West Palaearctic Minilimosina (Svarciella): a new species, new records, key and taxonomical notes (Diptera: Sphaeroceridae)

Article *in* Casopis Slezskeho Zemskeho Muzea - serie A - vedy prirodni · January 2010

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West Palaearctic *Minilimosina* (*Svarciella*): a new species, new records, key and taxonomical notes (*Diptera*: *Sphaeroceridae*)

Jindřich R o h á č e k

West Palaearctic *Minilimosina (Svarciella)*: a new species, new records, key and taxonomical notes (*Diptera: Sphaeroceridae*) - Čas. Slez. Muz. Opava (A), 58: 97-114, 2009.

A b s t r a c t : The knowledge of the West Palaearctic species of *Minilimosina* subgenus *Svarciella* Roháček, 1983 is supplemented by description of a new species, viz. *Minilimosina (Svarciella) bartaki* sp.n. (Czech Republic, Romania), redescription of male *M. (S.) pujadei* Carles-Tolrá, 2001 and description of female *M. (S.) egena* Roháček, 1992 and their phylogenetic affinities are discussed on the basis of genitalic characters. First records of *M. (S.) vitripennis* (Zetterstedt, 1847) from Portugal and Greece, of *M. (S.) egena* Roháček, 1992 from Greece (Crete), and of *M. (S.) floreni* Roháček & Marshall, 1988 from Slovakia are presented, distributions of all above species are reviewed and new biological data are provided. A new key to West Palaearctic *Svarciella* species is prepared. All descriptions are supplemented by illustrations of diagnostic features including those of the male and female terminalia.

K e y w o r d s : *Diptera*, *Sphaeroceridae*, *Svarciella*, taxonomy, 1 sp.n., 1 new female, key, relationships, biology, distribution, West Palaearctic.

Introduction

The world species of *Minilimosina (Svarciella)* Roháček, 1983 were revised by Roháček (1983, European species), Marshall (1985, New World species) and Roháček & Marshall (1988, worldwide review). However, since the latter review of the 27 species then recognised in the genus, two more species have been described, both from Europe, viz. *Minilimosina (S.) egena* Roháček, 1992 (Switzerland) and *Minilimosina (S.) pujadei* Carles-Tolrá, 2001 (Andorra). Following the results of the revision of type material of species described by J. Villeneuve, the synonymies of two *Svarciella* species were established by Roháček (2001): *M. (S.) v-atrum* (Villeneuve, 1917) proved to be correct name for a species formerly treated under (synonym) *M. (S.) splendens* (Duda, 1928) and *M. (S.) guestphalica* (Duda, 1918) was restituted as a valid name for *M. (S.) v-atrum* auctt. (not Villeneuve, 1917). In the World catalog of Sphaeroceridae (Roháček et al. 2001) 29 species of *Svarciella* are listed (including the above corrections of synonymies), i.e. the above species plus the Mongolian *Minilimosina (S.) puncticorpoides* (Papp, 1973) transferred to *Svarciella* from the former genus *Limosina* Macquart, 1935. Thus, with addition of *M. (S.) pujadei*, the world fauna of *Svarciella* has recently included 30 described species.

During studies of dipteran biodiversity in the Podyjí National Park in South Moravia, Czech Republic (see Barták & Kubík 2005) two interesting species of *Svarciella* were encountered, one of which proved to be *M. (S.) pujadei* and the other an unnamed species of unclear affinities (Roháček et al. 2005). This study is therefore primarily aimed at the description of this new species and recognition of its phylogenetic relationships. In addition, the poorly known *M. (S.) pujadei* is redescribed and its male genitalia newly illustrated and, based on recently acquired material, a female of *M. (S.) egena* Roháček, 1992 is described and new distributional data are given for these and some other *Svarciella* species. Also some new biological data on the poorly known species are presented.

Because it is expected that some additional species of *Minilimosina (Svarciella)* could be discovered in underinvestigated areas (e.g. in the Mediterranean subregion) a new key to the identification of the West Palaearctic species of the subgenus is constructed to enable their recognition.

Material and methods

The material examined is deposited in collections abbreviated as follow: MBP – collection of Prof. Dr. M. Barták (Praha, Czech Republic), KMVC – Museum of East Bohemia (Hradec Králové, Czech Republic), SMOC – Silesian Museum (Opava, Czech Republic). Label data of primary-type specimens are presented strictly verbatim; data of paratypes and other specimens examined are given in full in standardized form.

Male genitalia and female postabdomina were examined after detachment and dissection of the whole abdomina. After examination, parts were transferred to small coalesced plastic tubes and pinned below respective specimens; this is indicated by the abbreviation "genit.prep." in the list of material examined.

Abbreviations of morphological structures used in text and/or illustrations: A_1 – anal vein, ac – acrostichal (seta), ads – additional orbital setulae, as – additional sclerite, C – costa, C-index (= Cs_2 : Cs_3) – ratio of length of 2nd costal sector : lenght of 3rd costal sector, CuA_1 – cubital vein, ce – cercus, Cs_2 – second costal sector, dc – dorsocentral (seta), dm – discal medial cell, dp – distiphallus, ea – ejacapodeme, g – genal (seta), ifr – interfrontal (seta), M – medial vein, oc – ocellar (seta), occe – outer occipital (seta), occi – inner occipital (seta), ors – orbital (seta), pg – postgonite, pha – phallapodeme, pp – phallophore, pvt – postvertical (seta), R_{2+3} – second radial vein, R_{4+5} – third radial vein, S – sternum, sc – scutellar (seta), stpl – sternopleural (seta), T – tergum, ta-tp : tp (= rm\dm-cu : dm-cu) – ratio of length between cross-veins on dm cell : length of posterior cross/vein, tp (= dm-cu) – posterior cross-vein, vi – vibrissa, vte – outer vertical (seta), vti – inner vertical (seta).

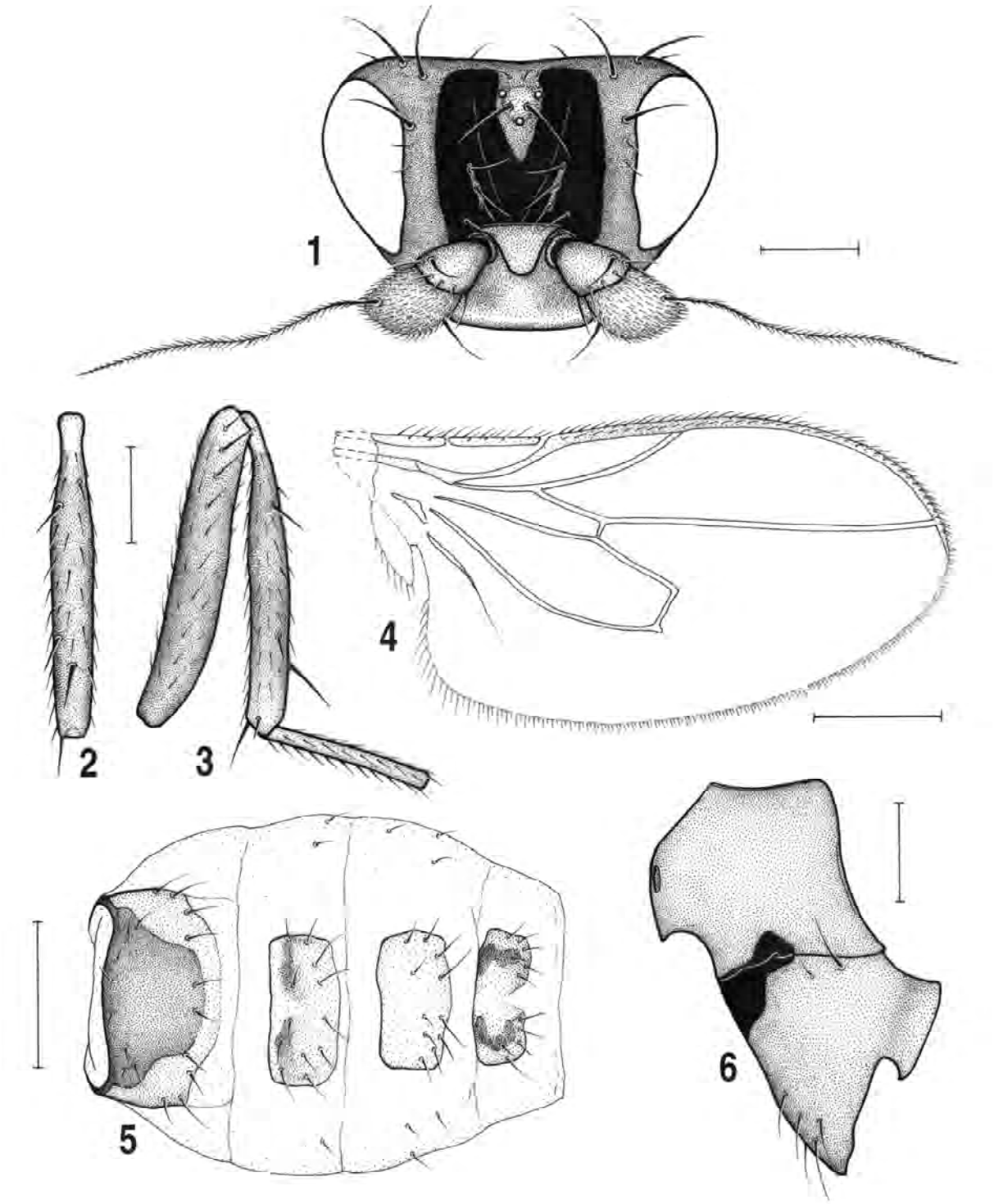
Minilimosina (Svarciella) bartaki sp. n.

