

RESEARCH ARTICLE

# A review of Palaearctic species of the *contaminata* group of *Scatophila* (Diptera: Ephydriidae) with description of a new species

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**Abstract.** The *contaminata* group of *Scatophila* Becker, 1896 from the Palaearctic Region is reviewed. A new species *S. hirsovae* sp. nov. from the Czech Republic (type locality: Kateřina, Soos Reserve), Slovakia, and Turkey is described. Redescription of the *contaminata* group, diagnoses and photographs of the two other known European species: *S. contaminata* (Stenhammar, 1844) and *S. pumilio* (Loew, 1860), and a key for their identification are provided. *Scatophila contaminata* is recorded from Siberia for the first time.

**Key words.** Diptera, Ephydriidae, cryptic species, morphological characters, taxonomy, Czech Republic, Slovakia, Turkey, Palaearctic Region

**Zoobank:** <http://zoobank.org/urn:lsid:zoobank.org:pub:03564920-D40B-4ED4-A32B-DD4FA91BA354>

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## Introduction

Adult shore flies are small to moderate-sized flies, typical length 1.0–8.0 mm. About 2000 valid species usually occur in close association with moist substrates and may often be observed on seashores, and along lake shores, rivers, streams, ponds, marshy habitats and also on the water surface of pools. Many adults are polyphagous, feeding on yeast, various algae, and other microscopic organisms. There are few non-specialized predators, capturing and feeding on small insects (WAGNER et al. 2008). Most larvae are aquatic or semi-aquatic and occur in many different microhabitats. The majority of shore flies feeds on various micro-organisms, e.g. algae, protozoa, and bacteria, and/or utilize detritus or are leaf miners on limnic emerging macrophytes. A large group of scavengers develops in decomposing organic matter, e.g. carcasses of small animals, carrion and faeces (MATHIS et al. 2021). The family is divided into four subfamilies: Hydrellinae, Gymnomyzinae, Ilytheinae and Ephydriinae (ZATWARNICKI 2023b). The genus *Scatophila* Becker, 1896 belongs to the tribe Scatellini, which is one of five tribes of Ephydriinae.

*Scatophila* is a rather distinctive genus of shore flies showing a unique combination of the following three diagnostic characters: projected setose face, one orbital

seta and short costal vein (extended to  $R_{2+3}$ ). It currently comprises 50 species of which most occur in the Holarctic Region (ZATWARNICKI & MATHIS 2024): 19 are Palaearctic, 6 also occur in the Nearctic Region, another 4 are found in Japan and the Far East: *S. caviceps* (Stenhammar, 1844), *S. facialis* Miyagi, 1977, *S. gorodkovi* Krivosheina & Ozerov, 2016 and *S. sexmaculata* Miyagi, 1977. The latter species could be a synonym of *S. caviceps*. ZATWARNICKI & IRWIN (2018) redescribed and illustrated three Palaearctic species and proposed to synonymize three names. ZATWARNICKI & MATHIS (1994) reconstructed the phylogeny of the genus and they recognized nine species groups that are defined by characters of the male terminalia. Five of these groups are present in the Old World (the *contaminata*, *despecta*, *mesogramma*, *noctula*, and *quadriguttata* groups).

The aim of the present paper is to describe a new species of the *contaminata* species-group that is close to the European species *S. pumilio* (Loew, 1860). It is the third new species found by the junior author in Czech Republic after two new *Hydrellia* (ZATWARNICKI & KEJVAL 2024). As the metallic microtomentose face is not shared by all species in the group (present in the nominative species *S. contaminata*), an updated definition of the group is provided.



## Materials and methods

The material studied is deposited in the following collections:

CULSP	Czech University of Life Sciences Prague, Czech Republic (Miroslav Barták);
DEBU	University of Guelph Insect Collection, School of Environmental Sciences, Guelph, Canada (Steven A. Marshall);
MCH	Muzeum Chodska, Domažlice, Czech Republic;
MZLU	Zoological Institute, Museum of Zoology and Entomology, Lund University, Lund, Sweden (Rune Bygebjerg);
NMPC	National Museum of the Czech Republic, Praha, Czech Republic (Michal Tkoč);
RBINS	Royal Belgian Institute of Natural Sciences, Bruxelles, Belgium (Patrick Grootaert, Wouter Dekoninck and Pol Limbourg);
SDEI	Senckenberg Deutsches Entomologisches Institut, München, Germany (Frank Menzel);
SMOC	Slezské zemské muzeum, Opava, Czech Republic (Jindřich Roháček);
UUZM	Museum of Evolution, Uppsala University, Uppsala, Sweden (Hans Mejlom);
ZMHB	Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Berlin, Germany (Jenny Pohl and Sven Marotzke);
ZMPA	Museum and Institute of Zoology PAS, Warsaw, Poland (Dariusz Iwan, Przemysław Szymoszczyk).

