Vestnik Zoologii, **53**(3): 227–236, 2019
DOI: 10.2478/vzoo-2019-0022

UDC 595.77(477)

THE FIRST RECORDS OF *CORYNOPTERA* SPECIES (DIPTERA, SCIARIDAE) FROM UKRAINE

A. I. Babytskiy[1,2], O. A. Zuieva[3], O. O. Bezsmertna[4,5], I. D. Dudiak[6]

[1]*Schmalhausen Institute of Zoology, NAS of Ukraine,*
vul. B. Khmelnytskogo, 15, Kyiv, 01030 Ukraine
[2]*National University of Life and Environmental Sciences of Ukraine,*
vul. Heroiv Oborony, 13, 03041, Kyiv, Ukraine
[3]*BioLabTech, LTD,*
vul. Bohomoltsia, 4, office 228, Kyiv, 01024 Ukraine
[4]*Taras Shevchenko National University of Kyiv,*
vul. Volodymyrska, 60, Kyiv, 01033 Ukraine
[5]*Kivertsi National Natural Park "Tsumanska Puscha",*
vul. Nezalezhnosti, 18, Kivertsi town, Volyn Region, 45200 Ukraine
[6]*Mykolayiv National Agrarian University,*
vul. Georgiya Gongadze, 9, Mykolayiv, 54020 Ukraine
[1]*E-mail: andriybabytskiy@gmail.com*

The First Records of *Corynoptera* species (Diptera, Sciaridae) from Ukraine. Babytskiy, A. I., Zuieva, O. A., Bezsmertna, O. O., Dudiak, I. D. — Five species of black fungus gnats of the genus *Corynoptera* Winnertz, 1867, *C. perpusilla* Winnertz, 1867, *C. praeparvula* Mohrig & Krivosheina, 1983, *C. subparvula* Tuomikoski, 1960, *C. concinna* (Winnertz, 1867), and *C. hypopygialis* (Lengersdorf, 1926) are recorded from Ukraine for the first time. Also *C. concinna* is firstly recorded from Hungary. Distributions of these species are summarized and diagnoses of the species are provided.
K e y w o r d s : Mycetophiloidea, black fungus gnats, species distribution, morphology.

Introduction

Corynoptera Winnertz, 1867 (Diptera, Sciaridae) species are medium-sized to small black fungus gnats widespread in the world, excluding only Arctic and Antarctica. These sciarids most often occupy shaded forests and wet meadows, where their larvae feed on plant remains permeated by fungal hyphae. *Corynoptera* species play important role as detritophagous and facilitate decaying of rotten woods and leaves litter in the biotopes. Development of some *Corynoptera* is associated with fungal fruit bodies, but their consortium relationships need further clarification and are to be examined.

According to Menzel & Mohrig (2000) *Corynoptera* s. l. includes 16 species groups (*subtilis*, *membranigera*, *tridentata*, *dumosa*, *crassistylata*, *acantharia*, *blanda*, *spinifera*, *acerrima*, *parvula*, *concinna*, *forcipata*, *clausa*, *boletiphaga*, *flavicauda*, *nigrohalteralis*-groups) and 155 species in the Palearctic Region.

According to Hippa & Vilkamaa (2010), *Corynoptera* s. str. includes 123 species in the Holarctics. In *Corynoptera* s. str., they consider the species only from four of the Menzel and Mohrig's groups: *subtilis*, *membranigera*, *tridentata* and *flavicauda*-groups, whereas *nigrohalteralis* group was transferred to the genus *Dichopygina* Vilkamaa, Hippa & Komarova, 2004, *crassistylata*-group — to *Peyerimhoffia* Kieffer, 1903, *clausa* group — to *Claustropyga* Hippa, Vilkamaa & Mohrig, 2003; *spinifera* and *parvula* groups — to *Camptochaeta* Hippa & Vilkamaa, 1994. The species groups *boletiphaga*, *acantharia*, *acerrima*, *blanda*, *concinna*, *dumosa*, and *forcipata*-groups were excluded from *Corynoptera* s. str. without generic specification.

In this paper, we follow Menzel & Mohrig's (2000) concept of *Corynoptera*.

The *Corynoptera* diversity of Ukraine remains poorly studied. By far, all the knowledge of Ukrainian fauna was based on material collected by Wierzejski in Ternopil Podolia (Winnertz, 1868), Bukowski in Crimea (Bukowski & Lengersdorf, 1936), and Mamaev in Transcarpathian Region (Krivosheina et al., 1986); see also records by Gerbachevskaja, 1969; Gerbachevskaja-Pavluchenko, 1986; Hippa & Vilkamaa, 1994; Menzel & Mohrig, 2000; Komarova, 2003; Hippa et al., 2010; Komarov, 2011; Mohrig et al., 2012.

Altogether, 16 *Corynoptera* species have been recorded from Ukraine by far: 8 from Crimea: *C. bistrispina* (Bukowski & Lengersdorf, 1936), *C. dentata* (Bukowski & Lengersdorf, 1936), *C. dentiforceps* (Bukowski & Lengersdorf, 1936), *C. flavicauda* (Zetterstedt, 1855), *C. forcipata* (Winnertz, 1867), *C. luteofusca* (Bukowski & Lengersdorf, 1936), *C. minutula* (Bukowski & Lengersdorf, 1936), *C. subtilis* (Lengersdorf, 1929); 6 from Transcarpathia: *C. bulgarica* (Mohrig & Mamaev, 1992), *C. polana* Rudzinski, 2009, *C. saetistyla* Mohrig & Krivosheina, 1985, *C. tetrachaeta* Tuomikoski, 1960 *C. trepida* (Winnertz, 1867), *C. tridentata* Hondru, 1968; 1 from "Podolia" (obviously south of Ternopil Region): *C. serena* (Winnertz, 1868) and 1 without specified location: *C. inundata* Fritz, 1982.

Since 2013, while studying faunistics, ecology and taxonomy of the black fungus gnats of Ukraine, we have found 33 sciarid species in Ukraine previously unknown here, among them 5 species of the genus *Corynoptera*.