(Figs 1-17, 28)

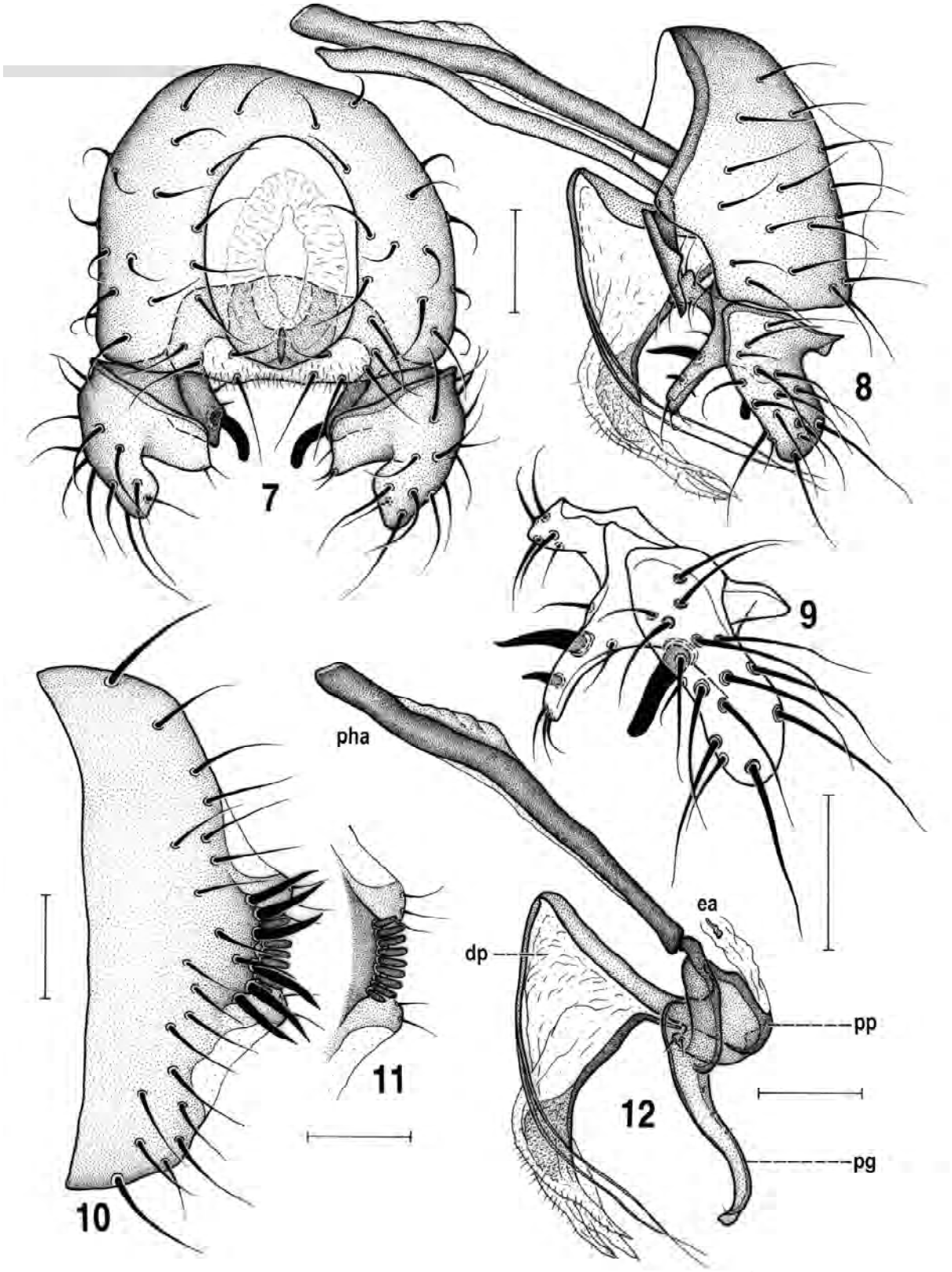
Type material: Holotype ♂ labelled: "CZ: Podyjí NP, 1.5 km SW of Havraníky, steppe, PT [= pan traps], 340 m, 48º48'29'N, 15º59'31''E, Barták, Kubík [leg.], 24.-26.vii.01", "HOLOTYPUS ♂, *Minilimosina (S.) bartaki* sp.n., J. Roháček det. 2009" (red label). The holotype specimen is intact, with wings shrivelled because of drying up from ethanol (SMOC). Paratypes: CZECH REPUBLIC: same data as for holotype, 1♀; Podyjí NP [= National Park], Havraníky, 48º48'52'N, 15º59'48''E, 330 m, forest-steppe, MT [= Malaise trap], 16.v.-11.vi.2002, 1♂, Maixnerová leg.; Podyjí NP, Fládnická chata, 1 km W of Hnanice, 48º48'40'N, 15º58'08''E, 350 m, PT, 28.-30.viii.2001, 1♂, Barták leg. (1♀ SMOC, others MBP); ROMANIA: Banat: Sfânta Elena 1 km E (Alibeg brook valley), 230 m, 44°40´37´´N, 21°43´32´´E, sweeping vegetation along brook, 31.v.2008, 1♂, J. Roháček leg. (SMOC). All paratypes with genit. prep.

Etymology: The species is named in honour of my friend, Professor Dr. Miroslav Barták, CSc., a distinguished Czech dipterist and the principal investigator of the dipterous fauna of the Podyjí National Park (see Barták & Kubík 2005) where this species had been discovered.