The descriptive terminology of external characters follows CUMMING & WOOD (2017). Orientation of structures in the description of the male terminalia are the same as in nematoceros Diptera, i.e., the cerci indicate the dorsal side of the hypopygium and the hypandrium is regarded as ventral; the direction to the head of the fly is defined as anterior (and its opposite as posterior). Standard methods of examination were used, including the study of the male postabdominal structures. The presentation of label data is strictly verbatim for type specimens but standardized for other material examined. Separate labels are indicated by double slash (//) and comments on label data are placed in square brackets. Abdomens of some specimens were detached and then the genitalia were dissected. After examination, all dissected parts were put into plastic vials containing glycerin and pinned below the respective specimens. Illustrations of the male terminalia were made using a drawing tube attached to the microscope Labophot2 and were rendered using the graphic software Micrografx Designer 7.0. Photographs of habitus were taken with a Canon EOS 7D (18 Mp) camera with a zoom objective 70–200/f4 and a Nikon 10x/0.3 Plan Fluor microscopic objective. The images were then combined, using licensed stacking software, Zerene Stacker.

One head, one abdominal, and two venational ratios used in the descriptions are defined below:

Gena to eye ratio is the genal height measured at the maximum eye height / eye height.

Costal vein ratio is the straight-line distance between the apices of  $R_{2+3}$  and  $R_{4+5}$  / distance between the apices of  $R_1$  and  $R_{2+3}$ .

M vein ratio is the straight-line distance along vein M between crossveins dm-cu and r-m / distance apicad of dm-cu.

Male tergite 5 to 4 ratio – length of the male tergite 5 / length of the male tergite 4 (measured at the median part of the abdomen in dorsal view).

## Systematics

### Genus *Scatophila* Becker, 1869

*Scatophila* Becker, 1896: 237. Type species: *Ephydra caviceps* Stenhammar, 1844, by original designation.

*Centromeromyia* Frey, 1954: 40. Type species: *Centromeromyia eremita* Frey, 1954, by original designation (synonymized by ZATWARNICKI 1991: 329).

### The *contaminata* species group

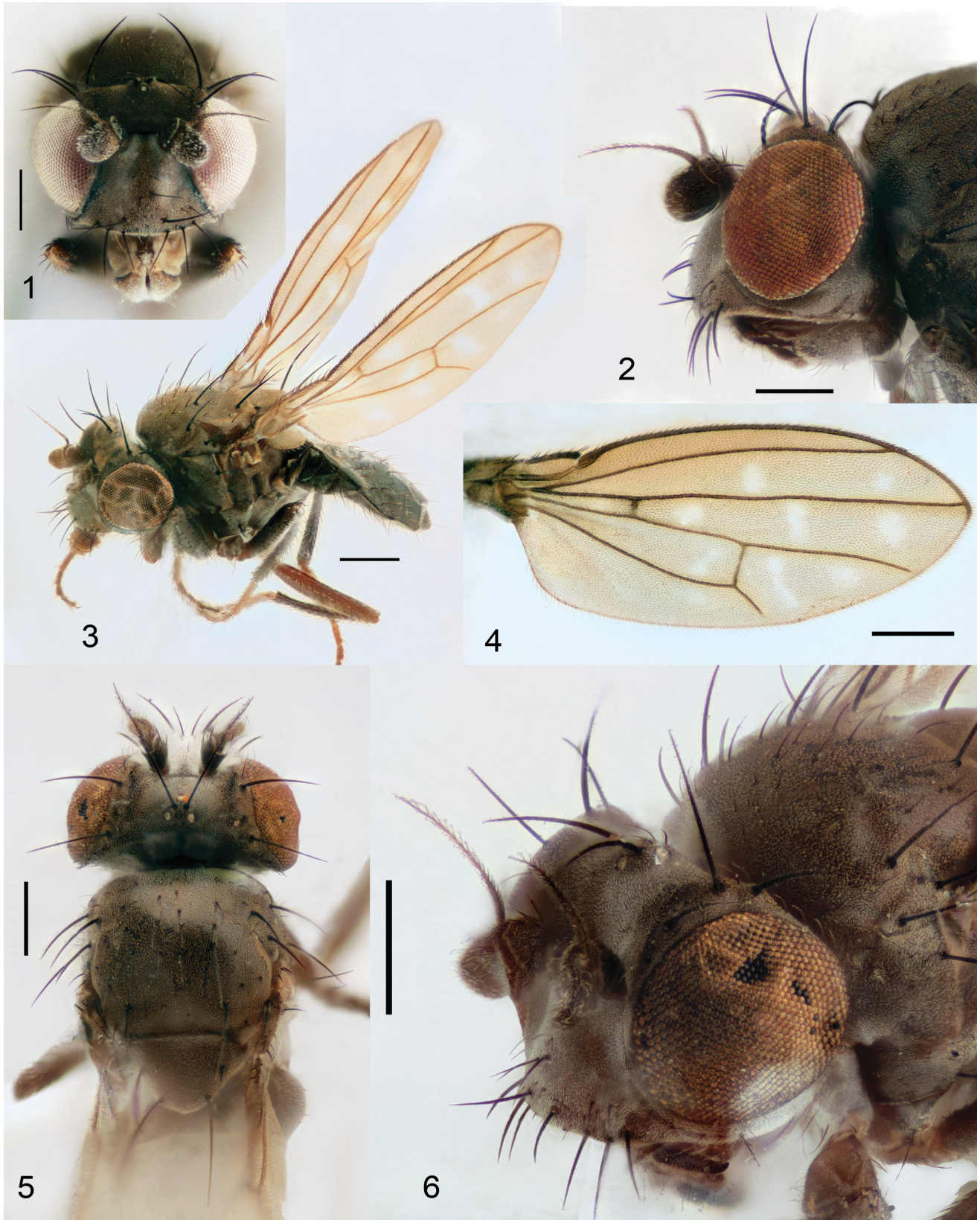
**Diagnosis.** Face moderately produced anteriorly, not sexually dimorphic; 2–3 large setae on the facial margin and 2 distinct setae on the midface of which the ventral one is nearly as strong as the marginal (Figs 1–3, 5, 6, 13, 16, 17, 23–25); gena very narrow; anterior margin of epandrium almost straight (Figs 7, 10, 18); neohypandrium present, elongate, slightly deflected before the top (Figs 9, 12, 20); postgonite arcuately deflected, its proximal margin slightly convex, distal process of postgonite triangular, bifurcate on the top (Figs 9, 12, 20); phallus (= aedeagus) without ventral process, in dorsal view with broadly oval distal margin (Figs 8, 11, 19); anterior margin of the dorsal opening of phallus almost straight or broadly convex; phallapodeme in lateral view (Figs 9, 12, 20) refracted medially or arcuately deflected, in dorsal view generally with broad proximal extension and sharp subapical lateral process (Figs 8, 11, 19).

**Species included.** *Scatophila contaminata* (Stenhammar, 1844), *S. exilis* Cresson, 1935, *S. ordinaria* Sturtevant & Wheeler, 1954, and *S. pumilio* (Loew, 1860).

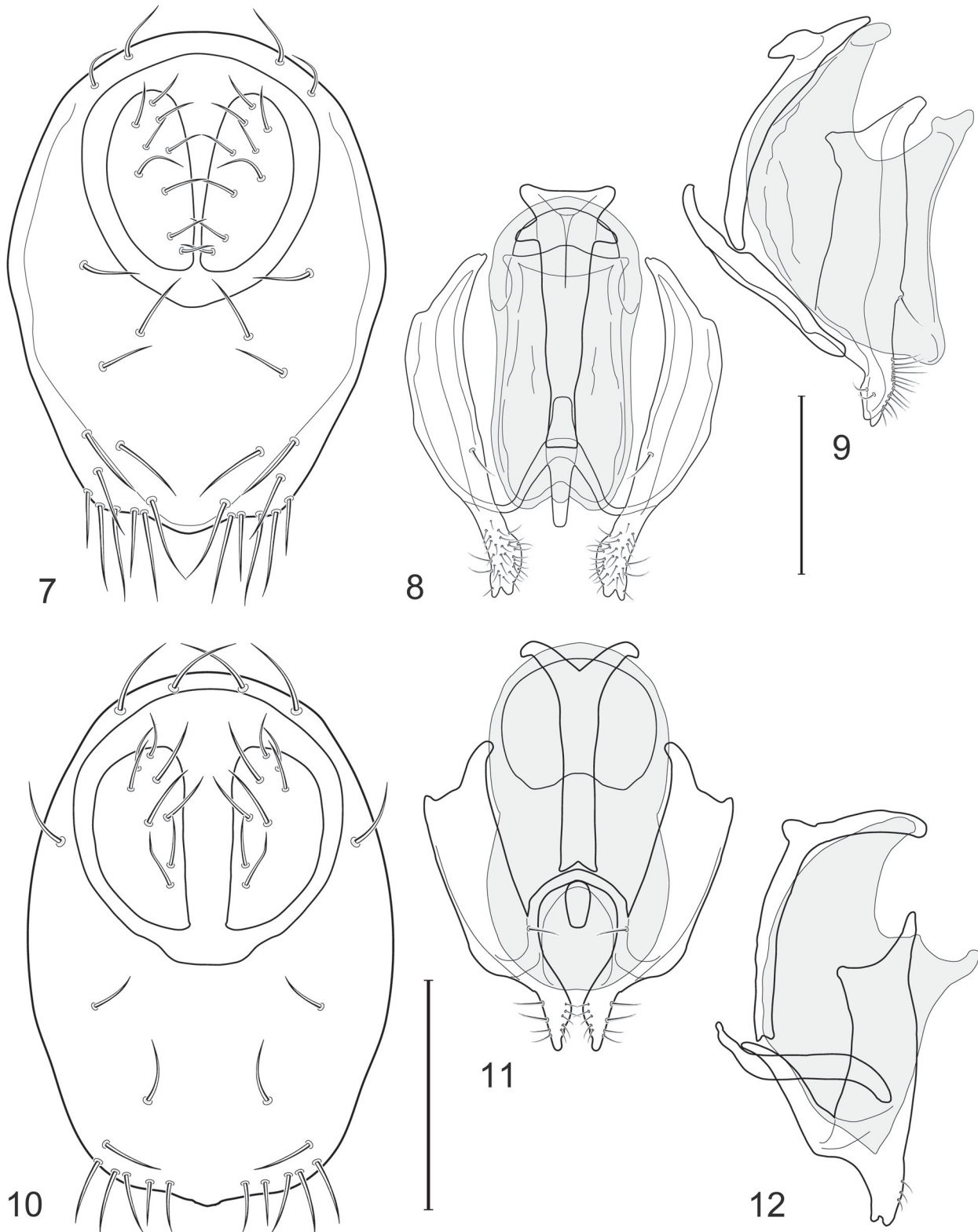
**Remark.** The placement of *S. pumilio* in the *contaminata* group was informally proposed by ZATWARNICKI & MATHIS (1994, illustration legend on page 364 and a remark on page 368) and is confirmed herein.

### Key to European species of the *contaminata* group

- 1 Body black, unicolorous (Figs 3, 5); face of male with white microtomentum (Figs 2, 5, 6), face of female shiny (Fig. 1); mesonotum uniform, without pattern (Fig. 5); phallapodeme bar-like, gradually broadened posteriorly (Figs 8, 9). ..... *S. contaminata* (Stenhammar, 1844).
- Body grey with pattern on mesonotum (Figs 13, 15, 17, 22, 24, 25); face not shiny, without whitish microtomentum (Figs 13, 16, 17); phallapodeme Y-shaped or helmet-like posteriorly (Figs 11, 12, 19, 20). ..... 2
- 2 Acrostichal setulae similar in size (Fig. 25); margin of wing at apex of vein  $R_{4+5}$  rounded (Fig. 21); knob of halter light brown; the male terminalia with epandrial anterior margin slightly rounded medially (Fig. 10), and phallapodeme Y-shaped, split posteriorly (Fig. 12). ..... *S. pumilio* (Loew, 1860)
- Presutural acrostichal setulae larger than others (Fig. 15); wing slightly pointed at apex of vein  $R_{4+5}$  (Fig. 14); knob of halter white; the male terminalia with epandrial anterior margin even (Fig. 18), and phallapodeme helmet-like in dorsal view (Fig. 20). ..... *S. hirsovae* sp. nov.



Figs 1–6. *Scatophila contaminata* (Stenhammar, 1844). 1 – head, anterior view; 2 – head, lateral view; 3 – habitus, latero-oblique view; 4 – wing, dorsal view; 5 – head and thorax, dorsal view; 6 – head, latero-oblique view. Scale bar = 0.2 mm.



Figs 7–12. Male terminalia. 7–9 – *Scatophila contaminata* (Stenhammar, 1844): 7 – epandrium and cerci, dorsal view; 8, 9 – internal male terminalia (8 – dorsal view, 9 – lateral view). 10–12 – *S. pumilio* (Loew, 1860): 10 – epandrium and cerci, dorsal view; 11, 12 – internal male terminalia (11 – dorsal view, 12 – lateral view). Scale bar = 0.1 mm.

***Scatophila contaminata* (Stenhammar, 1844)**

(Figs 1–9)

*Ephydra contaminata* Stenhammar, 1844: 185.

*Scatophila contaminata*: BECKER (1896): 240 (combination).

*Scatophila halterata* Becker, 1896: 245.

*Scatophila halterata*: ZATWARNICKI (1987): 280 (synonymy).

**Type localities.** *Ephydra contaminata* – not given, Sweden from the title of the paper; *Scatophila halterata* – Węglińiec (as ‘Kohlfurt’), Lower Silesia, Poland.

**Type material examined.** *Ephydra contaminata*: LECTOTYPE: ♂, designated by ZATWARNICKI & MATHIS (2024) in good condition, labelled: ‘E. contaminata St. ♂ a Stenh. [handwritten] // MZLU-DIPT 000 67432 [‘67432’ handwritten] // LECTOTYPE ♂ *Ephydra contaminata* Sten-

hammar designated by Zatwarnicki & Mathis' (MZLU).

Scatophila halterata: HOLOTYPE: ♂ (without head, terminalia in a plastic vial) labelled: 'Kohlfurt 10/6. 37425 // Holotypus [red] // halterata // Mus. Zool. Berlin [yellow]' (ZMHB).

**Other material examined.** BELGIUM: Blankenberge, 10.viii.1924, M. Bequaert leg., 1 ♂; Genk (Terminen), 14.x.1949, A. Collart leg., 1 ♂; Knokke, 1.ix.1954, M. Bequaert leg., 1 ♀; Postel, 28.iii.1922, G. Severin leg., 1 ♀ (RBINS). CZECH REPUBLIC: BOHEMIA: Bilina, Lom 1, 50°34'57"N 13°41'50"E, alt. 260 m, near small pond, ET, 3.iv.–2.v.1999, M. Barták leg., 1 ♀; Březno, S of Chomutov, 17.vii.–19.viii.1999, M. Barták leg., 1 ♀; Chomutov, Libouš II jih, 17.vii.–19.vi.1999, M. Barták leg., 1 ♀; Duchcov, 2 km E, deciduous wood, 1.vii.1993, M. Barták leg., 2 ♂♂ (CULSP); Kateřina, Soos NNR, 50°08'55"N 12°24'31"E, alt. 440 m, salt marshes, 9.–11.vi.2022, Z. Kejval lgt., 1 ♂ (MCH); same data, except: 50°09'03"N 12°24'09"E, 24.vi.2023, 1 ♂ (MCH). POLAND: Malczyce ['Oderwald 14/5 30851'], T. Becker leg., 1 ♀ (ZMHB); Słupsk, 29.viii.1932, O. Karl leg., 1 ♀ (ZMPA). RUSSIA: Novosibirsk, Cherny Mts, aspirated among sedge roots, 28.vi.1991, S. A. Marshall leg., 2 ♂♂ (DEBU). SWEDEN: SKÅNE: Lanskröna, Lindeshamn, 27.viii.1990, P. Prütz leg., 1 ♂ 1 ♀; same locality, 23.iv.2009, P. Prütz leg., 1 ♂; Lomma, 16.iii.1972, H. Andersson leg., 1 ♂; T. Hellestad Trollskoggen, 6.v.1971, H. Andersson leg., 1 ♂ (MZLU). UPPLAND: Hjälssta, Hjälsstaviken, 1.iv.1960, L. Hedström leg., 1 ♀; Uppsala, Nedre Föret, 16.iv.1958, L. Hedström leg., 1 ♂ (UUZM).

**Diagnosis.** Body shiny, blackish (Figs 3, 5); face of male with white microtomentum (Figs 2, 5, 6), face of female shiny (Fig. 1); mesonotum uniform, without pattern; acrostichal setulae similar in size; wing with conspicuous spots (Fig. 4); margin of wing at apex of vein  $R_{4+5}$  rounded; knob of halter brown or blackish; male genitalia (Figs 7–9) with epandrial anterior margin projected medially (Fig. 7) and phallapodeme bar-like, slightly broadened posteriorly (Figs 8, 9).

**Distribution.** Holarctic: Alaska (ZATWARNICKI & MATHIS 2024); Belgium (ZATWARNICKI 2023), Czech Republic (BARTÁK 1996, ZATWARNICKI et al. 2001), Finland (ZATWARNICKI & KAHANPÄÄ 2014), Germany (HOLLMANN-SCHIRRMACHER & ZATWARNICKI 1999), Hungary (ZATWARNICKI & PAPP 2001), Poland (BECKER 1896; KARL 1937; ZATWARNICKI 1987, 1991), Russia: European Territory (NARTSHUK 1970), Siberia (new record), Sweden (DAHL 1959, ZATWARNICKI, 1987).

### *Scatophila hirsovae* sp. nov.

(Figs 13–20)

**Type locality.** Czech Republic, Bohemia, Kateřina, Soos National Nature Reserve, saline swamp near Císařský spring, 50°8'53.8"N 12°24'10.8"E, altitude 440 m.

**Type material.** HOLOTYPE: ♂ (dissected), labelled: 'CZ-Bocc 5840, 5.7.2021, KATEŘINA, Soos Reserve, saline swamp near Císařský spring, pan traps, 440 m, Z. Kejval leg. 50°8'53.8"N 12°24'10.8"E [printed] // HOLOTYPE [red label, printed] // Scatophila hirsovae sp.nov. T. Zatwarnicki & Z. Kejval det. 2025 [printed]' (NMPC). PARATYPES: 1 ♂ 1 ♀, same labels as holotype (NMPC); 1 ♂ 1 ♀, 'CZ-Bocc 5840, 21.6.2023, KATEŘINA, Soos Reserve, salt marsh (partly trans.) swept, 440 m, Z. Kejval leg. 50°09'04"N 12°24'05"E [printed]' (NMPC); 2 ♂♂, 'CZ-Bocc 5548, 12.8.2023 DOBROMĚŘICE, Dobroměřický ryb. (pond bottom) 195 m, Z. Kejval leg. 50°23'24"N 13°47'33"E [printed]' (NMPC); 1 ♂ (dissected): 'CS: Borský Jur, edge of pine wood, 48.36N/17.03E, 190 m Barták, 22. vii. 1989' (CULSP); 1 ♀, 'CZ: Chomutov, Libouš II jih nr brook, MT, 285m, 50°24'24"N, 13°23'21"E Barták, 5.vi.-17.vii. 1999' (CULSP); 2 ♀♀, 'CZ: Duchcov- 2 km E deciduous wood, 18 [number in the circle, handwritten] 50.36N/13.43E, 220 m., Bartak, 9.v.1993' (CULSP); 1 ♂, 'Slovakia mer., Kamenín nr. Štúrovo, salty meadow, J.

Roháček leg. // sweeping over boggy meadow, 31. V. 1982 [printed, only date handwritten]' (SMOC).

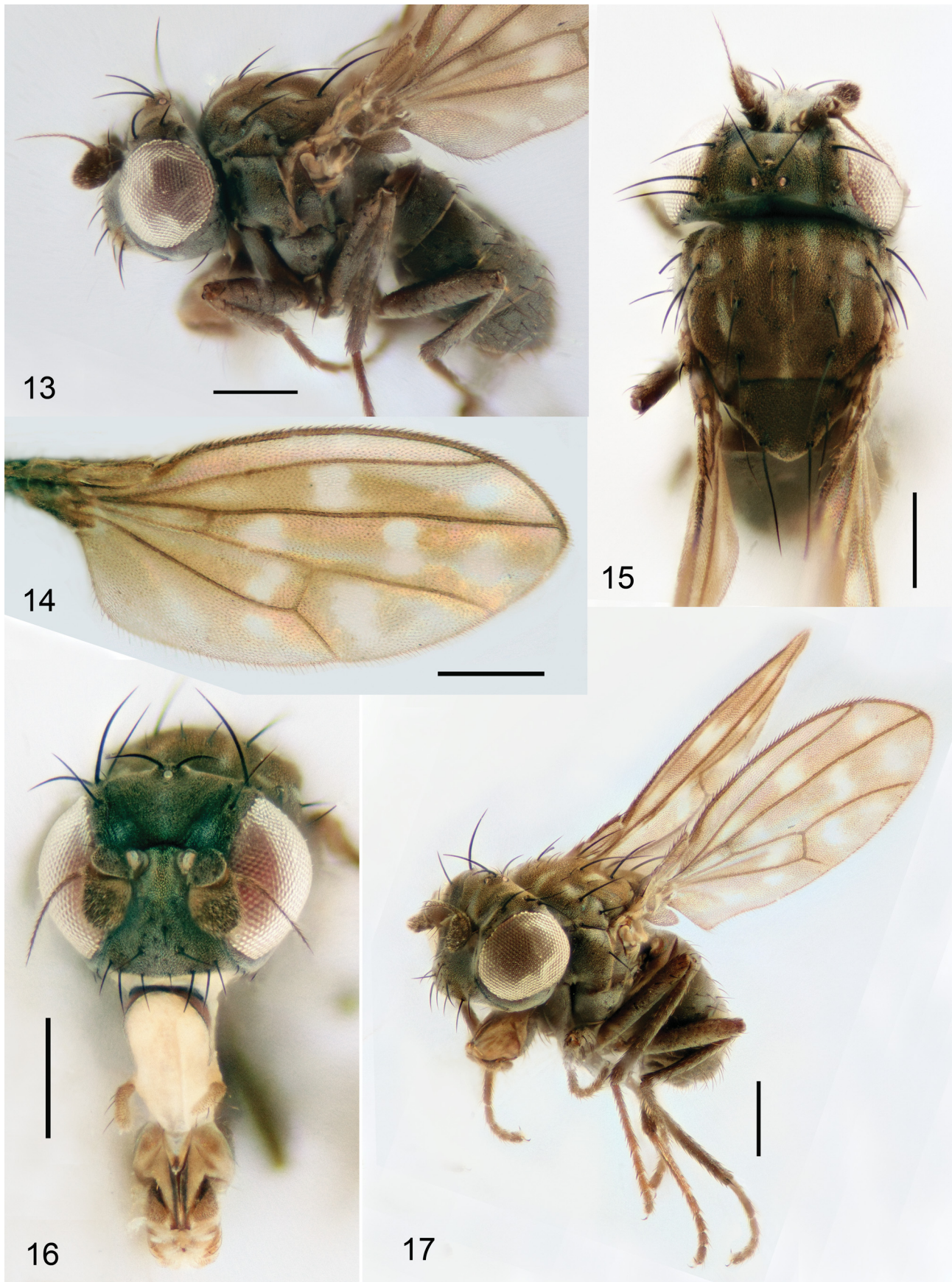
**Other material examined.** CZECH REPUBLIC: BOHEMIA: SE of Most, 50°28'01"N 13°40'16"E, alt. 250 m, mine dump, pond banks/sandy, 11.viii.2023, Z. Kejval leg., 1 ♂ without terminalia (MCH). TURKEY: AYDIN: Çine, 8 km S, 37°32'34"N 28°03'46"E, alt. 68 m, river bank, swept, 29.iv.–1.v.2016, M. Barták & Š. Kubík leg., 1 ♂ (CULSP).

**Description.** Small shore flies, male body length 1.02–1.37 mm; wing length 0.80–1.20; female body length 1.17–1.38, wing length 1.05–1.07.

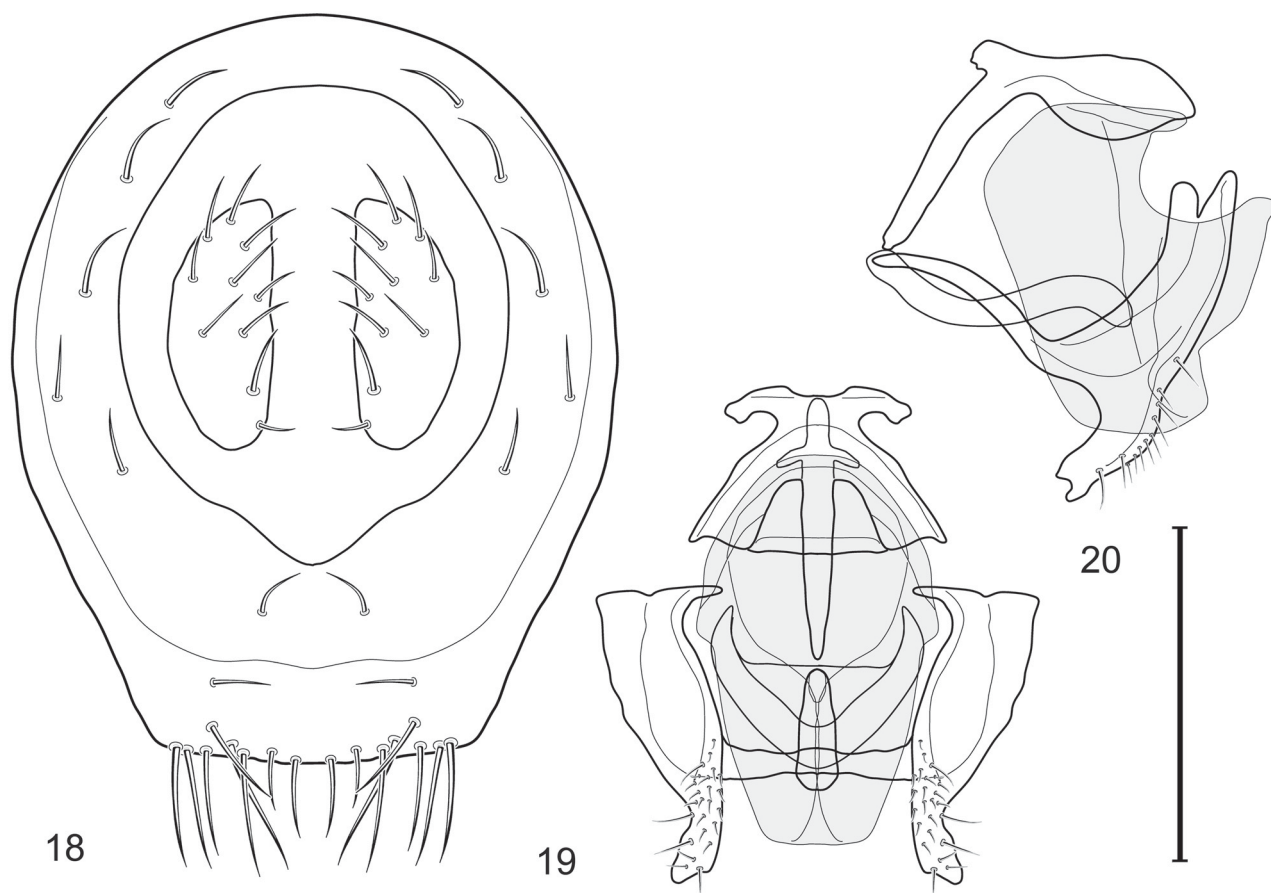
**Head.** Frons almost 1.5× wider than long, parafrons grey with black lateral margins, mesofrons brownish-grey (Figs 15–17); the length of the inner vertical seta 1.5× of outer vertical seta, ocellar and fronto-orbital seta subequal in length of outer vertical seta (Figs 15–17); antenna black; face projected slightly, in 1/4 of eye width; face medially and ventrally brownish, antennal fovea and gena greyish; 3 strong submarginal setae and 2 midfacial setae, ventral one longer (Figs 13, 16, 17); palpus black; gena very short, gena-to-eye ratio 0.086–0.140.

**Thorax** (Figs 23–25): Mesonotum (Figs 24, 25) mostly dark brown with seven small grey areas: one medial stripe between acrostichal setae, better expressed towards scutellum, and three on each side (Figs 24, 25); oval spot between acrostichal and dorsocentral setae, rounded spot between dorsocentral seta and presutural supra-alar seta, followed by a narrow, oval spot extending to posterior intra-alar seta; scutellum dark brown, with apex grey; central and ventral part of anepisternum, also ventral section of katepisternum dark brown, the rest of pleura grey (Fig. 23); presutural acrostichal setulae larger than others. Wing (Fig. 21) generally brown, infusate with whitened spots; cell  $r_{2+3}$  with three, basal radial cell and discal cell with one small, cell  $r_{4+5}$  with three (basal small), m cell and cell  $cu_{A1}$  with two spots; costal vein ratio 0.28–0.41; M vein ratio 0.57–0.73; stem of halter whitish grey, knob of halter white. Legs uniformly black (Fig. 23).

**Abdomen.** Tergites dark brown, unicolorous, subshiny, with slight bluish-green reflection; male fifth to fourth tergite ratio 1.2. Male terminalia (Figs 18–20): epandrium in dorsal view (Fig. 18) 1.24 times as long as wide, posterior margin widely rounded, anterior margin broadly truncate (nearly straight) with rounded lateral margins; cercal opening comparatively large, height of cercal opening equal to 0.64 epandrial length; cerci in dorsal view (Fig. 18) moderate in size, hemispherical; postgonite in dorsal view irregularly deltoid with moderately broadened apically anterior process and small posteroventral projection (Fig. 20) and slightly arcuate; in lateral view irregularly trapezoid in arcuate form, anterior process apically bifurcate, bearing setulae, ventral process narrow, elongate (Fig. 19); neohypandrium in lateral view elongated, narrow, shallowly sinuous (Fig. 19); phallapodeme in dorsal view helmet-like with addition of T-shaped posterior crossbar (spatulate in antero-dorsal view), medial process linear, distinctly longer than expanded section (Fig. 20), in lateral view elongate, C-shaped with dorsal section narrowly elliptic, ventral process bar-like (Fig. 19); phallus (= aedeagus) in dorsal view elongated, 1.63 times as long as wide, ovoid with broadened anterior margin, dorsal opening pentagonal



Figs 13–17. *Scatophila hirsovae* sp. nov. 13 – head, thorax and abdomen, lateral view; 14 – wing, dorsal view; 15 – head and thorax, dorsal view; 16 – head, anterior view; 17 – habitus, latero-oblique view. Scale bar = 0.2 mm.



Figs 18–20. *Scatophila hirsovae* sp. nov., male terminalia. 18 – epandrium and cerci, dorsal view; 19–20 – internal male terminalia (19 – dorsal view, 20 – lateral view). Scale bar = 0.1 mm.

with broad V-shaped anterior margin (Fig. 20); in lateral view irregularly ampulliform with posterodorsal large circular indentation producing medial triangular projection, posterior margin moderately rounded, ventral margin straight, apically shallowly rounded (Fig. 21), ventral phallic process lacking.

**Differential diagnosis.** *Scatophila hirsovae* sp. nov. is undoubtedly close to *S. pumilio*, as suggested by overall similarity of external and genital characters. It can be distinguished from this species by the wing slightly pointed at apex of vein  $R_{4+5}$ , knob of halter white and characters of the male terminalia, especially by the helmet-like phallopodeme in dorsal view (see the key above).

The new species is similar to the Nearctic *S. exilis*, which can be separated by yellowish trochanters, apices of femora and two basal tarsomeres (versus black legs); anterior section of epandrium (in front of cercal opening) rectangular, 3× wider than long in the midlength (versus anterior section of epandrium trapezoidal, 2× wider than long in the midlength), epandrial anterior margin bears 30 sub- and marginal setae (versus epandrial anterior margin bears 16 sub- and marginal setae); postgonites separated medially (versus postgonites connected medially).

**Etymology.** The species is dedicated to Dr. Hana Kubátová-Hiršová (Kobylnice, Czech Republic) in recognition of her contribution to the knowledge of Ephydriidae, especially to faunistics of Central European species. The species epithet, *hirsovae*, is derived from her maiden name.

**Distribution.** Palaearctic: Czech Republic (Bohemia), Slovakia, Turkey (Anatolia).

### *Scatophila pumilio* (Loew, 1860)

(Figs 10–12, 21–25)

*Scatella pumilio* Loew, 1860: 44.

*Scatophila pumilio*: BECKER (1896): 244 (combination).

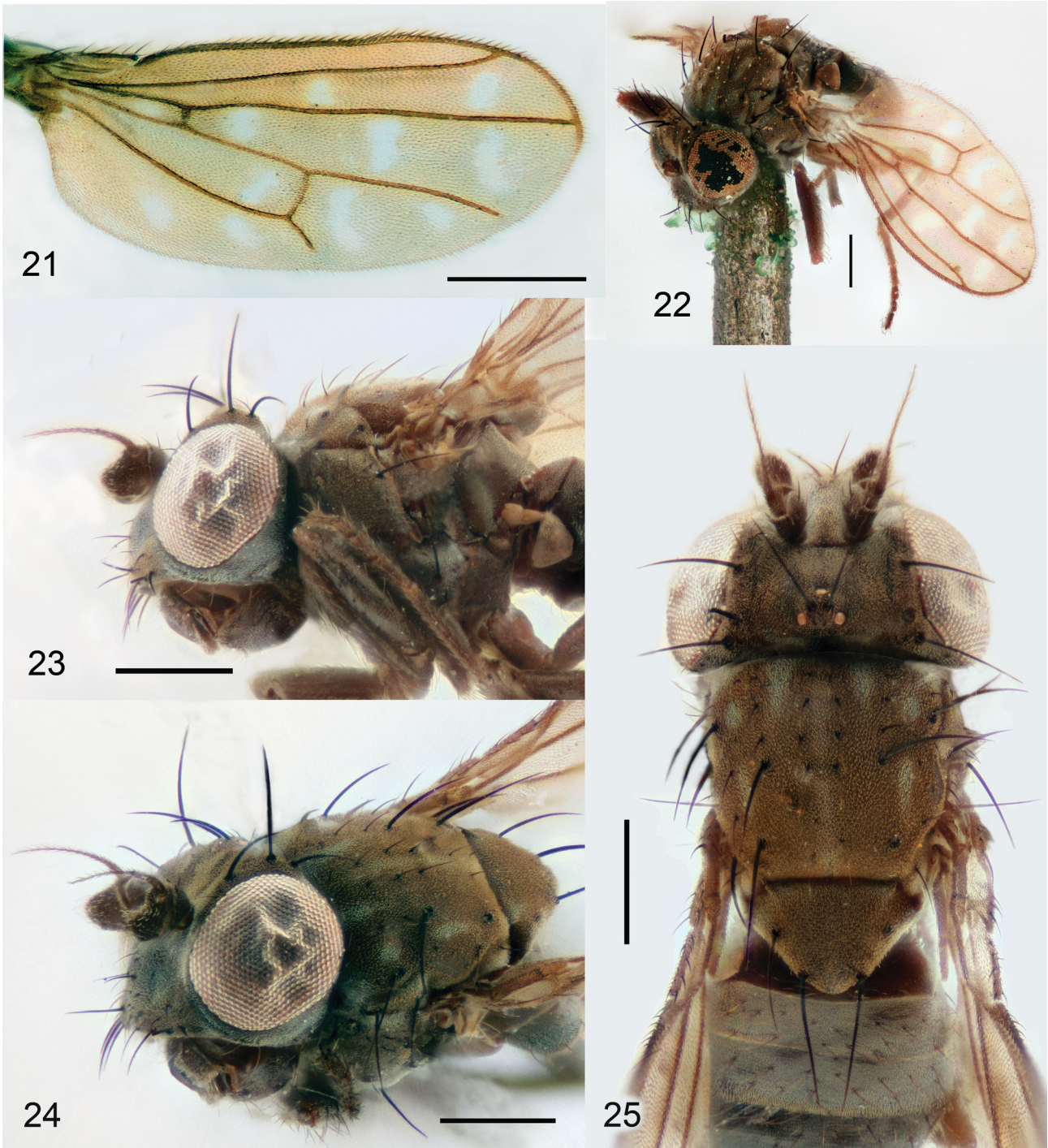
**Type locality.** Lower Silesia (as ‘Schlesien’), