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# Three new West Palaearctic species of *Rhamphomyia* subgenus *Lundstroemiella* (Diptera, Empididae)

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**Abstract:** Rhamphomyia (Lundstroemiella) cervi sp. n. (France), R. (L.) cimrmani sp. n. (Turkey) and R. (L.) speighti sp. n. (France) are described and illustrated. A key to the Palaearctic species of the subgenus Lundstroemiella Frey is given.

Key words: Rhamphomyia, Lundstroemiella, new species, taxonomy.

#### Introduction

The species of the subgenus Lundstroemiella Frey, 1922, type species: Rhamphomyia hybotina Zetterstedt, 1838 (orig. des.), are usually small (wing length less than 4.5 mm) with eyes dichoptic in both sexes, elongated antennae (the 3<sup>rd</sup> segment 2–6 times as long as the two basal segments combined) which are inserted in the upper third of the head, obtuse axillary angle, and body at least partly covered with pale setulae. Palaearctic species of the subgenus are relatively well known thanks to papers by Oldenberg (1927), Barták (1985) and Barták (1999). Additional three new species are described here, and this necessitates revision of the earlier keys (Barták, 1985, 1999).

Altogether 18 Palaearctic species are currently assigned to the subgenus Lundstroemiella and three additional species,  $R.\ cervi$  sp. n.,  $R.\ cimrmani$  sp. n. and  $R.\ speighti$  sp. n., are described here as new to science.

### Material and methods

The material studied was received on loan from Muséum d'Histoire Naturelle in Geneva. The genitalia were macerated in 10% KOH (24 h, room temperature). Abbreviations: T1,2,3 : Mt1,2,3 = length of fore, mid, hind tibia : length of fore, mid, hind basal tarsomere; Mt1,2,3 : Mt1,2,3 = length of fore, mid, hind basal tarsomere : width of this tarsomere; M2/D = length of vein M2 : greatest length of discal medial cell; M3/Db = length of apical : preapical sections of vein CuA<sub>1</sub>; lw : ww = greatest length of wing: greatest width of wing. Ratio of antennal segments = length of  $1^{\rm st}:2^{\rm nd}:3^{\rm rd}:$  style (in 0.01 mm scale).

## Rhamphomyia (Lundstroemiella) cervi sp. n. (Fig. 1)

**Description.** Male. Eyes dichoptic, facets subequal in size or the uppermost ones slightly smaller. From brownish-black, 0.22 mm long and 0.02 mm broad at narrowest point, shining, with 3-4 short setulae evenly spaced on the sides. Ocellar setae black, half as long as frons, without additional setulae. Face brownishblack, pruinose, parallel-sided, as broad as frons below and 0.24 mm long, bare. Occiput brownish-black, shining in upper part, grey pruinose in lower third and in lower half just behind compound eyes and below neck, and with a triangular pruinose area above neck; occiput covered mostly with black setulae, several pale setulae present below neck, postocular row of setulae complete but irregular. Antennae black, ratio of antennal segments (in 0.01 mm scale) = 12:7:31:10, both basal antennal segments with short setulae (the longest about 0.07 mm long). Labrum brownishyellow, polished, slightly longer than head is high. Palpus yellowish-brown, with several short setulae.

Thorax brown, mesonotum including scutellum, notopleura and postpronotum shining, only a small part of prescutellar area thinly pruinose, pleura grey pruinose (with only a very narrow stripe in anterior part of anepimeron shining). Chaetotaxy: about 2 pale setae on proepisternum; prosternum and proepisternal depression bare; about 10 (?) pale, almost uniserial acrostichals, fine and short (0.06 mm long in front part, broken in hind part of the rows in the unique holotype specimen); about 10 (?) uniserial pale dorsocentrals (about 0.08 mm long in middle of rows to judge by the single seta present), ending in 2 short and fine pres-