Material and methods

Material was collected during the expeditions and excursions from 2013 to 2018. Adult males were collected by the Malaise trap, sweeping with entomological net and with aspirator directly from a substrate. Collected gnats were kept in 5 ml vials with 70 % ethanol. In the laboratory, they were dehydrated in absolute ethanol and mounted on slides in Euparal.

The morphology was studied with MBS-9 and Biolam D11 microscopes equipped with Nikon D90 camera; images processed using NKRemote Ver. 2.2.1, AxioVision Rel. 4.7 and Photoshop CC 2015 programs; pictures stacked by Helicon Focus 6.7.1 open source software.

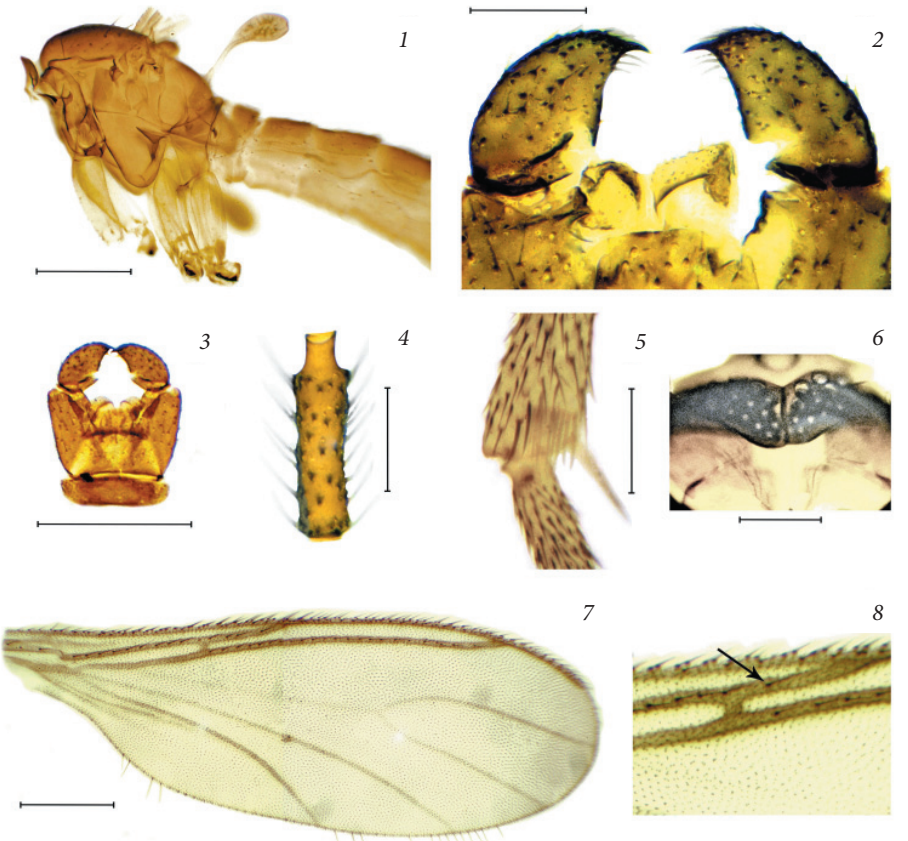
All of the studied material is kept in Andriy Babytskiy's Private Collection, Kyiv (PABK) and mostly deposited to the public on the Ukrainian Biodiversity Information Network (Babytskiy, 2018). Individual catalogue numbers of the vouchers are given (e. g., UkrBIN-795774). The genera arrangement and species names follows Frank Menzel and Werner Mohrig's Palearctic Sciaridae revision (Menzel & Mohrig, 2000). Diagnoses of the species are generally based on the keys and protologs by Hippa et al. (2010), Menzel & Mohrig (1993; 2000), Hippa & Vilkamaa (1994), Mohrig (1993); Mohrig et al. (1983), Tuomikoski (1960), Frey (1948); Lengersdorf (1926; 1928–1930) and Winnertz (1867).

subtilis group

Corynoptera perpusilla Winnertz, 1867 (figs *1*–*8*)

Material examined. Ukraine, Ivano-Frankivsk Region, between Nezvysko and Luka villages, left bank of Dniester River: 48.78383 N 025.25209 E, altitude ca. 170 m, meadow near forest, sweeping, 10.08.2016, 1 ♂, leg. A. Babytskiy (No 91, UkrBIN-795807); Ukraine, Ternopil Region, Mykulyntsi settlement: 49.40126 N 25.60140 E, altitude ca. 295 m, vegetable garden in the yard near the house, Malaise trap, 19–21.06.2016, 2 ♂, leg. A. Babytskiy (No 117, UkrBIN-795829; No 120, UkrBIN-795830); Ukraine, Ternopil Region, outskirts of Pachorna village, left bank of Dniester River, NNP "Dnistrovskyi kanion": 48.66650 N 025.67790 E, altitude ca. 140 m, coastal willow overgrowth, sweeping, 31.07.2017, 1 ♂, leg. A. Babytskiy (No 253, UkrBIN-795946).

Distribution: Austria, Azores Is., Balearic Is., Belgium, Britain Is., Bulgaria, Canary Is., Czech Republic, Danish mainland, French mainland, Germany, Greek mainland, Ireland, Italian mainland, Madeira Is., Poland, Romania, Russia (Moscow, Altay, Primorsk regions and Adygeya Republic), Slovenia, Spanish mainland, Sweden, Switzerland, The Netherlands (Komarova, 2003; Hippa et al., 2010; Komarov, 2011; Menzel & Heller, 2013), Ukraine (**first record**).



Figs *1–8*. *Corynoptera perpusilla*, males: *1* — thorax; *2* — ventral view of gonostyles; *3* — general view of hypopygium ventral; *4* — the fourth flagellomere; *5* — front tibial (t_1) organ; *6* — eye bridge; *7* — wing; *8* — r_1 vein of specimen No 253 (black arrow shows only 1 proximal macrotrichia on r_1). Scale bars: *1, 3, 7* — 0.20 mm; *2, 4, 5, 6* — 0.05 mm.