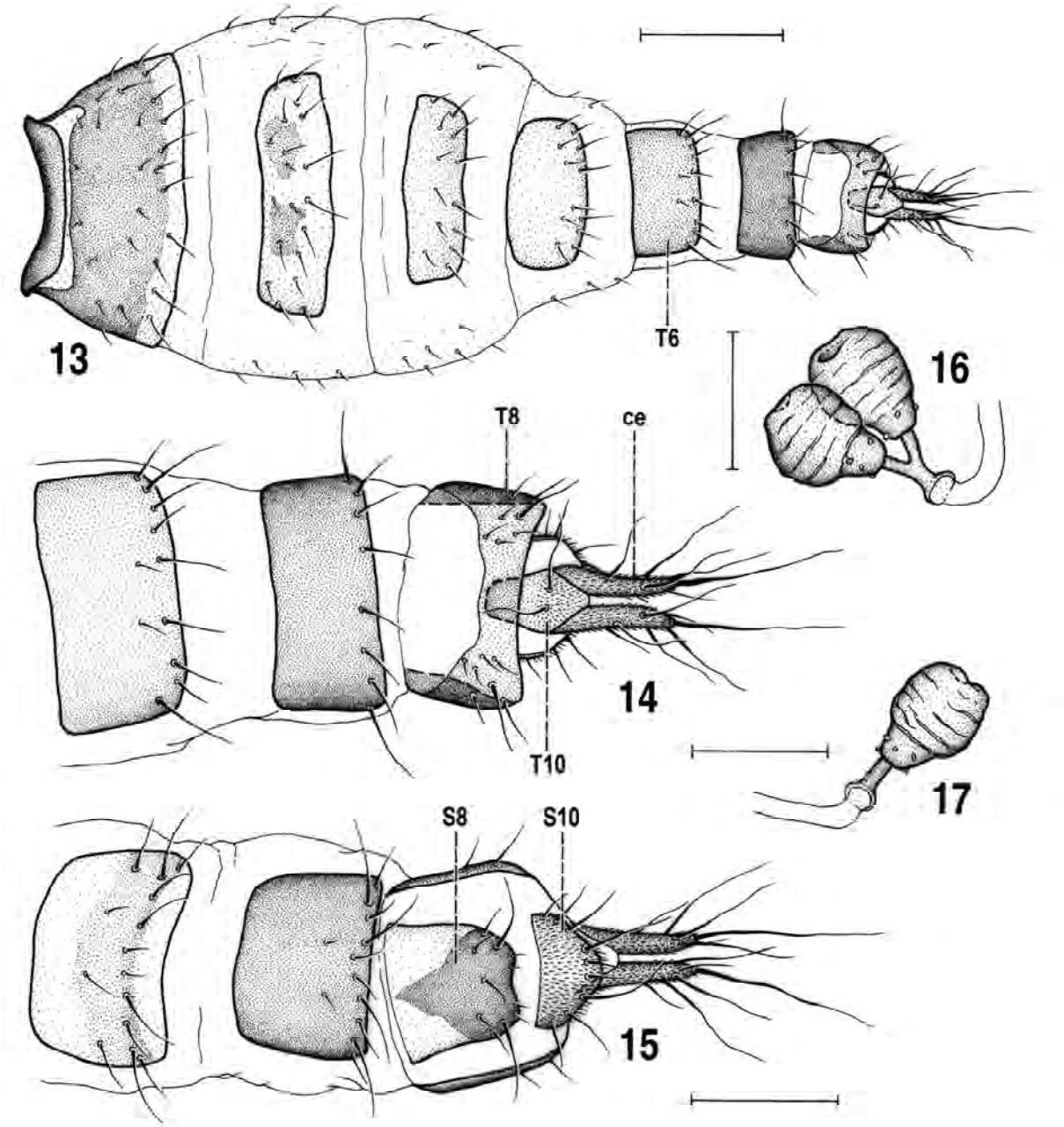
Description: M a l e. Total body length 1.07-1.27 mm; general colour brownish black and relatively shining despite some dark brownish grey microtomentum. Head brownish black to almost black. Frons (Fig. 1) with broad orbits, very narrow interfrontalia and relatively long frontal lunule (the latter most silvery) silvery grey microtomentose; ocellar triangle and occiput with darker greyish microtomentum. Frontal triangle (very narrow and reaching to anterior margin of frons) less microtomentose and shining in contrast to dull black area between the latter and orbits (boundary between frontal triangle and dull area indicate by a line in Fig. 1); frontal triangle may sometimes be distinctly lighter (brown) than surrounding quadrangular dull area. Cephalic chaetotaxy: all setae relatively short (Fig. 1); pvt absent and replaced by small divergent postocellar setulae; occe and occi reduced to subequal, poorly visible setulae hardly longer than postocellars; vte and vti strong (the latter longest of cephalic setae); only posterior ors developed, as long as vte; 1-2 minute ads on orbit in front of ors (see Fig. 1); oc about as long as vte; 3 small and fine ifr (the middle pair usually longest) and 1 similar setula anterolaterally to foremost ifr pair; g small to minute, not longer than peristomal setulae; vi strong, almost as long as vte. Face and gena brownish black; face with shining concavities below antennae and greyish microtomentose medial carina; gena with shiny triangular spot below eye and with perpendicular glabrous stripe on boundary between gena and occiput; vibrissal angle usually somewhat paler than rest of gena. Eye subcircular and slightly convex; its longest diameter about 2.7 times as long as smallest genal height, i.e. gena relatively high. Mouthparts brown, palpus pale brown. Antenna brown to blackish brown, pedicel darkest; 1st flagellomere seemingly paler in consequence of its greyish pilosity. Arista about 3.3 times as long as antenna, shortly ciliate.



Figs 1-6. *Minilimosina (S.) bartaki* sp.n., male (Figs 1-3, 6 holotype, Figs 4-5 paratype). 1 – head dorsofrontally; 2 – mid tibia dorsally; 3 – mid femur, tibia and basitarsus anteriorly; 4 – wing; 5 – preabdomen dorsally; 6 – mesopleuron and sternopleuron. Scales: Figs 4,5 = 0.2 mm, others = 0.1 mm.



Figs 7-12. *Minilimosina (S.) bartaki* sp.n., male (paratype). 7 – genitalia caudally (aedeagal complex omitted); 8 – genitalia laterally; 9 – gonostylus sub(ventro)laterally; 10 – pregenital sternum (S5); 11 – posterior comb of spines on S5; 12 – aedeagal complex laterally. Scales = 0.05 mm. For abbreviations see text.



Figs 13-17. *Minilimosina (S.) bartaki* sp.n., female (paratype). 13 – abdomen dorsally; 14 – postabdomen dorsally; 15 – dtto, ventrally; 16, 17 – spermathecae. Scales: Fig. 13 = 0.2 mm, Figs 14-15 = 0.1, others = 0.03 mm.

Thorax brownish black. Mesonotum sparsely greyish brown microtomentose and distinctly shining; pleural part of thorax only slighly more microtomentose and subshining except for small bare and lustrous spot on anterodorsal corner of sternopleuron projecting posteriorly somewhat dorsally also on mesopleuron (see Fig. 6). Scutellum roundedly transversely trapezoidal, distinctly shorter than long, rather flat on disc. Thoracic chaetotaxy: only 1 dc in prescutellar position, not longer than scutellum (anterior postsutural dc very weak, reduced to microseta); ac microsetae relatively long, in only 4 rows behind suture (in 2 rows in prescutellar area); 2 sc, basal slightly shorter than scutellum, apical about 1.8 times as long as scutellum; 2 stpl (Fig. 6) but anterior very weak and hair-like.

Legs with blackish brown femora, brown tibiae and mid and hind coxae; fore coxa, trochanters, knees, apices of tibiae and tarsi yellowish brown or ochreous. Mid femur ventrally unarmed, simply setulose (Fig. 3); mid tibia dorsally with reduced setosity (Fig. 2) composed

of only 1 proximal anterodorsal, 1 distal anterodorsal and 1 (yet more) distal dorsal seta; ventral side of mid tibia with only 1 relatively short ventroapical seta. Ratio t_2 : mt_2 = 1.86-1.95.

Wing relatively short and broad (Fig. 4), with hyaline or indistinctly pale ochreous membrane; veins very pale brownish, only C somewhat darker, also Cs_2 rather pale brown, never blackish or markedly darker than other costal parts. C distinctly extended beyond apex of R_{4+5}; R_{2+3} short, regularly slightly upcurved to C; R_{4+5} almost straight or indistinctly sinuate. Discal (dm) cell relatively broad, tapered somewhat distally, with both its outer corners more or less obtuse-angled; venal processes of M and CuA_1 beyond tp (dm-cu) very minute. A_1 short; alula relatively narrow though not very small. Wing measurements: length 1.05-1.14 mm, width 0.44-0.50 mm, C-index = 0.48-0.57, ta-tp : tp (rm\dm-cu : dm-cu) = 2.00-2.13. Haltere ochreous yellow, knob sometimes with pale brownish tinge.

Abdomen with preabdominal sclerites (except for syntergum T1+2) more or less reduced, partly desclerotized and pale pigmented (Fig. 5), all with short and sparse setae. Pleural membranous part of preabdomen enlarged. T1+2 largest and darkest (blackish brown) preabdominal sclerite; T3-T5 small, pale brownish ochreous, T3 and T5 with a pair of darker irregular spots (Fig. 5). Preabdominal sterna S2-S4 narrow, becoming somewhat larger posteriorly (S4 widest), S2 pale ochreous, others pale brown. Pregenital sternum (S5) large, broad (as wide as T1+2) dark brown, with highly characteristic posteromedial armature (Figs 10-11) consisting of a short comb of 8-9 blunt spines margined by pale lateral lobes (each with 2 setulae); this comb surmounted by 6 very robust acutely pointed spine-like setae; other setae normal and scattered in posterior half of S5. Postabdominal sterna S6-S8 more or less coalesced together forming asymmetrical blackish brown systernite.

