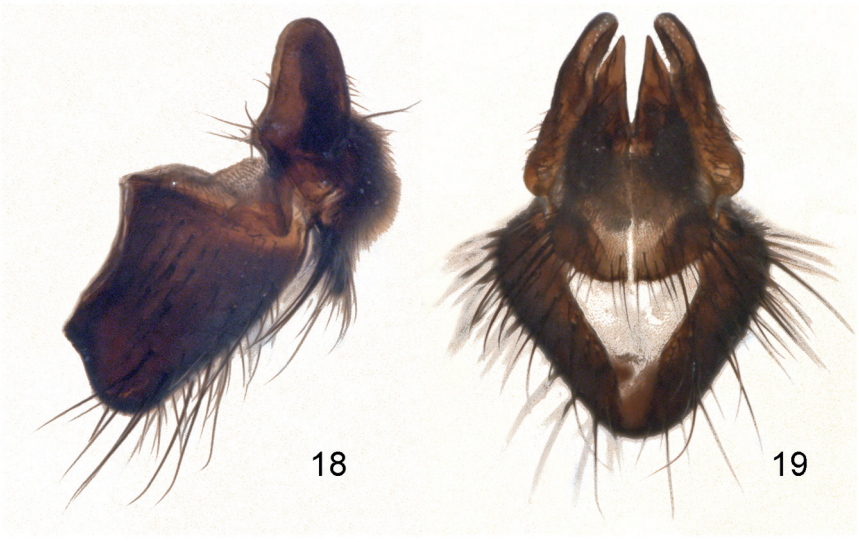
15–17. *Botanophila subbrunneilinea* (Ringdahl), ♂ lectotype: 15 – sternite V; 16, 17 – hypopygium and phallic parts, lateral and caudal aspects. Same scale

Identity

Hennig (1970: 358) tentatively synonymised *subbrunneilinea* Ringdahl with *Botanophila brunneilinea* (Zetterstedt), but my dissection of the lectotype revealed that *subbrunneilinea* represents a previously unrecognised species of *Botanophila* Lioy within the *brunneilinea* species group. The 2♂♂ paralectotypes have not been dissected, but appear conspecific with the lectotype. Even the ♀ paralectotype belongs to the *B. brunneilinea* species group and is possibly conspecific with the lectotype.

Description

Based on ♂ lectotype and 2♂♂ paralectotypes. A relatively large (wing length 7.2–7.5mm) and bristly *Botanophila* species with a long-pubescent arista, a long prealar seta, and numerous short *av* and *pv* setae but no apical *pd* seta on hind tibia, all characters referring it to the *B. brunneilinea* species group. The following differential description helps to distinguish *B. subbrunneilinea* (Ringdahl) from the widespread *B. brunneilinea* (Zetterstedt): brownish grey dusting on dorsal parts of thorax and abdomen lighter overall; mid- and hind tibiae ochreous-brown *vs.* of brownish-black (however, males of *B. brunneilinea* with a more or less broad-fronted (feminized) head occur relatively often, and those males show the same colour characteristics as *B. subbrunneilinea*); frons at narrowest point barely as wide as anterior ocellus, parafrontals at this point broader than frontal vitta *vs.* frons at narrowest point more or less wider than anterior ocellus, parafrontals at this point narrower than frontal vitta; mid



18, 19. *Botanophila brunneilinea* (Zetterstedt), ♂: hypopygium, lateral and caudal aspects. Same scale (as in 15–17)

tibia with 0 *vs.* 1–3 short *av* setae. Sternite V (Fig. 15) large with strongly setose lobes, unremarkable within the species group. Terminalia (Figs. 16, 17 *vs.* 18, 19): epandrium on dorsal part smoothly rounded *vs.* obtusely pointed; surstyli and cerci very differently shaped in both lateral and caudal aspects.

Female (based on ♀ paralectotype). Almost indiscernible from *B. brunneilinea* (Zetterstedt) but mid- and hind tibiae lighter, ochreous brown and mid tibia without *av* seta.

Relationships

As indicated above, *Botanophila subbrunneilinea* (Ringdahl) is readily referred to the *B. brunneilinea* species group that occurs primarily in the southern parts of the West Palaearctic subregion. *B. subbrunneilinea* is a valid species in a species group that is morphologically uniform, taxonomically complex and still contains many undescribed species. Only male specimens can be reliably identified, and usually only after dissection and examination of the surstyli and cerci.

Biology

Existing information suggests that all members of the *Botanophila brunneilinea* species group have phytophagous larvae feeding on developing rosettes of Compositae (Asteraceae). Apparently, various thistles and knapweeds (tribus Cardueae) constitute the host plants for most species.

Distribution

Apart from the type material from Crimea (Ukraine), I have seen material of *B. subbrunneilinea* from Hungary: Vác, Naszály 1♂ 9.vii.1958 (T. Jermy) [HNHM] and Greece: Makedhonia, Oros Olimbos [Mt. Olympos], 4♂♂ 21–26.v.1990, 1♂ 17–20.v.1994 (V. Michelsen) [ZMUC].

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