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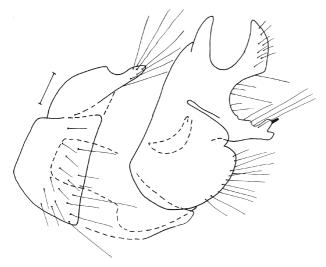


Fig. 1. Rhamphomyia cervi sp. n., male terminalia (macerated), lateral view. Scale 0.1 mm.

cutellars (equally small and broken in the holotype); intrahumerals very fine and inserted close to front dorsocentrals, posthumeral fine and short, with a short additional seta; a short pale postpronotal seta and about 8 slightly shorter pale setulae; 1 long and strong dark notopleural seta (several pale setulae in both front and hind parts of notopleura); 1 supraalar; prealars probably absent; 1 dark postalar seta and 2 short pale setulae; 2 long and 2 much shorter dark scutellars; laterotergite (metapleura) with pale setae. Fore coxa yellow, mid and hind coxae pale brown; coxae pruinose, covered with pale setae. Basal halves of all femora, fore and mid tibiae and basal 1/4 of hind tibia yellow, the rest of legs brown (yellow and brown colours merging without sharp boundaries).

Legs subpolished, covered with both brown and pale setae. A very short and almost indistinct seta in the comb at tip of hind tibia. Fore and mid femora and tibiae short setose, only mid tibia with a single long subbasal posterodorsal seta (0.20 mm long, 4 times as long as diameter of tibia). Hind femur with a dense and fine, pale and almost upright ventral ciliation, as long as femur is deep. Hind tibia slightly swollen apically, with several posterodorsal setae up to as long as diameter of tibia, anterodorsals shorter. Basal tarsomere of both fore and mid legs thin and short setose, T1 : Mt1 = 1.9, Mt1 : Mt1 = 12.5, T2 : Mt2 = 2.0, Mt2 : Mt2 = 12.0, basal tarsomere of hind leg slightly swollen (broader than the following tarsomeres but narrower than tip of tibia), short setose, T3 : Mt3 = 2.0, Mt3 : Mt3 = 5.4.

Wing clear, stigma slightly darker than membrane, veins brownish-yellow, anal vein  $(A_1)$  absent in apical part. Costal seta present, axillary angle extremely obtuse  $(150^{\circ})$ . M2/D = 1.9, M3/Db = 5.2, lw: ww = 3.5 (?). Haltere yellow, calypter yellow with pale fringes.

Abdomen brown, shining including the 1st segment and genital lamellae. Setae and setulae mostly pale, the 8th segment and terminalia also with dark setae. Hind marginal setae on sides of tergites about 1/3 as long as their segments, slightly longer only on segment 2, discal setulae slightly shorter than marginals. Dorsum of tergites shorter setose than sides. Terminalia as in Fig. 1. Dorsal genital lamella firmly attached to lateral lamella; hypandrium membraneous; phallus relatively short; ejaculatory apodeme square-shaped. Length of body 3.3 mm (without genitalia), wing 3.3 mm.

#### Female. Unknown.

Type material. Holotype (male): France, Var, Cavaliers, Gorges du Verdon (coordinates 6.2 E, 43.45 N, approxim.). 17.V.–13.VI.2003, MT (= Malaise trap), leg. E. Castella et M. Speight, deposited in Muséum d'Histoire Naturelle in Geneva.

Distribution. France.

Dates of occurrence. May–June.

**Etymology.** The species is named after the peculiar shape of the male dorsal genital lamella which resembles deer antlers.

Differential diagnosis. Rhamphomyia (Lundstroemiella) cervi sp. n. belongs to a complex of species containing R. sphaenoptera and R. olympiana because of the shining mesonotum including scutellum and upper part of occiput, presence of long subbasal anterodorsal seta on mid tibia, and very narrow from (these characters are probably also present in the currently unknown female of this species). However, the male of the new species differs from the other two species of this complex (in addition to the peculiar shape of the dorsal genital lamella) by the absence of prominent spine-like anterior and anteroventral setae on mid femur and the absence of a polished spot on pleura. Furthermore, the new species differs from both species of this complex (and also from the rather closely allied R. freyi) by the darkened mid and hind coxae.