Genitalia. Epandrium (Figs 7-8) moderately long and about as high as broad, with relatively short, subequal and sparse setae. Cerci (Fig. 7) reduced, very short, medially connected by narrow strip; each cercus with 3 setae (dorsal one shorter) and sparsely micropubescent. Medandrium (= intraepandrial sclerite) broad and relatively short (low). Hypandrium broadly Y-shaped; its lateral sclerites externally expanded and medial rod long (Fig. 8), slender and slightly sinuate in profile. Gonostylus (Figs 7-9) distinctive, with armature resembling some species of the *M. (S.) fanta* group, composed besides large convex and long-setose posterior lobe (having a dorsal, posteromedially projecting keel-like process) and usual internal projection with robust curved blunt spine (see Fig. 7) also of 2 anterior projections – a small dorsal with several small setulae and a longer anteroventral armed with 2 acute spines (1 longer and robust dorsal, 1 short and less thickened ventral) in addition to small proximal and apical setae (see Fig. 9); no micropubescence on outer side of gonostylus. Aedeagal complex (Fig. 12). Phallapodeme simple, rod-like, with small dorsal keel. Postgonite slender, S-shaped, with more robust proximal part bearing 2 setulae, very slightly clubbed apex and 1 microsetula near apex and 2-3 in the middle third of posteroexternal side. Aedeagus formed by very elongate, anteriorly projecting phallophore having also small anteroventral process and largely membraneous distiphallus. Distiphallus composed of very slender, whip-like and distally splited dorsal sclerite and slender, dorsoventrally flattened but distally expanded and weakly sclerotized ventral sclerite; its membraneous part finely haired in apical third. Ejaculatory apodeme extremely reduced.

F e m a l e . Similar to male unless mentioned otherwise. Total body length 1.42 mm. No differences in mid leg chaetotaxy. Ratio t_2 : mt_2 = 1.76. Wing slightly longer (narrower) than in male. Wing measurements: length 1.23 mm, width 0.53 mm, C-index = 0.60, ta-tp : tp (rm\dm-cu : dm-cu) = 1.94. Abdomen longer (Fig. 13), with slender telescopical postabdomen. Preabdomen with only T1+2 larger and blackish brown, other sclerites somewhat reduced and pale brownish pigmented. T3 and T4 shorter and more transverse than in male (Fig. 13) and only T3 with darker spots (? always). S2-S5 concolourous, pale brownish ochreous, narrower than in male and becoming wider posteriorly; S2-S4 longer than broad, S5 slightly wider than long.

Postabdomen (Figs 14-15) with the majority of sclerites darker than preceeding ones. T6 brown, simply transversely oblong, slightly longer than T7, the latter blackish brown, both with short setae at posterior margin only (Fig. 14). T8 (more precisely its dark lateral parts) slightly longer than T6, dorsally shortened and pale pigmented, with 1 longer seta and several setulae in posterolateral corners. T10 (supraanal plate) very narrow, elongately pentagonal, with a pair of usuall dorsal setae and micropubescence restricted to posterior half. S6 almost as wide as T6, very pale, brownish pigmented only in its middle transverse, shortly setose, stripe (Fig. 15). S7 blackish brown like T7 but markedly longer and narrower and little transverse, with more setae along posterior margin in addition to a pair of setulae in front of them. S8 elongately subtrapezoidal, tapered and rounded posteriorly, with distinctive cordate pigmentation (Fig. 15) and 2 long, ventrally curved setae in addition to several setulae. S10 transversely subtriangular, densely micropubescent and bearing a series of marginal setae 2 submedial being unusually long. Spermathecae 1+2 (Figs 16-17) blackish, pyriform, with sparsely transversely ridged and apically slightly impressed main (distal) part; its basal part with several small grain-like excrescences; sclerotized parts of spermathecal ducts shorter than body of spermatheca, with distinctly bulging end. No internal sclerotization of female genital chamber observed. Cerci (Figs 14-15) very slender, long, dark-pigmented and finely micropubescent, each with long sinuate hair-like setae, apical of which longest.

Discussion: Because of its multiprojecting gonostylus and armature of male S5 the new species was originally considered to belong to the Oriental *Minilimosina (S.) fanta* group sensu Roháček & Marshall (1988), see Roháček et al. (2005: 340). However, the structure of its distiphallus with a split whip-like sclerite clearly demonstrates that it belongs to the *Minilimosina (S.) vitripennis* group. On the other hand, the structures of gonostylus and also the armature of the male pregenital (S5) sternum of *M. (S.) bartaki* sp.n. indicate that this species is not very closely related to other species currently affiliated to the *M. (S.) vitripennis* group inasmuch as they all have a simpler gonostylus and male S5 unarmed [*M. (S.) niveipennis* (Malloch, 1913), *M. (S.) xanthosceles* Roháček & Marshall, 1988, *M. (S.) xestops* Roháček & Marshall, 1988], with a posteromedial deflexed process [*M. (S.) vitripennis* (Zetterstedt, 1847), *M. (S.) contrasta* Marshall, 1985, *M. (S.) pujadei* Carles-Tolrá, 2001] or with a pair of serrate flanked lobes [*M. (S.) amphicuspa* Roháček & Marshall, 1988], thus never with posteromedial comb of blunt spines. Moreover, its elongately projecting phallophore resembles most that of *M. (S.) amphicuspa* which is postulated as a sister-group to all remaining species of the *M. (S.) vitripennis* group by Roháček & Marshall (1988). The presence of these structures, some of which more resemble those of the members of the *M. (S.) fanta* group, indicate that the new species obviously forms a very basal clade of the *M. (S.) vitripennis* group.

M. (S.) bartaki sp.n. is a distinctive species easily distinguished from all other West Palaearctic species of *Svarciella* not only by the postabdominal and genitalic characters but also by the combination of external features (ornamentation of head, shape of bare shiny spot on pleural sclerites, male mid leg chaetotaxy, pale Cs_2, simply arched R_{2+3}, reduced and pale-pigmented preabdominal sterna), see the key below.

Biology: *M. (S.) bartaki* sp.n. obviously is associated with warm open habitats. It has been collected in steppe or steppe forest habitats both in South Moravia (see Fig. 28) and Romania. Adults were collected by means of yellow pan traps, Malaise traps and swept from vegetation in May to August.

Distribution: Czech Republic (South Moravia), Romania. Considering the occurrence of this species in warm steppe habitats in the Podyjí National Park and its recent finding in SW Romania it can be presupposed that *M. bartaki* sp.n. is distributed in the whole of the Balkan penninsula or even the East Mediterranean and probably reached its northernmost limit in South Moravia.

Minilimosina (Svarciella) pujadei Carles-Tolrá, 2001

(Figs 18-22, 30)

Minilimosina (Svarciella) pujadei Carles-Tolrá, 2001: 11-12.

Type material: Holotype ♂ ANDORRA: Santa Coloma, 16.-30.6.1993, Malaise trap, J. Pujade leg. (Faculty of Biology, Barcelona), not examined.

Material examined: CZECH REPUBLIC: Podyjí NP, nad Šóbesem, 48º49'039'N, 15º58'39''E, 340 m, forest-steppe, PT [= pan traps], 2.-4.v.2003, 1♂, Barták & Kubík leg. (SMOC, genit. prep.).