Diagnosis. Male imagoes reach 1.5–2.0 mm in length. Eye bridge consists of 3 rows of ommatidia (facets) (fig. *6*). Maxillary palpus is long and slender, white-yellow colored, consists of 3 palpomeres. Basal palpomere is slender, as long as the third one, with unbordered dorsal patch of sensilla and one long setae; palpomere 2 is the shortest, makes ½ of basal one. Flagellomeres are dark and long setosed, the length/width of 4th flagelomere is 3.5 (fig. *4*). Thorax with sparse light brown setosity, honey to dark brown colored (fig. *1*). Postpronotum is bare. Mesonotum with lateral, central and scutellar light brown setae. Abdomen is concolorous with thorax. Legs are long and slender, concolorous with hypopygium. Front tibial organ t_1 is bordered by barely visible arch-shaped crest with fine vestiture, forming a comb-like row (fig. *5*). Spurs of t_2 and t_3 are long, with the same length. Tarsal claws without teeth. Wings are slightly fumose, posterior veins and membrane without macrotrichia, 1.2–1.4 mm in length (fig. *7*). stM and the base of M-fork are barely visible; stM is longer than M-fork; x = y, both bare; stCu is short, makes ½ x (fig. *7*); r_1 is short, makes ½ r, falls into C far before the basis of M-fork; r_5 falls into C in front of about the M-fork half; c/w = 0.6–0.7 (fig. *7*). Helter is fuscous, with 1 or 2 rows of setae. Hypopygium is light yellow-brown, gonocoxa without basal differentiation (fig. *3*). Gonostylus is slender, its length/width = 2.5, with dark apical tooth and 3 light hyaline megasetae which do not reach the end of the tooth (fig. *2*) (Menzel & Mohrig, 2000).

Corynoptera perpusilla belongs to the large *C. subtilis*-Group contains 31 species which differ from the other *Corynoptera* by presence of distinct long and strong or short and rudimentary apical tooth on gonostylus (Menzel & Mohrig, 2000). *Co-*

rynoptera perpusilla is greatly similar to *C. dubitata* Tuomikoski, 1960, *C. alneti* Hippa, Vilkamaa & Heller, 2010, *C. ninae* Antonova, 1977, *C. praevia* (Mohrig & Menzel, 1992), *C. dilligenta* Rudzinski, 2008, *C. perornata* Mohrig & Röschmann, 1993 (F. Menzel and W. Mohrig (2000) consider this species in *Cratyna* Winnertz, 1867 genus), *C. montana* (Winnertz, 1869) and *C. sphenoptera* Tuomikoski, 1960 (Hippa et al., 2010). *Corynoptera perpusilla* is distinguishes from: *C. dubitata* by more gradual narrowing of gonostylus while gonostylus of *C. dubitata* are looking like obliquely cut apically; *C. alneti* by a narrower and more perpendicular apical tooth of the gonostylus; *C. ninae* by a less curved apical part of the gonostylus and shorter, stouter and less parallel gonostylar megasetae; *C. praevia* by less curved apical part of the gonostylus and three-segmented maxillary palpus instead of two-segmented in *C. praevia*; *C. diligenta* and *C. perornata* by a shorter gonostylus with a relatively shorter apical tooth, also from *C. diligenta* it differs by normal, not unusually elongated necks on the antennal flagellomeres; *C. montana* by smaller size (*C. montana* wing length is 1.8–2.3 mm) and less setose gonostylus and gonocoxa; *C. sphenoptera* by three megasetae instead 2 in *C. sphenoptera* and by absence of finger-like process dorsally on the tegmen (Hippa et al., 2010).

Note. In some specimens of *C. perpusilla* from Ukraine (No 120 and 253) on r_1 1 proximal macrotrichia is present (fig. *8*), other specimens (No 91 and 117) shown r_1 with up to 5 macrotrichia along all vein (fig. *7*). Biometric indexes of studied specimens: wing length — 1.20–1.31 mm, wing width — 0.44–0.51 mm; width/length of wing = 0.35–0.40; stM/M-fork = 1.01–1.15; r_1/r = 0.47–0.73; x/y = 0.74–1.17; stCu/x = 0.20–0.70; c/w = 0.54–0.66. Length of spur/width of tibia: leg 1 = 1.13–1.52, leg 2 = 1.35–1.69; leg 3 = 1.10–1.48. Length of metatarsus/length of tibia: leg 1 = 0.48–0.51, leg 2 = 0.43–0.46, leg 3 = 0.43–0.48. Length of tibia 3/length of thorax 1.25–1.43.

parvula group

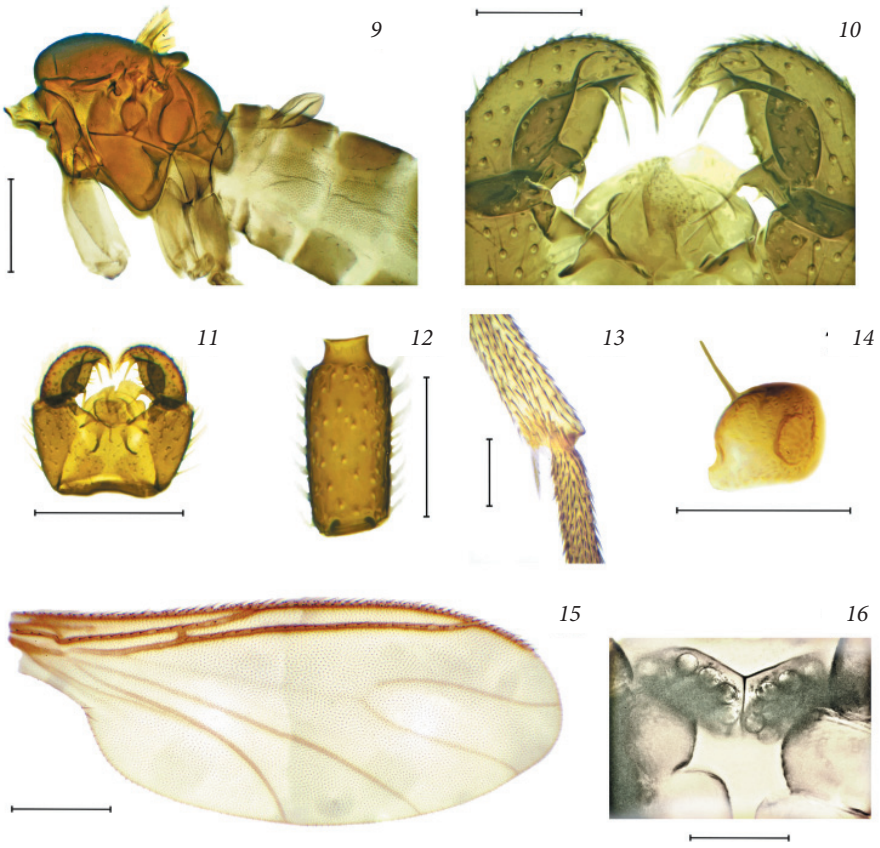
Corynoptera praeparvula Mohrig & Krivosheina, 1983 (figs *9–16*)