# Rhamphomyia (Lundstroemiella) cimrmani sp. n. (Fig. 2)

Description. Male. Eyes dichoptic, facets in upper third of eye smaller than in lower two-thirds. Frons brownish-black, 0.16 mm long and 0.09 (?) mm broad at middle, grey pruinose (only small areas close to lateral margins of ocellar triangle subpolished), with only a single pair of long setulae (0.20 mm long) inserted just above antennal bases. Ocellar setae black, longer than frons, hind part of ocellar triangle with a single pair of long additional setulae. Face black, grey pruinose, parallel-sided, about 0.03 mm broad and 0.24 mm long, bare. Occiput brownish-black, grey pruinose, mostly with black setulae, with only several pale setulae below neck, postocular row complete but irregular and with long setulae above and contrastingly short ones

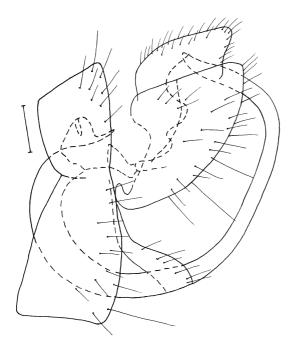


Fig. 2.  $Rhamphomyia\ cimrmani\ {\rm sp.\ n.},\ {\rm male\ terminalia}\ ({\rm macerated}),\ {\rm lateral\ view.\ Scale\ 0.1\ mm}.$ 

below. Antennae black, ratio of antennal segments = 7:5:50 (?): 7 (the  $3^{\rm rd}$  segment slightly bent), both basal antennal segments with rather long setulae (the longest about 0.16 mm long). Labrum brown, polished, slightly longer than head is high. Palpus brown, rather long, with long setulae (about 0.20 mm long).

Thorax black, rather light grey pruinose, mesoscutum without stripes. Chaetotaxy: about 6 pale proepisternal setulae; prosternum bare; proepisternal depression with 1-2 pale setulae; about 18 black, narrowly biserial acrostichals; about 16 irregularly biserial black dorsocentrals, ending in 2 prescutellars; both acrostichals and dorsocentrals rather fine and long (0.25 mm long at middle of the rows); 8-10 dark and pale setulae in presutural part of mesoscutum outside dorsocentrals, from which both intrahumeral and posthumeral are poorly differentiated; 8–10 pale setulae on postpronotum (strong seta absent); 2 notopleurals (and several pale setulae in front part of notopleura); supraalar and prealar areas uniformly covered with 8-10 dark setulae; 1 postalar; 2 long and 2 slightly shorter black scutellars; laterotergite (metapleura) with pale se-

Coxae blackish-brown, pruinose, with pale setae. Legs brown, pruinose, mid and hind femora and base of hind tibia subpolished to polished. Legs covered mostly with pale setulae in proximal parts (femora, bases of tibiae) and dark setulae in distal parts. A very short and almost indistinct seta present in the comb at tip of hind tibia. Fore and mid femora short setose, posteroventral setulae subequal in length to depth of femora, other setulae shorter. Fore and mid tibiae short setose, with several poorly differentiated posterodorsal setae which

are slightly longer than diameter of tibiae. Hind femur with rather long pale dorsal setae in basal part, otherwise short setose. Hind tibia swollen apically, with a row of posterodorsal setae twice as long as diameter of tibia in thin basal half of tibia and subequal to diameter of tibia in swollen apical part. Basal tarsomere of fore leg thin and short setose, T1: Mt1 = 1.6–1.7, Mt1: Mt1 = 10.0, basal tarsomere of mid leg thin, short setose, with short ventral spines, T2: Mt2 = 2.0–2.1, Mt2: Mt2 = 11.2, basal tarsomere of hind leg swollen, short setose, T3: Mt3 = 2.0-2.1, Mt3: Mt3 = 3.0 (?, it is slightly collapsed).