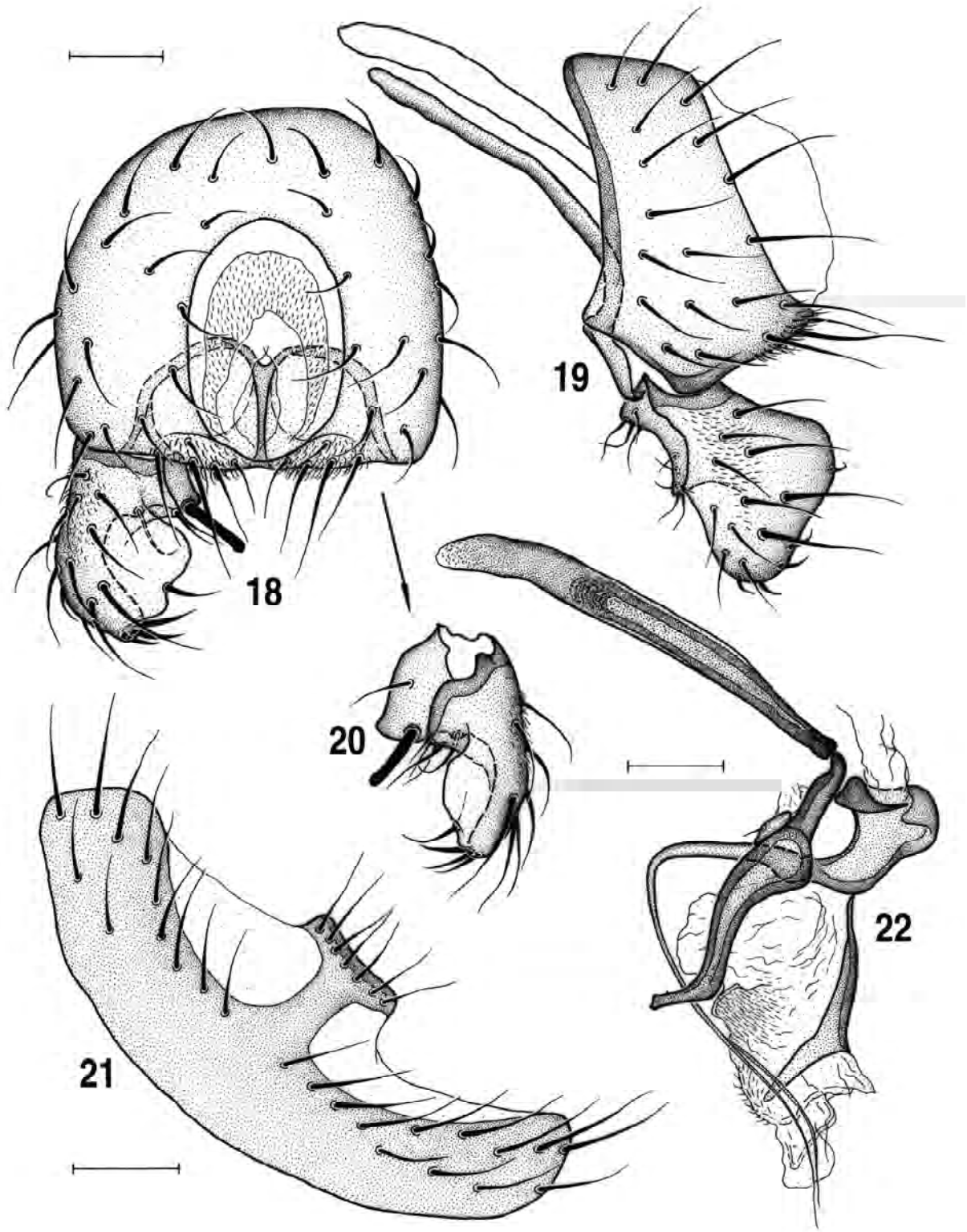
Redescription: M a l e. Total body length 1.4-1.6 mm; general colour blackish brown, grey to dark greyish brown microtomentose, subshining. Head blackish brown. Occiput greyish brown microtomentose. Frons largely (i.e. orbits and medially up to interfrontalia and ocellar triangle) pale grey to bluish grey microtomentose and contrasting with dull black cordate area covering narrow and somewhat shining frontal triangle and a space between the latter and interfrontalia and reaching to anterior margin of frons. Frontal lunule densely whitish silvery microtomentose. Cephalic chaetotaxy: all setae comparatively short; pvt absent but replaced by minute divergent postocellar setulae; occe and occi weak and short, the latter slightly smaller; vti strong and longest of cephalic setae, somewhat longer than vte, the latter subequal to oc and posterior ors; 2 ors but anterior distinctly shorter than posterior; 1-2 minute ads on orbit; 2-3 small and fine ifr plus 1 additional setula anterolaterally to foremost ifr; g short but distinct, slightly longer than anterior peristomal setula; 2-3 setulae also on parafacial ridge; vi almost as long as vti but markedly weaker. Face and gena blackish brown; face with only marginal stripe and medial carina somewhat microtomentose, facial concavities below antennae bare and shiny. Gena dark grey microtomentose except for small shiny triangular spot below eye (above vibrissal angle). Eye convex, subcircular; its longest diameter about 3.8 times as long as smallest genal height. Mouthparts pale brown including palpus, the latter bearing 2 distinct subapical and several minute ventral setulae. Antenna blackish brown, scape somewhat lighter; 1st flagellomere with pale ochreous pilosity being longer than aristal cilia. Arista about 2.8 times as long as antenna, shortly ciliate.

Thorax blackish brown. Mesonotum dark greyish brown microtomentose and subshining; pleural part of thorax similarly microtomentose except for a subtriangular bare and shiny spot on anterodorsal corner of sternopleuron (of similar extent and shape as that of *M. vitripennis*). Scutellum roundedly transversely trapezoidal, shorter than long, slightly convex on disc. Thoracic chaetotaxy: 2 short postsutural dc, anterior weak, about twice longer than dc microsetae, posterior dc as long as basal sc and shorter than scutellum; ac microsetae relatively long, in only 4 rows between anterior dc; 2 sc, basal slightly shorter than scutellum, apical about 1.5 times as long as scutellum; 2 stpl, both weak, anterior reduced to hair-like setula.

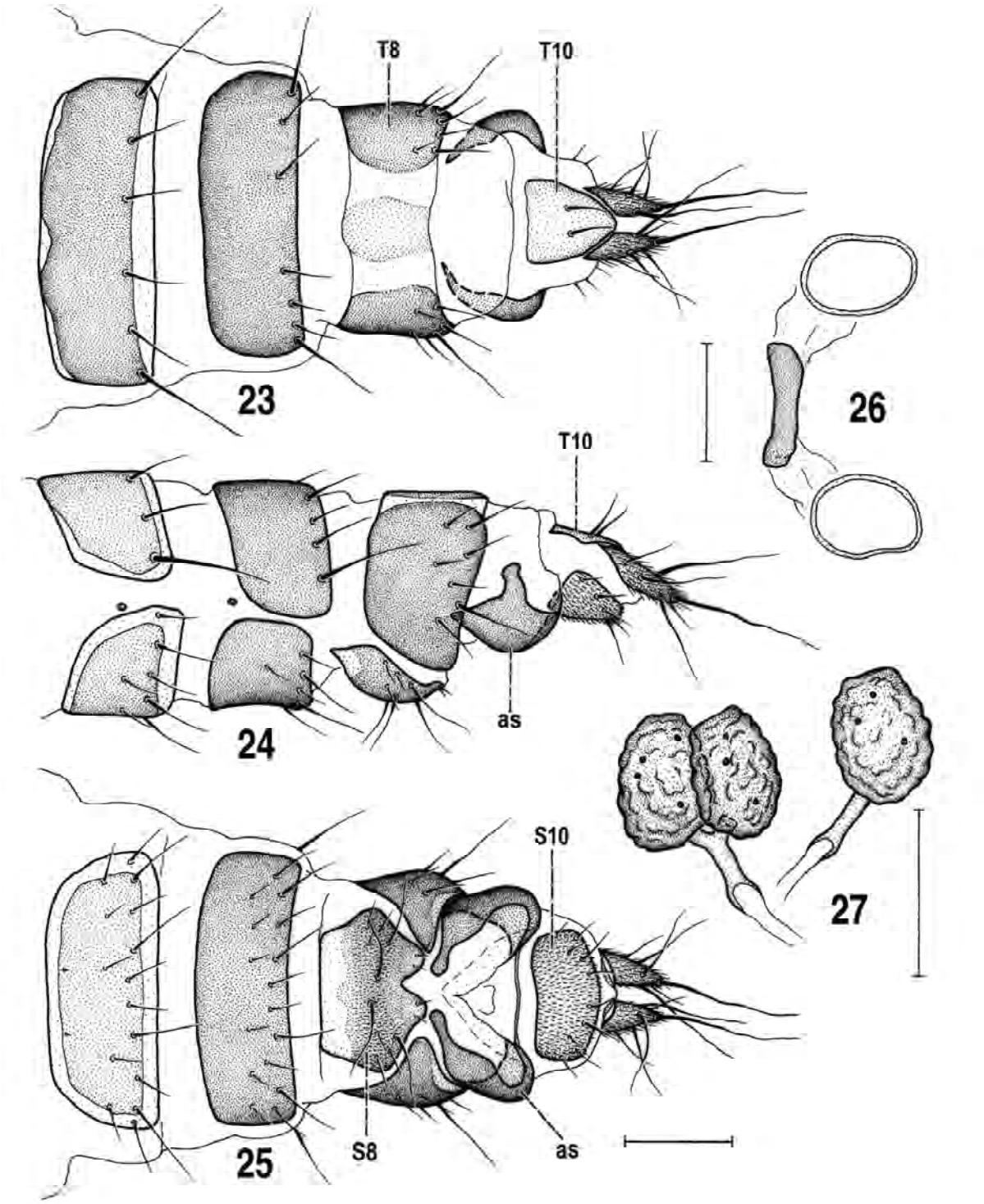
Legs blackish brown, only trochanters, knees, extreme apices of tibiae and tarsi (the latter palest) lighter brown. Chaetotaxy of mid femur and mid tibia similar to that of *M. vitripennis*, i.e. ventrally unarmed, simply setulose. Ratio $t_2 : mt_2 = 1.72$.

Wing moderately broad, with pale ochreous brown membrane. Venation closely resembling that of *M. vitripennis*: veins pale ochreous brown but Cs_2 markedly darkened, blackish. C distinctly extended beyond apex of R_{4+5}; R_{2+3} short, relatively straight, only apically upcurved to C; R_{4+5} slightly sinuate. Discal (dm) cell of medium length and moderately broad, tapered somewhat distally, with both its outer corners slightly obtuse-angled; venal process of M beyond tp (dm-cu) short, that of CuA_1 about twice as long as the latter; A_1 short, slightly bent; alula small and narrow. Wing measurements: length 1.36 mm, width 0.57 mm, C-index = 0.70, ta-tp : tp (rm\dm-cu : dm-cu) = 2.89. Haltere with ochreous stem and pale brown knob.