Material examined. Ukraine, Volyn Region, outskirts of Solovychi village: 51.06260 N 024.48169 E, altitude ca. 180 m, dry meadow with pine planting, with exhauster, 8.08.2015, 1 ♂, leg. A. Babytskiy (No 146).

Distribution: Andorra, Britain Is., Bulgaria, Canary Is., Czech Republic, Germany, Greek mainland, Italian mainland, Slovakia, Spanish mainland (Menzel & Heller, 2013), Turkmenistan (Hippa & Vilkamaa, 1994; Roskov et al., 2017), Ukraine (**first record**).

Diagnosis. Male imagoes reach 1.6 mm in length. Eye bridge consists of 3–4 rows of ommatidia (fig. *16)*. Maxillary palpus consists of 3 segments (palpomeres); basal palpomere with 1 setae and sensory pit (fig. *15*). Length/width of 4th flagellomere is 1.40–1.80 (fig. *12*). Thorax is dark, mesonotum setosed (fig. *9*). Gonocoxa and legs are bright. Abdomen is short and light haired. Tibial organ t_1 is unbordered, with unarranged patch of setae (fig. *13*). Length of spur/width of tibia: leg 1 = 1.10–1.70, leg 2 = 1.70–1.90; leg 3 = 1.55–1.70. Length of metatarsus/length of tibia: leg 1 = 0.50, leg 2 = 0.45–0.50; leg 3 = 0.45. Length of tibia 3/length of thorax 1.10–1.20. Wing length is 1.1–1.5 mm; width/length of wing 0.40–0.45; stM is barely visible; c/w = 0.60–0.65; r_1/r = 0.60–0.70; y without or with 1 macrotrichia (figs *15*). Helter is dark. Hypopygium is pretty short and light haired (fig. *11*). Gonostylus is conspicuous, with 2 long and 1 shorter megasetae at the apex, also 2 long megasetae with high sockets are present on the inner part of gonostylus ventral side (fig. 10). Gonostylus dorsal side is wing-like extended; inner part of gonostylus is concave (Mohrig et al., 1983; Hippa & Vilkamaa, 1994).

Corynoptera praeparvula belongs to the large *C. parvula*-Group contains 30 species which differ from the other *Corynoptera* by the presence of one or more spine curving inwards and downwards on the middle and lower half of the gonostylus inner side (Men-



Figs *9–16*. *Corynoptera praeparvula*, male: *9* — thorax; *10* — ventral view of gonostyles; *11* — general view of hypopygium ventral; *12* — the fourth flagellomere; *13* — front tibial (t_1) organ; *14* — basal palpomere of maxillary palpus; *15* — wing; *16* — eye bridge. Scale bars: *9, 11, 15* — 0.20 mm; *10, 12, 13, 14, 16* — 0.05 mm.

zel & Mohrig, 2000). *Corynoptera praeparvula* is similar to *C. ignorata* Mohrig & Froese, 1992, *C. disporata* Mohrig, 1994 and *C. cruciata* (Hippa & Vilkamaa, 1994). *Corynoptera praeparvula* is distinguishes from: *C. ignorata* by absence of additional mesial megaseta on the gonostylus, arising from the large basal body of the more apical and ventral megaseta; *C. disporata* by all apical megaseta situated more ventrally than in *C. disporata* one apical megaseta located more dorsally; *C. cruciata* by having more parallel megaseta, unlike *C. cruciata* megaseta are strongly convergent, crossing or near so, also gonostylus of *C. cruciata* is more massive and laterally more strongly arcuate (Hippa & Vilkamaa, 1994).

N o t e . Vein y bare, r_1 with 2–3 macrotrichia (fig. *15*). Biometric indexes of studied specimen: wing length — 1.16–1.17 mm, wing width — 0.47–0.48 mm; width/length of wing 0.40–0.41; stM/M-fork = 1.22; r_1/r = 0.55–0.59; x/y = 0.88–0.91; stCu/x = 0.17–0.33; c/w = 0.53. Length of spur/width of tibia: leg 1 = 1.02–1.05, leg 2 = 1.42; leg 3 = 1.27. Length of metatarsus/length of tibia: leg 1 = 0.44, leg 2 = 0.42, leg 3 = 0.43. Length of tibia 3/length of thorax 1.11.