Wing clear, stigma hyaline, veins brownish-yellow, anal vein  $(A_1)$  traceable only in basal third. Costal seta absent, axillary angle obtuse  $(120^{\circ})$ . M2/D = 1.5, M3/Db = 2.2-2.3, lw: ww = 2.8-2.9. Haltere yellow, calypter yellow with pale fringes.

Abdomen brown, thinly pruinose, tergites on sides slightly subpolished. Setae and setulae mostly pale, terminalia also with dark setae. Hind marginal setae on sides of tergites 2–3 slightly longer than their segments, but shorter on the following segments, discal setulae shorter than marginals. Dorsum of tergites short setose. Terminalia as in Fig. 2. Phallus rather thick; hypandrium with 5–6 setulae on each side; ejaculatory apodeme very small; ventral epandrial sclerite sinuate in dorsoventral plane. Length of body 2.9 mm (without genitalia), wing 3.0 mm.

Female. Unknown.

Type material. Holotype (male): Turkey, Antalya prov., Altinyaka, 25 km N Kumluca (coordinates 30.4 E, 36.5 N, approx.), 650–1000 m a.s.l., 28.IV.2000, leg. B. Merz et H. Senay, deposited in Muséum d'Histoire Naturelle in Geneva.

Distribution. Turkey.

Date of occurrence. April.

**Etymology.** The species is named in honour of the Czech imaginary inventor, Jára da Cimrman.

Differential diagnosis. Rhamphomyia (Lundstroemiella) cimrmani sp. n. is closely related to R. longefilata and R. granadensis, sharing with them the following characters: acrostichals and dorsocentrals long and black, and mesoscutum grey pruinose (all other Palaearctic species of Lundstroemiella have either mesoscutum polished or acrostichals and dorsocentrals pale and short). However, the frons of the new species has only a single pair of long setae in ventral position (whereas it is uniformly setose in the two other species), 4 scutellars present (at least 6 in the two other species) and axillary angle obtuse (almost right angled in the two other species). Moreover, the face in R. cimrmani sp. n. is very narrow and the basal tarsomere of the hind leg is swollen (as in R. longefilata), but the face is

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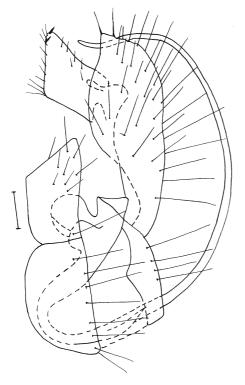


Fig. 3. Rhamphomyia speighti sp. n., male terminalia (macerated), lateral view. Scale 0.1 mm.

pruinose (as in  $R.\ granadensis$ ). The presence of two notopleurals is also peculiar because all other Palaearctic Lundstroemiella species have only a single long notopleural seta.

# Rhamphomyia (Lundstroemiella) speighti sp. n. (Fig. 3)

Description. Male. Eyes dichoptic, facets subequal in size or the uppermost ones slightly smaller. From brownish-black, 0.15 mm long and 0.10 mm broad at narrowest point (below), shining (only the lowermost area just above base of antennae pruinose), with 3-4 short setulae evenly spaced on sides. Ocellar setae black, very short (0.06 mm), no additional setulae. Face brownish-black, pruinose, parallel-sided, 0.04 mm broad and 0.28 mm long, bare. Occiput brownish-black, entirely pruinose, with short black setulae in upper part and several pale setulae below neck (some of them quite long), postocular row almost complete but irregular. Antennae brown, ratio of antennal segments = 10:8:45:9, both basal antennal segments with short setulae (the longest about 0.06 mm long). Labrum brownish-yellow, polished, 1.5 times as long as head is high. Palpus yellowish-brown, with several short setu-

Thorax brown, entirely brownish-grey pruinose, with only tips of postpronotal calli polished. Chaeto-taxy: about 5 pale and very short setulae on proepisternum; both prosternum and proepisternal depression

bare; about 10 (?) pale, narrowly biserial acrostichals, fine and short (0.04 mm long in middle of the rows); about 10 (?) uniserial pale dorsocentrals (0.06 mm long), ending in a single prescutellar seta; intrahumeral absent; 1 fine and short posthumeral; postpronotum with a few short pale setulae; 1 pale notopleural (a few pale setulae in front and hind parts of notopleura); 1 fine supraalar; prealar setulae probably absent; 1 pale postalar; 2 long and 2 much shorter pale scutellars; laterotergite (metapleura) with pale setae.

Coxae yellow, pruinose, covered with pale setae. Fore and mid femora and tibiae and base of hind femur yellow, rest of the legs brownish to brown (yellow and brown colours merging without sharp boundaries). Legs subpolished, covered with both brown and pale setae. A short seta present in the comb at tip of hind tibia. All femora and tibiae short setose, without prominent setae except preapicals, even hind tibia (which is slightly swollen apically) with scarcely differentiated posterodorsal setae near apex. Basal tarsomere of fore and mid legs thin and short setose, T1:Mt1 = 1.8,Mt1: Mt1 = 7.1, T2 : Mt2 = 2.0, Mt2 : Mt2 = 10.0-12.0,basal tarsomere of hind leg slightly swollen (broader than the following tarsomeres but narrower than tip of tibia), short setose, T3: Mt3 = 2.1-2.2, Mt3: Mt3 =5.3-5.6.

Wing clear, stigma slightly darker than membrane, veins brownish-yellow, anal vein  $(A_1)$  absent in apical part. Costal seta short or absent, axillary angle very obtuse  $(140^\circ)$ . M2/D = 1.5-1.6, M3/Db = 2.2, lw: ww = 3.2. Haltere yellow, calypter yellow with pale fringes.

Abdomen brown, shining, 1st and 8th segments pruinose, dorsal genital lamella also pruinose. Setae and setulae mostly pale, 8<sup>th</sup> tergite and terminalia also with dark setae. Hind marginal setae on sides of tergite 2 nearly as long as the segment, on tergites 3-4 they are about half as long as their segments, on the following segments they are shorter than their segments, discal setulae slightly shorter than marginals. Dorsum of tergites shorter setose. Terminalia as in Fig. 3. Dorsal lamella higher than long, with 5-6 spines on inner margin apically (these spines are mostly not visible in lateral view); ventral epandrial sclerite long and narrow; phallus long and thin, subbasally slightly broadened; hypandrium with 4 subequally long setae on each side. Length of body 3.5–4.0 mm (without genitalia), wing 3.3-3.6 mm.

### Female. Unknown.

Type material. Holotype (male): France: Var, Cavaliers, Gorges du Verdon (coordinates 6.2 E, 43.45 N, approxim.), 17.V.–13.VI.2003, MT [= Malaise trap], leg. E. Castella et M. Speight, deposited in Muséum d'Histoire Naturelle in Geneva. Paratype: 1 male, same data as the holotype, deposited in the collection of the Czech University of Agriculture.

**Distribution.** France.

#### Dates of occurrence. May-June.

**Etymology.** The species is named in honour of the collector, M. Speight.

Differential diagnosis. Rhamphomyia (Lundstroemiella) speighti sp. n. is closely allied to R. australis in having both mesoscutum and occiput pruinose, frons polished, and male hypandrium with long setae. The main differences between these two species lie in the shape of the male terminalia (compare Fig. 3 with those of R. australis in Barták, 1985) and in the 1st and 8th abdominal tergites which are pruinose in the new species but shining in R. australis.

### Key to Palaearctic species of Rhamphomyia subgenus Lundstroemiella

1 Mesoscutum pruinose
- Frons pruinose
<i>R. granadensis</i> Chvála, 1981
– Frons with only a single long seta in lowermost part.
Male: face about 7 times as long as broad, basal tar-
somere of hind leg swollen. Female unknown
5 (2) Occiput shining in upper portion. Discal medial
cell elongated, almost as long as vein M2
- Occiput pruinose throughout. Discal medial cell
much shorter than vein M2
6 (5) Axillary angle slightly obtuse (about 90–110°).
Basal tarsomere of hind leg swollen, about twice
as thick as the second tarsomere. Postpronotal calli
pruinose. Male hypandrium with long setae. Female
frons pruinose R. tumiditarsis Oldenberg, 1917
– Axillary angle very obtuse (130–140°). Basal tar-
somere of hind leg not so strongly swollen, in doubt-
ful cases postpronotal calli shining or male hypan-
drium with minute setulae only. Female from shining
at least in upper half
7 (6) Postpronotal calli shining, at least at apex. Male
hypandrium covered with long setae8  - Postpronotal calli entirely pruinose. Male hypan-
drium covered with minute, inconspicuous setulae
only 9
omy9

8 (6) 1<sup>st</sup> and 8<sup>th</sup> tergites shining. Male dorsal genital lamella twice as long as high, exceeding lateral lamella, ending in longer setulae but not spines . . . .  $-1^{st}$  and  $8^{th}$  tergites pruinose. Male dorsal genital lamella higher than long, shorter than lateral lamella, ending in several spines. R. speighti sp. n. 9 (7) Frons entirely shining. Acrostichals and dorsocentrals inconspicuous, much shorter than the distance between their rows. Occiput almost bare above. Abdomen with very short, inconspicuous setulae ...... R. rupestris Oldenberg, 1927 - Frons pruinose in lower third. Acrosticals and dorsocentrals conspicuous, about as long as the distance between their rows. Upper occipital setae about as long as the distance between upper ocelli. Abdomen with conspicuous pubescence, discal setulae about 1/3 as long as their segments..... 10 (1) Occiput shining at least in upper third. If in doubt (R. magellensis), then occiput shining only in uppermost corner just behind ocelli, and phallus short, rather thick and hidden......11 Occiput entirely pruinose. Phallus always long, ex-11 (10) Scutellum at least partly shining. In doubtful Scutellum entirely pruinose. Occiput shining in up-12 (11) Pleura with a shining spot occupying hind part of an episternum and front part of an epimeron. Mid tibia with a long subbasal posterodorsal seta. All coxae yellow. Male mid femur with spine-like ante-- Pleura uniformly pruinose. Other characters not as above......14 13 (11) Male dorsal lamella with a downcurved tip and without a long projection dorsally (Barták, 1985, Male dorsal lamella with a narrowed straight tip and a long projection dorsally (Barták, 1999, Fig. 1). Female indistinguishable ..... 14 (12) Postpronotum and sides of mesoscutum broadly pruinose. Apical pair of scutellar setae wide apart, inserted closer to margin of scutellum than to each other. (Additional character: acrostichals uniserial)  $\dots R.$  magellensis Bezzi in Frey, 1922 - Postpronotum and sides of mesoscutum shining. Apical pair of scutellar setae inserted closer together 15 15 (14) Coxae black. (Additional characters: from broad; male phallus long, hypandrium covered with minute setulae only) ..... R. aterrima Frey, 1922 16 (15) Mid tibia with a long black subbasal posterodorsal seta. Male dorsal genital lamella antler-like in lateral view.....R. cervi sp. n.

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- Phallus gently bowed subbasally. Female antennal style as long as usual and postpronotum shining .18
- 1<sup>st</sup> abdominal tergite pruinose. Mesoscutum without a pruinose stripe. Posthumeral seta inserted in the shining part of mesoscutum. Male lateral genital lamella slightly broadened apically (BARTÁK, 1999, Fig. 2). Female abdominal segments 7–8 pruinose...

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