Abdomen with preabdominal sclerites (except for systergum T1+2) reduced and pale pigmented, all with short and sparse setae. Pleural membranous part of preabdomen enlarged.



Figs 18-22. *Minilimosina (S.) pujadei* Carles-Tolrá, 2001, male (Czech Republic). 18 – genitalia caudally (aedeagal complex and right gonostylus omitted); 19 – genitalia laterally (aedeagus and postgonite omitted); 20 – right gonostylus slightly dorsocaudally; 21 – pregenital sternum (S5); 22 – aedeagal complex laterally. Scales = 0.05 mm.



Figs 23-27. *Minilimosina (S.) egena* Roháček, 1992 female (Crete). 23 – postabdomen dorsally; 24 – dtto laterally; 25 – dtto, ventrally; 26 – spectacles-shaped sclerite ventrally; 27 – spermathecae. For abbreviations see text. Scales: Fig. 23-25 = 0.1 mm, others = 0.05 mm.

Figs 28-29. Habitats of *Minilimosina* species. 28 – steppe near Havraníky, S. Moravia, Czech Republic, type locality of *M. (S.) bartaki* sp.n.; 29 – NW part of the Samaria gorge, SW Crete, Greece, locality and habitat (forested parts) of *M. (S.) egena* Roháček. Photo by J. Ševčík (Fig. 28) and J. Roháček (Fig. 29).

T1+2 large and broad, darker brown than other terga, blackish brown in anterior corners. T3-T5 small (only about half width of T1+2), transversely oblong, pale brownish ochreous, with some parts or irregular spots somewhat darkened. S2-S4 narrow, becoming larger and wider posteriorly; S2 smallest and like (larger) S3 only slightly transversely trapezoidal, both pale-pigmented; S4 transversely oblong, distinctly darker than S2 and S3. Pregenital sternum (S5) of distinctive shape (Fig. 21), most similar to that of *M. (S.) contrasta* Marshall, 1985, but more transverse and somewhat bent, with more slender posteromedial T-shaped appendage having 7-8 setae on posterior margin. Postabdominal sterna S6-S8 blackish brown like epandrium, partly fused together forming asymmetrical synsternite.

Genitalia very similar to those of *M. (S.) contrasta*. Epandrium (Fig. 18-19) moderately long and about as high as broad, with relatively long, moderately dense setae of subequal length. Cerci (Fig. 18) reduced, much shortened, medially connected by narrow strip; each cercus with 5 setae (dorsal and most medial ones shorter, second lateral longest) and relatively

Figs 30-31. Habitats of *Minilimosina* species. 30 – forest steppe with pan traps, lokality Nad Šóbesem, S. Moravia, Czech Republic, habitat of *M. (S.) pujadei* Carles-Tolrá; 31 – alpine meadows with Malaise trap, Velká kotlina glacial cirque, N. Moravia, Czech Republic, habitat of *M. (S.) floreni* Roháček & Marshall. Photo by M. Barták (Fig. 30) and J. Ševčík (Fig. 31).

long micropubescence. Medandrium (= intraepandrial sclerite) broad and rather large but weakly sclerotized except for its medial part. Hypandrium broadly Y-shaped; its lateral sclerites slightly expanded externally and medial rod long but relatively broad because dorsoventrally flattened. Gonostylus (Figs 18-20) large, lobe-shaped, anteriorly with small dorsal and middle triangular processes, both shortly setulose; internally with two flat projections (best visible in Fig. 20), one with short fine setae, the other (more anterior) with usuall robust blunt and straight spine and some fine setae. The main (external) convex lobe of gonostylus with long and strong setae, some micropubescence in its middle and with 4 short thickened and curved setae on ventrally rounded corner (Fig. 19). Aedeagal complex (Fig. 22). Phallapodeme simple, rod-like, without dorsal keel. Postgonite dark pigmented, slender,

slighly S-shaped but somewhat knee-like bent in apical third, most robust at proximal third where the remnant of pregonite with 1 setula is attached, slender in proximal end; microsetulae on outer side reduced or absent. Aedeagus with elongate, anteriorly projecting phallophore indistinctly separated from dorsal sclerite of distiphallus (see Fig. 22). Distiphallus formed by a very slender, whip-like and distally splited dorsal sclerite and slender, somewhat flattened, distally fissed and laterally projecting ventral sclerite; its membraneous part micropubescent in middle of anterodorsal part and somewhat haired between apices of ventral sclerite. Ejaculatory apodeme not observed, probably very minute.

Discussion: This poorly known species is redescribed here on the basis of a male specimen found in South Moravia (see Roháček et al. 2005) with the aim to supplement the brief original description with schematical illustrations of male postabdominal structures (Carles-Tolrá 2001). As correctly recognized by the latter author, the species is most closely allied to Nearctic *Minilimosina (S.) contrasta* Marshall, 1985 having very similar male genital structures and the shape of the posteromedial deflexed process of male S5. The latter species differs from *M. (S.) pujadei* in having antennae yellow-orange and contrasting so with dark head, the T-shaped process of the male S5 distinctly shorter, more robust and with only 5 setae and by some detail in the structures of genitalia, e.g. gonostylus with different anterodorsal part, distiphallus more slender, phallophore distinctly separate from dorsal whip-like sclerite of distiphallus and postgonite slightly bent in distal fourth, see Marshall (1985). On the other hand, *M. (S.) pujadei* can be easily recognized from all West Palaearctic species of the subgenus *Svarciella* not only by genitalic but also by external features (see the key below).

Biology: Unknown. The holotype male was caught in Malaise trap situated in an open place near forest and river at altitude 1050 m (Carles-Tolrá 2001). The second male (Roháček et al. 2005) was collected by means of yellow pan traps in a forest-steppe habitat (Fig. 30). Adults were obtained in V-VI.

Distribution: Andorra (Carles-Tolrá 2001), Czech Republic (South Moravia - Roháček et al. 2005). The finding of the species in a warm steppe habitat in the southernmost part of the Czech Republic seems to indicate that it probably is a Mediterranean species reaching its northernmost distribution limit in Central Europe where it may be restricted to steppe habitats of thermophyticum.

Minilimosina (Svarciella) vitripennis (Zetterstedt, 1847)

Limosina vitripennis Zetterstedt, 1847
Leptocera (Scotophilella) albifrons Spuler, 1925
Limosina paravitripennis Papp, 1973

Material examined: GREECE: Pieria: Olympos Mts., Priónia, 40º04'N, 22º26'E, 1100 m, sweeping undergrowth of mixed forest, 1.vi.2007 1♂1♀, same, sweeping vegetation along brook, 1.vi.2007 1♀; Pieria: Olympos Mts., Karyá 3 km E, 39º59'N, 22º25'E, 800 m, sweeping over boggy meadow, 3.vi.2007 2♀; SW Crete: Omalos 3 km SW, sweeping over meadow, 17.v.2004 1♂, all J. Roháček leg. (SMOC, some with genit. prep.). PORTUGAL: C. Portugal, Estrela Mts., Manteigas env., valley of Montego river, 1000 m, 12.vi.1997 1♂, B. Mocek leg. (KMVC, genit. prep.). ROMANIA: Banat, Sfânta Elena 1 km E (Alibeg brook valley), 230 m, 44°40´37´´N, 21°43´32´´E, sweeping vegetation along brook, 31.v.2008 1♀, J. Roháček leg. (SMOC, genit. prep.).

Distribution: The species is widespread in the Holarctic Region (see Roháček et al. 2001). The above records for the first time demonstrate the occurrence of *M. (S.) vitripennis* in Portugal and Greece (mainland but also Crete) and confirm its presence in Romania. In addition, it has recently been also recorded from Madeira (Roháček 2007).

Minilimosina (Svarciella) floreni Roháček & Marshall, 1988

(Fig. 31)

Minilimosina (Svarciella) floreni Roháček, 1988: 245-246.

Material examined: CZECH REPUBLIC: N. Moravia: Hrubý Jeseník Mts. - Velká kotlina glacial cirque, sweeping over subalpine meadow, 24.viii.1990 1♀, J. Roháček leg.; same locality, Malaise trap, 23.viii.-27.ix.2004 2♂, J. Roháček & J. Ševčík leg. (SMOC, genit. prep.). SLOVAKIA: C. Slovakia: Poľana Mts., Kyslinky - Pod Dudášom reserve, 48º39'N, 19º29'E, 1070 m, sweeping undergrowth of coniferous forest, 22.viii.2007 1♂, J. Roháček leg. (SMOC, genit. prep.).