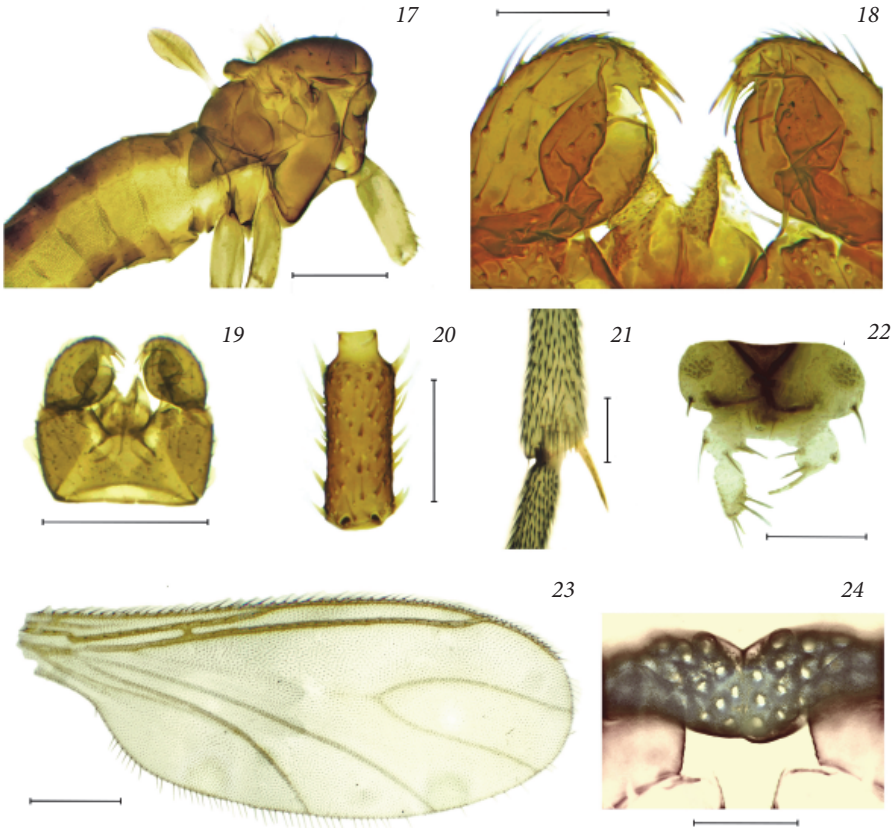
Corynoptera subparvula Tuomikoski, 1960 (figs *17–24*)

M a t e r i a l e x a m i n e d . Ukraine, Volyn Region, outskirts of Solovychi village: 51.06260 N 024.48169 E, altitude ca. 180 m, dry meadow with pine planting, with exhauster, 8.08.2015, 1 ♂, leg. A. Babytskiy (No 147, UkrBIN-795848); Ukraine, Ternopil Region, outskirts of Pachorna village, left bank of Dniester River, NNP "Dnistrovskyi kanion": 48.66650 N 025.67790 E, altitude ca. 140 m, coastal willow overgrowth, sweeping, 31.07.2017, 1 ♂, leg. A. Babytskiy (No 254, UkrBIN-795947); Ukraine, Odesa Region, outskirts of Lebedivka village, the bank of Burnas estuary, NNP "Tuzlovski lymany": 45.8411667 N, 030.1398333 E, altitude ca 10 m, honeylocust-robinia forest with oak admixture, above fruit body of *Agaricus* sp., sweeping, 20.07.2017, 1 ♂, leg. A. Babytskiy (No 289).

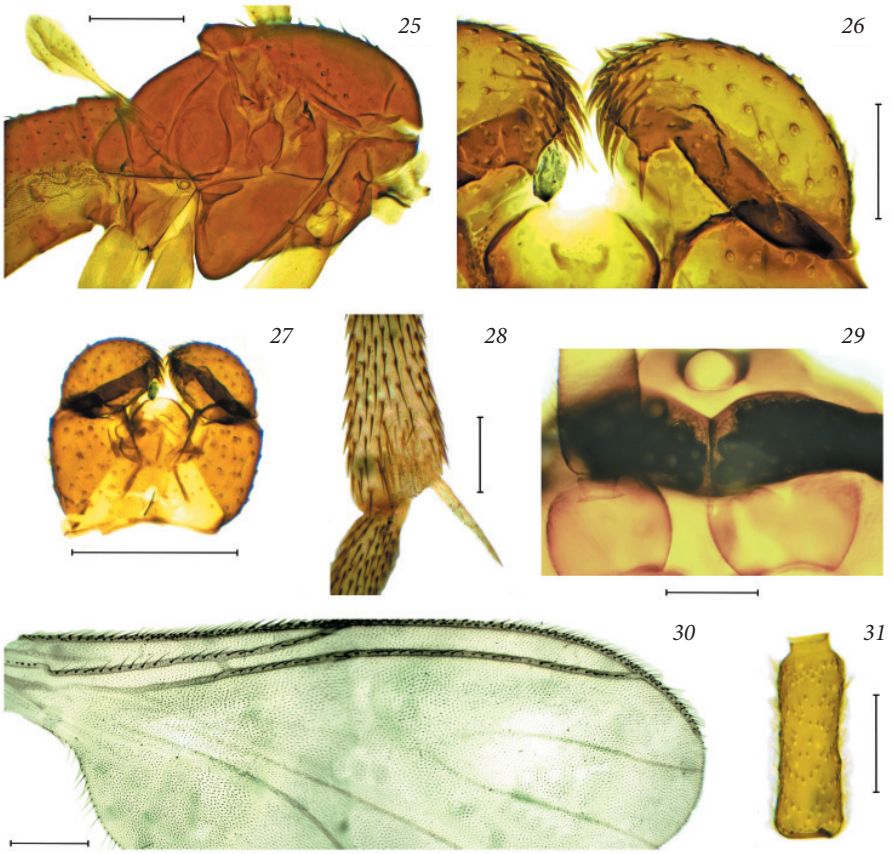
Distribution: Austria, Britain Is., Bulgaria, Canada (Ontario), Canary Is., Czech Republic, Danish mainland, Finland, Germany, Greek mainland, Italian mainland, Kazakhstan, Romania, Russia (Altay region, Karelia and Tuva), Spanish mainland, Sweden, The Netherlands (Hippa & Vilkamaa, 1994; Komarova, 2003; Sataeva, 2006; Menzel & Heller, 2013), Turkmenistan (Gerbachevskaja-Pavluchenko, 1986), Ukraine (**first record**).

Diagnosis. Male imagoes reach 1.40 mm in length. Eye bridge consists of 2–3 rows of ommatidia (fig. *24*). Maxillary palpus is bright yellowish brown, short, consists of 3 segments; basal palpomere with 1 setae and bordered sensory pit (fig. *22*). Length/width of 4th flagellomere is 1.50–2.50 (fig. *20*). Thorax is brownish, body bristles are bright yellowish (fig. *17*). Legs are bright. Tibial organ t_1 is unbordered, with unarranged patch of setae (fig. *21*). Length of spur/width of tibia: leg 1 = 1.40–1.50, leg 2 = 1.70–1.80; leg 3 = 1.70–1.90. Length of metatarsus/length of tibia: leg 1 = 0.45–0.50, leg 2 = 0.40–0.45; leg 3 = 0.45–0.50. Length of tibia 3/length of thorax 1.15–1.25. Wing length is 1.1–1.3 mm; width/length of wing 0.40–0.45; c/w = 0.60–0.75; r_1/r = 0.60–0.75; y bare (fig. *23*). Helter with a light stalk (fig. *17*). Gonostylus with 5 megasetae — 3 apical, 1 mesial and 1 basal (figs *18–19*). Two upper apical megaesetae located close each other, directed horizontal; lower apical megaeseta with socket, more basal than two upper. Basal megaseta arising from a very large, lobe-like basal body. Inner part of gonostylus is concave. Dorsal side of gonostylus is wing-like extended (Tuomikoski, 1960; Gerbachevskaja, 1969; Hippa & Vilkamaa, 1994).