Biology: All above recorded Central European specimens originate from cold montane habitats (subalpine meadow near timber line – Fig. 31, montane coniferous forest) and, interestingly, were all collected in August. The two type specimens from Sweden were caught in June and August, one by means of yellow pan trap in a field, the other on sapping trunk of *Acer platanoides* (see Roháček & Marshall 1988).

Distribution: This poorly known species was described from two males collected by F. Florén in Sweden (Roháček & Marshall 1988) and since only recorded from the Hrubý Jeseník Mts. in the Czech Republic (Roháček 1996, 2006). It is here newly recorded from Slovakia.

Minilimosina (Svarciella) egena Roháček, 1992

(Figs 23-27, 29)

Minilimosina (Svarciella) egena Roháček, 1992: 173-174.

Type material: Holotype ♂ SWITZERLAND: Zürich, 15.-18.8.1977, G. Bächli leg. (Zoologisches Museum der Universität Zürich, Switzerland). Paratype ♂, same locality, 1.VI.-13.VI.1985, G. Bächli leg. (SMOC). Both type specimens with genit. prep.

Other material examined: GREECE: SW Crete: Samaria gorge NW part, on forest litter in mixed forest, 14.v.2004 16♂8♀; SW Crete: Omalos 3 km SW, under tufts of grass, 17.v.2004 4♂1♀, sweeping over meadow, 1♂; W Crete: Prases 4 km SW, sifting decayed leaves by stream, 18.v.2004 1♂2♀, 21.v.2004 3♂, sweeping vegetation along brook, 21.v.2004 1♀, all J. Roháček leg. (SMOC, a number of specimens with genit. prep.).

Supplement to original description: Male. Total body length 1.31-1.90 mm. Fore femur with 2 posterodorsal setae, one at proximal, the other at distal third of femur. Ratio t_2 : mt_2 = 1.76-1.86. Wing measurements: length 1.37-1.75 mm, width 0.55-0.73 mm, C-index = 0.65-0.86, ta-tp : tp (rm\dm-cu : dm-cu) = 2.31-3.50.

Female (new). Resembling male (see Roháček 1992) but differing as follows. Larger on the average; total body length 1.39-2.18 mm. Fore femur with somewhat longer posterodorsal setae. Mid femur ventrally simply setulose, without double row of short curved setae. Mid tibia ventrally with only 1 ventroapical seta being about twice as long as that in male; a row of posterodorsal setulae on mid tibia distinctly longer and thicker than those in male or than other tibial setulae. Mid basitarsus longer, ratio t_2 : mt_2 = 1.60-1.76. Wing slightly longer (narrower) than in male and Cs_2 usually longer, in largest specimens nearly as long as Cs_3 (in one female examined even slightly longer than Cs_3). Wing measurements: length 1.51-2.11 mm, width 0.61-0.89 mm, C-index = 0.74-1.03, ta-tp : tp (rm\dm-cu : dm-cu) = 2.69-3.51. Abdomen longer than in male, tapered posteriorly. All preabdominal terga and sterna heavily sclerotized and brownish black. T1+2 - T5 glabrous and lustrous except for syntergum T1+2 having greyish microtomentose T-shaped area covering T1 and medial band on T2 (similarly as in male). T1+2 widest and longest abdominal sclerite, about 2.5 times as long as T3; T3-T5 transverse, becoming smaller (shorter as well as narrower) posteriorly, all with sparse setae, longest in posterolateral corners. Preabdominal sterna (S2-S5) narrow, about half width (or less in S2) of associated terga but still transverse, sparsely greyish brown microtomentose. S2 small, transversely semicircular, narrower than S5; S3 and S4 of subequal width but S4 shorter and more transverse; S5 shortest (as short as S2 but wider), most transverse, with broadly rounded anterior corners; all these sterna sparsely shortly setose.

Postabdomen (Figs 23-25) telescopically retractible into preabdomen, with T6 and T7 distinctly grey microtomentose and contrasting so with shining T3-T5. T6 brown to dark brown with pale margins and only 6 setae at posterior margin (Fig. 23). T7 resembling in shape and size T6 but entirely brownish black and its setae somewhat shorter. T8 slightly longer than two foregoing terga and far extended on ventrolateral side of postabdomen, dorsally with tripartite pigmentation, medial band being brown to pale brown and bare, large lateral parts brownish black and setose including 1 longer seta. T10 simple, subtriangular, pale brown and lacking micropubescence, with only a dorsomedial pair of markedly short setae (Fig. 23). S6 brown and pale margined, slightly narrower than S7, finely setose in posterior half. S7 completely brownish black, similarly (but more) setose as S6. S8 (Fig. 25) of distinctive hexagonal, posteromedially deeply incised shape, having unpigmented anterior marginal area and micropubescence restricted to transverse band in the middle in which most of setae (including 2 pairs of long, ventrally curved setae) are inserted; 2 short setulae on each of its posterior lobes. A pair of peculiar blackish brown lateroventral additional sclerites (Figs 24-25, as) developed between 8th and 10th abdominal segments, probably representing secondary sclerotization around gonopore and each narrowly projecting dorsally on lateral side (see Fig. 24). S10 simple, transversely suboblong, densely micropubescent and shortly setulose at lateral and posterior margins (Fig. 25). Internal spectacle-shaped sclerite of female genital chamber distinctly developed (Fig. 26), composed of small, brownish, transverse medial plate and oval hyaline rings. Spermathecae 1+2 (Fig. 27) blackish, suboval with flattened or slightly depressed tip and somewhat rugged surface bearing several minute grains; sclerotized parts of spermathecal ducts almost as long as body of spermatheca, those of paired spermathecae fused close their insertion. Cercus (Figs 23-25) of moderate length, narrowly subconical, dark brown, with dense and relatively long micropubescence and very long sinuate hair-like setae, apical and dorsopreapical longest.

Discussion: *Minilimosina (S.) egena* was described from only two males from the vicinity of Zürich in Switzerland (Roháček 1992). Its recent discovery in southwestern and western Crete, where a long series was collected, enabled supplementation of the description as regards the formerly unknown female. Analysis of the female postabdominal characters confirmed that the species belongs to the *M. (S.) v-atrum* group as Roháček (1992) suggested. However, the peculiar additional sclerites beween female 8th and 10th abdominal segment (probably a secondary sclerotization surrounding the female gonopore), armature of male gonostylus and elongate phallophore indicate that it probably forms a sister group to other species of the *M. (S.) v-atrum* group except for *M. (S.) floreni* (cf. Roháček & Marshall 1988: Fig. 136).

Biology: No biological data were associated with type specimens (Roháček 1992). The new material from mountains in Crete indicates the precise habitats of *M. (S.) egena*. The majority of specimens were collected in spring places in montane forested habitats, either directly on wet forest litter (Samaria gorge, cca 950 m, Fig. 29) or sifted from decayed leaves (of *Platanus* and *Juglans* trees near Prases, 760 m) but some were also found under tufts of grass in wet meadow-like habitat near a shallow pool (Omalos plateau, 1060 m). Adults were collected in V (Crete) and VIII (Switzerland).

Distribution: The species was only known from Switzerland (Roháček 1992) and, consequently, the records from Crete are rather surprising. Possibly *M. (S.) egena* is another Mediterranean species ranging north as far as Switzerland.

Key to identification of West Palaearctic species of *Svarciella*

1 Preabdominal terga T3-T5 pale-pigmented, desclerotized and much reduced in contrast to dark, large and strongly sclerotized T1+2 (Figs 5, 13). Male mid femur and tibia always without ventral curved setae and/or spines. Dorsal sclerite of distiphallus very long, whip-like and distally split into two strips (Figs 12, 22) [*M. (S.) vitripennis* group]. ……..…….. 2

– Preabdominal terga T3-T5 of normal size, dark and heavily sclerotized as is T1+2. Male mid femur and tibia ventrally often with rows of curved and thickened setae or short spines. Dorsal sclerite of distiphallus short, shorter than ventral sclerite, sometimes fused with phallophore (Roháček & Marshall 1988: Fig. 135) [*M. (S.) v-atrum* group]. ……..…… 4

2(1) Cs_2 (2nd costal sector) pale brown, concolourous with rest of C; R_{2+3} slightly bent along its entire length (Fig. 4). Frons with large subquadrate blackish area (Fig. 1) extended to anterior margin of frons. Male S5 (Figs 10-11) with a posteromedial comb of blunt spines surmounted by 6 robust spine-like setae. Gonostylus besides usual internal projection with robust blunt spine with 2 anterior projections, the anteroventral of which is armed by thick pointed spines (Fig. 9). Female postabdomen as in Figs 14-15, spermathecae as in Figs 16-17……..……. *Minilimosina* (*S.*) *bartaki* sp.n. [Czech Republic, Romania]

– Cs_2 blackish, sharply contrasting with pale brownish or ochreous rest of C; R_{2+3} straight, with only apex upcurved to C (see Roháček 1982: 275, Fig. 180). Frons with smaller, cordate blackish area, at most reaching anterior margin of frons by apex of its anteromedial corner. Male S5 with a deflexed Y-shaped or T-shaped posteromedial process. Gonostylus (besides internal projection with robust blunt spine) without anterior projections. ……..……..…….. 3

3(2) Head with face and gena completely silvery white microtomentose; cordate blackish spot on frons smaller and usually not reaching frontal margin. Male S5 with deflexed posteromedial process Y-shaped (Roháček 1982: 277, Fig. 185). Gonostylus distally tapered and posterointernally curved (Roháček 1982: 276, Figs 182-184). Spermathecae and female postabdomen (Roháček 1982: 277, Figs 187-190)……. ……..…… *Minilimosina* (*S.*) *vitripennis* (Zetterstedt, 1847) [Holarctic]

– Face with only marginal stripes and carina sparsely microtomentose, otherwise (facial concavities) bare and shiny; gena microtomentose but with small triangular shiny spot below eye. Cordate blackish spot on frons larger, reaching frontal margin by its apex. Male S5 with deflexed posteromedial process T-shaped (Fig. 21). Gonostylus lobe-shaped, distally broad (Fig. 19). Female unknown……..… …….. *Minilimosina* (*S.*) *pujadei* Carles-Tolrá, 2001 [Andorra, Czech Republic]

4(1) Antennae yellow to pale brownish orange, contrasting with dark head. ……..…….. 5

– Antennae dark brown to blackish, concolourous with ground colour of head. ……..… 6

5(4) Mesopleuron with shining spot above fore coxa much smaller than that on sternopleuron (Roháček & Marshall 1988: Fig. 1). Male mid femur and tibia ventrally without spines or curved setae. Male S6 posteromedially (behind S5) simple. Dorsal sclerite of distiphallus fused with phallophore (Roháček & Marshall 1988: Fig. 6). Armature of male S5 (Roháček & Marshall 1988: Fig. 135). Female postabdomen and spermathecae (Roháček 1996: Figs 1-5)……..…… …… *Minilimosina* (*S.*) *floreni* Roháček & Marshall, 1988 [Sweden, Czech Republic, Slovakia]

– Mesopleuron with larger shining spot, similar in size to that on sternopleuron (Roháček 1983: 171, Fig. 228). Male mid femur ventrally proximally with curved setae and mid tibia with double row of small ventral spines (Roháček 1983: 171, Fig. 226). Male S6 posteromedially with a pair of tubercles (Roháček 1983: 171, Fig. 227). Dorsal sclerite of distiphallus small, separate from phallophore (Roháček 1983: 172, Fig. 230). Armature of male S5 (Roháček 1983: 172, Fig. 234). Female unknown. …… …… *Minilimosina* (*S.*) *ismayi* Roháček, 1983 [Spain]

6(4) C uniformly pale yellowish brown. Mesopleuron with large shining spot covering most of its central area (Roháček 1982 [as *M. (S.) splendens*]: 278, Fig. 191). Male S5 with a modified deflexed posteromedial process and a row of small tubercles (Roháček 1982: 279, Fig. 200). Male genitalia (Roháček 1982: 279, Figs 196-199). Spermathecae (Roháček 1982: 279, Fig. 201) a female postabdomen (Roháček 1982: 280, Figs 202-204)……. *Minilimosina* (*S.*) *v-atrum* (Villeneuve, 1917) [Palaearctic: Europe, Far East of Russia]

– C with blackish Cs_2 (and sometimes also proximal part of Cs_3) contrasting with pale rest of C. Mesopleuron with much smaller shining spot never covering its central area. Male S5 always with posteromedial comb of spines……..…… 7

7(6) Male mid femur and tibia without ventral curved setae or spines. Male S5 with very large convex densely setulose bulge (Roháček 1982 [as *M. (S.) hackmani*]: 282, Fig. 208; Roháček & Marshall 1988: Fig. 8). Gonostylus large, lobe-shaped, without robust spines (Roháček 1982: 282, Figs 206-207). Female postabdomen (Roháček & Marshall 1988: Figs 14-15) with elongately cordate S8 and deeply anteriorly depigmented S10. Spermathecae (Roháček & Marshall 1988: Fig. 16). …….. …… *Minilimosina* (*S.*) *unica* (Papp 1973) [Boreal Palaearctic: Sweden, Finland, Mongolia]

– Male mid femur with curved ventral setae and tibia with a long (double) row of short spines ventrally (Roháček 1982: 281, Fig. 213). Male S5 flat, without bulge but with robust thickened setae in front of posteromedial comb of blunt spines. Gonostylus small, bilobed, with 2-3 robust spines on inner lobe. Female postabdomen and spermathecae different. ……..…… 8

8(7) Mesopleuron and sternopleuron with larger shining area above fore coxa (Roháček 1992: Fig. 1). Male S5 with posteromedial comb of spines narrower (Roháček 1992: Fig. 9). Gonostylus (Roháček 1992: Figs 5-6, 8) with only 2 strong spines on inner lobe. Aedeagal complex with longer phallophore, shorter distiphallus and distally more robust postgonite (Roháček 1992: Fig. 7). Female postabdomen (Figs 24-25) with unique additional sclerites between 8th and 10th segment. Spermathecae suboval with somewhat rugged surface (Fig. 27)……..... *Minilimosina* (*S.*) *egena* Roháček, 1992 [Switzerland, Greece: Crete]

– Mesopleuron and sternopleuron with very small shining spots, one on mesopleuron above fore coxa, the other in the middle of boundary between mesopleuron and sternopleuron (Roháček 1983 [as *M. (S.) v-atrum*]: 171, Fig. 224). Male S5 with posteromedial comb of spines wider (Roháček 1983: 169, Fig. 219). Gonostylus (Roháček 1983: 169, Figs 216-218) with 3 strong spines on inner lobe. Aedeagal complex with shorter phallophore, more slender distiphallus and distally more tapered postgonite (Roháček 1983: 169, Fig. 215). Female postabdomen (Roháček 1983: 170, Figs 220-222) without additional sclerites. Spermathecae subcylindrical, with plain surface (Roháček 1983: 170, Fig. 223)……. …… *Minilimosina* (*S.*) *guestphalica* (Duda. 1918) [North and temperate Europe]

A c k n o w l e d g e m e n t s : It is an agreeable duty to express my sincerest gratitude to Prof. S. A. Marshall (Guelph, Canada) and Dr. M. Carles-Tolrá (Barcelona, Spain) who kindly reviewed the manuscript and provided useful comments. My special thanks are given to Prof. M. Barták, CSc. (Praha, Czech Republic) who kindly provided specimens of the new species for study; he and Dr. J. Ševčík (Ostrava, Czech Republic) kindly permitted to publish their photographs in this paper.

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Západopalearktické druhy podrodu Minilimosina (Svarciella): 1 nový druh, nové nálezy, klíč k determinaci a taxonomické poznámky (Diptera: Sphaeroceridae)

Dosavadní poznatky o druzích podrodu *Svarciella* Roháček, 1983 rodu *Minilimosina* jsou doplněny o popis nového druhu *Minilimosina (Svarciella) bartaki* sp.n. z jižní Moravy (Česká Republika) a Banátu (Rumunsko), redeskribci samce druhu *M. (S.) pujadei* Carles-Tolrá, 2001 a první popis samice druhu *M. (S.) egena* Roháček, 1992. Příbuzenské vztahy těchto druhů jsou diskutovány na základě analýzy znaků ze samčích a samiččích postabdominálních struktur. Druh *M. (S.) vitripennis* (Zetterstedt, 1847) je poprvé hlášen z Portugalska a Řecka (včetně Kréty), *M. (S.) egena* Roháček, 1992 z Kréty a *M. (S.) floreni* Roháček & Marshall, 1988 ze Slovenska. Je podán přehled rozšíření všech výše uvedených druhů a nové poznatky o jejich biologii. Pro determinaci západopalearktických druhů podrodu *Svarciella* je sestaven nový klíč. Všechny popisy i určovací klíč jsou doprovázeny originálními ilustracemi diagnostických znaků včetně znaků na samčích a samiččích terminálíích.

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