Corynoptera subparvula resembles *C. obscuripila* Tuomikoski, 1960, *C. parvula* (Winnertz, 1867), *C. cruciata* (Hippa & Vilkamaa, 1994) and *C. unidentata* (Hippa & Vilkamaa, 1994). From the first three it differs by lacking one or two other (except apical) closely as-



Figs *17–24. Corynoptera subparvula*, male: *17* — thorax; *18* — ventral view of gonostyles; *19* — general view of hypopygium ventral; *20* — the fourth flagellomere; *21* — front tibial (t_1) organ; *22* — maxillary palpus; *23* — wing; *24* — eye bridge. Scale bars: *17, 19, 23* — 0.20 mm; *18, 20, 21, 22, 24* — 0.05 mm.



Figs *25–31*. *Corynoptera concinna*, male: *25* — thorax; *26* — ventral view of gonostyles; *27* — general view of hypopygium ventral; *28* — front tibial (t_1) organ; *29* — eye bridge; *30* — wing (scale bar — 0.20 mm); *31* — the fourth flagellomere. Scale bars: *25, 27, 30* — 0.20 mm; *26, 28, 29, 31* — 0.05 mm.

sociated megasetae, and from all by its having a mesial megaseta located at the middle of the ventral mesial margin of the gonostylus (Hippa & Vilkamaa, 1994).

Note. Vein y bare, r_1 with 4–5 macrotrichia (fig. *25*). Biometric indexes of studied specimens: wing length — 1.18–1.33 mm, wing width — 0.49–0.50 mm; width/length of wing 0.37–0.42; stM/M-fork = 1.05–1.33; r_1/r = 0.55–0.72; x/y = 0.60–1.08; stCu/x = 0.21–0.33 (sometimes stCu is indistinct); c/w = 0.61–0.64. Length of spur/width of tibia: leg 1 = 1.19–1.37, leg 2 = 1.43–1.72; leg 3 = 1.46–1.60. Length of metatarsus/length of tibia: leg 1 = 0.46–0.48, leg 2 = 0.41–0.43, leg 3 = 0.44–0.46. Length of tibia 3/length of thorax 1.16–1.23.

concinna group

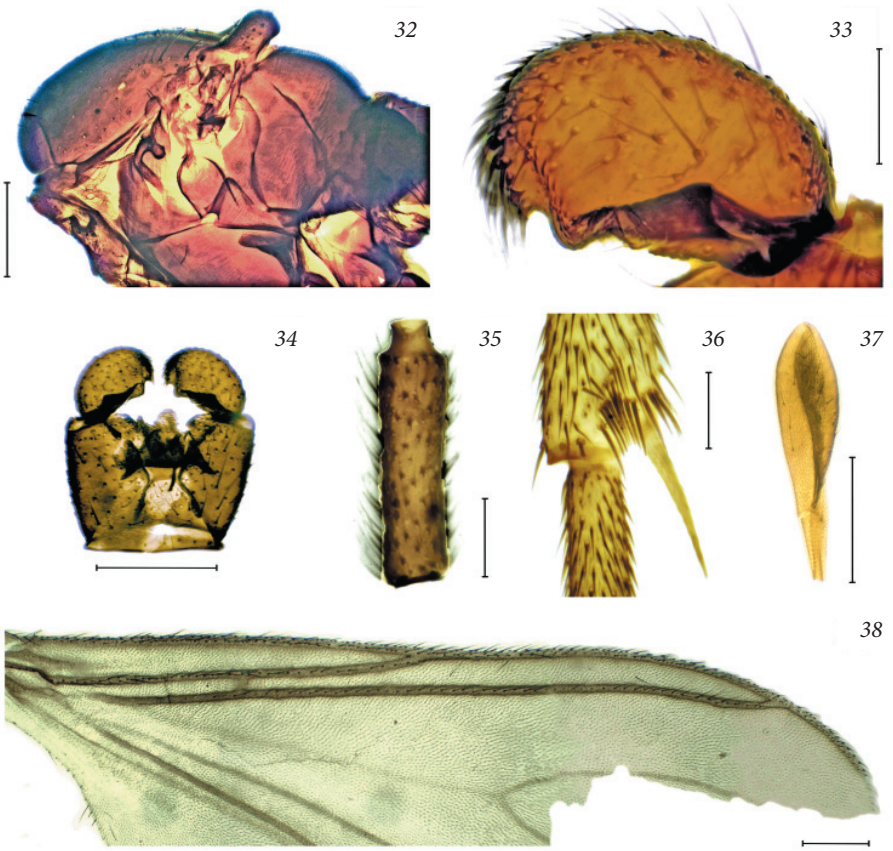
Corynoptera concinna (Winnertz, 1867) (figs *25–31*)

Material examined. Ukraine, Kyiv City, NPP "Holosiivskyi": 50.383772 N 30.497619 E, altitude ca. 260 m, in the house, on the window glass, by hands, 12.03.2015, 3 ♂, leg. A. Babytskiy (No 41–42, 133, UkrBIN-795839); Ukraine, Odesa Region, outskirts of Lebedivka village, the bank of Burnas estuary, NNP "Tuzlovski lymany": 45.8411667 N, 030.1398333 E, altitude ca 10 m, honeylocust-robinia forest with oak admixture, above fruit body of *Agaricus* sp., sweeping, 20.07.2017, 1 ♂, leg. A. Babytskiy (No 290); Hungary, Central Hungary Region, Budapest City: 47.4966458 N 019.0611258 E, altitude ca. 120 m, in the house, on the windowsill, found dead, 14–15.12.2018, 1 ♂, leg. A. Babytskiy (No 837).

Distribution: Afghanistan, Belgium, Britain Is., Canary Is., Finland, Germany, Latvia, Poland, Romania, Spanish mainland (Gerbachevskaja-Pavluchenko, 1986; Menzel & Heller, 2013), Hungary and Ukraine (**first records**).

Diagnosis. Male imagoes reach 2.0 mm in length. Eye bridge consists of 3 rows of ommatidia (fig. *29*). Maxillary palpus is short, whitish colored, consists of 3 segments. Basal palpomere with 1 setae and clearly bordered sensory pit. Palpomere 3 is narrow, almost twice as long as palpomere 2. Antenna is slim and honey-colored; flagellomeres with short and dense setosity, setae length is not exceeding the flagelomere width. Length/width of 4th flagelomere is 2.5–3.0 (fig. *31*). Thorax is dark, black-brownish colored (fig. *25*). Mesonotum setosed, scutellum with 2 very strong and dark bristles; postpronotum naked. Abdomen concolorous with thorax and setosed. Legs are yellow, tarsus are brown. Tibial organ t_1 with proximally bordered unarranged patch of bristles (fig. *28*). Tarsal claws without teeth. Wings are slightly browned; $r_1/r = 0.67$; r_1 falls into C well before the base of M-fork; c a little longer then ½ w; y > x, both bare; stM is slightly longer than M-fork (fig. *30*). Helter is whitish (fig. *25*). Gonocoxa are short and strong, yellow colored with short ventral inner side, slightly setosed on the membrane (fig. *27*). Gonostylus short and compact, with dense bristles at the apex and strong subapical megaseta on raised socked below (fig. *26*). Megaseta directed inward and downward, without any neighbor setae. Dorsal side of gonostylus is wing-like extended. Genital plate (tegmen) is slightly margined laterally, apical rounded, with fine teeth and moderately long aedeagus (Winnertz, 1867; Lengersdorf, 1928–1930; Mohrig, 1993; Hippa et al., 2010).

Corynoptera concinna belongs to the cognominal *C. concinna*-Group contains 8 species which differ from the other *Corynoptera* by presence of small, distinctly deep sensory



Figs *32–38*. *Corynoptera hypopygialis*, male: *32* — thorax; *33* — ventral view of gonostyles; *34* — general view of hypopygium ventral; *35* — the fourth flagellomere; *36* — front tibial (t_1) organ; 37 — helter; *38* — wing. Scale bars: *32*, *34, 37*, *38* — 0.20 mm; *33*, *35*, *36* — 0.05 mm.

pit, short and compact gonostyles with apical strong spine on raised socket usually with smaller, shorter spines below, also apex of tegmen in species of this group usually with central finger-like process or with fine central bridge (Menzel & Mohrig, 2000). From related species of the group *C. concinna* differs by megaseta location below apical group of bristles, at the upper third of gonostylus.

Note. Vein y sometimes bare or with 1 to 3 macrotrichia, r_1 with 3–9 macrotrichia. Biometric indexes of studied specimens: wing length — 1.47–1.93 mm, wing width — 0.59–0.78 mm; width/length of wing 0.40–0.41; stM/M-fork = 1.02–1.14; r_1/r = 0.66–0.84; x/y = 0.74–0.90, stCu/x = 0.16–0.31 or stCu is indistinct; c/w = 0.57–0.73. Length of spur/width of tibia: leg 1 = 1.01–1.37, leg 2 = 1.41–1.83; leg 3 = 1.36–1.78. Length of metatarsus/length of tibia: leg 1 = 0.46–0.50, leg 2 = 0.41–0.62, leg 3 = 0.42–0.45. Length of tibia 3/length of thorax 1.10–1.42.

flavicauda group

Corynoptera hypopygialis (Lengersdorf, 1926) (figs *32–38*)

Material examined. Ukraine, Ternopil Region: outskirts of Luchka village, "Zapust" tract: 49.40437 N 025.61119 E, altitude ca. 330 m, hornbeam-oak forest, sweeping, 7.05.2017, 1 ♂, leg. A. Babytskiy (No 170, UkrBIN-795868).

Distribution: Albania, Austria, Britain Is., Bulgaria, Czech Republic, Finland, Germany, Greek mainland, Italian mainland, Kazakhstan, Norwegian mainland, Russia (Altay region), Slovakia, Slovenia, Spanish mainland, Sweden, Switzerland (Sataeva, 2006; Komarov, 2011; Menzel & Heller, 2013), Ukraine (**first record)**.

Diagnosis. Male imagoes reach 1.8–2.2 mm in length. Eye bridge consists of 4 rows of ommatidia. Antennae are dense and long setosed, the bristles are slightly longer than a half of flagellomere width; flagellomere necks are dark. Length/width of 4th flagellomere is 4.0 (fig. *35*). Maxillary palpus is short, bright colored, consists of 3 segments. Basal palpomere is a bit high-backed, with 1 long outer setae and indistinct sensory pit. Sensilla are long and curved. Palpomere 2 is the shortest, makes ¾ of basal one. Palpomere 3 approximately as long as basal one. Thorax and abdomen are strong and dark brown colored (fig. *32*). Postpronotum is bare; mesonotum with strong and dark setosity. Legs and gonocoxa are lighter than thorax, but noticeably dark. Tibial organ t_1 with indistinct row of bristles (fig. *36*). Tarsal claws without teeth. Wings are fumose, posterior veins and membrane without macrotrichia, 2.0–2.3 mm in length; x is a bit shorter then y, bare or with 1–4 macrotrichia; r_1 = r; r_1 falls into C well before the base of M-fork; stM is longer than M-fork; stCu = ½–¼ x; c/w = 0.67 (fig. *38*). Helter is shortened, dark brown colored (fig. *37*). Hypopygium is spherical, unicolorous dark brown and concolorous with the abdomen; gonocoxa with very long black bristles on the inner parts, without basal differentiation (fig. *34*). Gonostulus is bubble-thick, evenly rounded on the outside (fig. *33*). The apex of gonostulus is tight and short setosed, with apical tooth and 4 megasetae (located per two pairs on the noticeable socket). Genital plate (tegmen) is larger in width than in height. Aedeagal teeth are small, with one-pointed apexes. Aedeagus is short, strong sclerotized (Lengersdorf, 1926; Frey, 1948; Menzel & Mohrig, 1993).

Note. Vein y with 2 macrotrichia, r_1 with many macrotrichia (15 on the specimen). Biometric indexes of studied specimen: wing length — 2.56 mm, wing width — 1.02 mm; width/length of wing 0.40; r_1/r = 0.87; x/y = 0.62; stCu/x = 0.66. Length of spur/width of tibia: leg 1 = 1.42. Length of metatarsus/length of tibia: leg 1 = 0.56.

We consider our pleasant obligation to express sincere gratitude to our colleagues and friends, who supported our work, among them, Valery Korneyev (Institute of Zoology of NAS of Ukraine, Kyiv) for his ongoing help, scientific guidance and valuable advice, and Frank Menzel (Senckenberg Deutsches Entomologisches Institut, Müncheberg) for confirmation of identification. Also we are grateful to S. A. Matsiuk for support in processing images and preparation figures. We also thank two anonymous reviewers for their valuable comments.

References

Babytskiy, A. 2018. Sciaridae dataset. *Dataset ID #3861. In: UkrBIN: Ukrainian Biodiversity Information Network [public project & web application]. UkrBIN, Database on Biodiversity Information*. Available from: http://www.ukrbin.com.

Bukowski, W., Lengersdorf, F. 1936. Neue Lycoriiden-Arten aus der Krim. *Konowia*, **15** (1–2), 106–112.

Frey, R. 1948. Entwurf einer neuen Klassifikation der Mückenfamilie Sciaridae (Lycoriidae). II Die nordeu1opäischen Arten. *Notul. Ent*., **27** (2–4), 33–112.

Gerbachevskaja, A. A. 1969. Sciaridae (Lycoriidae) family. *Keys to the insects of the European Territory of the USSR. Vol. V. Diptera, Siphonaptera. Part 1. Nauka, Leningrad*, 320–356 [In Russian].

Gerbachevskaja-Pavluchenko, A. A. 1986. Family Sciaridae. *Catalogue of Palaearctic Diptera*, **4** (4), 11–72.

Hippa, H., Vilkamaa, P. 1994. The genus *Camptochaeta* gen. n. (Diptera, Sciaridae). *Acta Zoologica Fenica*, **194**, 1–85.

Hippa, H., Vilkamaa, P., Heller, K. 2010. Review of Holarctic *Corynoptera* Winnertz, 1867, s. str. (Diptera, Sciaridae). *Zootaxa*, **2695**, 1–197.

Komarov, S. S. 2011. *Sciarids (Diptera, Sciaridae) of Horniy Altai*. PhD thesis, Novosibirsk, 1–244 [In Russian].

Komarova, L. A. 2003. *Sciarids (Diptera, Sciaridae) of foothills and mountains of North Altai and Salair*. PhD thesis, Tomsk, 1–563 [In Russian].

Krivosheina, N. P., Mohrig, W. K. 1986. Diptera from Sciaridae family of the European part of the USSR. *Entomologicheskoe obozrenie*, **65** (4), 153–163 [In Russian].

Lengersdorf, F. 1926. Die Sciariden des Naturhistorischen Museums in Wien. *Konowia*, **5** (2), 122–129.

Lengersdorf, F. 1928–30. 7. Lycoriidae (Sciaridae). *In*: Lindner, E., ed. *Die Fliegen der palaearktischen Region*. Stuttgart, **2** (1), 1–71.

Menzel, F., Heller, K. 2013. *Sciaridae*. Fauna Europaea, version 2.6.2 http://www.faunaeur.org/ (accessed 11.11.2018).

Menzel, F., Mohrig, W. 1993. Beiträge zur Taxonomie und Faunistik der paläarktischen Trauermücken (Diptera, Sciaridae) Teil IV. Lengersdorf'sche Sciaridentypen aus dem Naturhistorischen Museum Wien (1. Beitrag). *Beitr. Ent*., **43** (1), 63–80.

Menzel, F., Mohrig, W. 2000. Revision der palaarktischen Trauermucken (Diptera: Sciaridae). *Studia Dipterologica*, Suplement 6, 1–761.

Mohrig, W. 1993. Der Artenkreis *Corynoptera concinna* (Winnertz, 1867) (Diptera, Sciaridae). *Bonn. Zool. Beitr*., **44** (1–2), 47–55.

Mohrig, W., Heller, K., Hippa, H., Vilkamaa, P., Menzel, F. 2012. Revision of the Black Fungus Gnats (Diptera: Sciaridae) of North America. *Studia dipterologica*, **19** (1/2), 141–286.

Mohrig, W., Mamaev, B., Krivosheina, N. 1983. Beiträge zur Kenntnis der Trauermücken der Sowjetunion (Diptera, Sciaridae). Teil V. Sciariden aus Mittelasien. *Zool. Jb. Syst*., **110**, 141–155.

Roskov, Y., Abucay, L., Orrell, T., Nicolson, D., Bailly, N., Kirk, P. M., Bourgoin, T., DeWalt, R. E., Decock, W., De Wever, A., Nieukerken, E., Zarucchi, J., Penev, L. 2017. Species 2000 & ITIS Catalogue of Life http://www.catalogueoflife.org/ (accessed 11.11.2018).

Sataeva, A. R. 2006. Sciarids (Diptera, Sciaridae) of Southeast part of Kazakhstan. *Thesis*, Semipalatinsk, 1–364 [In Russian].

Tuomikoski, R. 1960. Zur Kenntnis der (Dipt.) Finnlands. *Annales Zoologici Societatis Zoologicae Botanicae Fennicae "Vannamo"*, **21** (4), 1–164.

Winnertz, J. 1867. *Beitrag zu einer monographie der Sciarinen*. Wein, 1–190.

Winnertz, J. 1868. Acht neue Arten der Gattung *Sciara*. *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien*, **18**, 533–540.

Received 12 February 2019
Accepted 5 March 2019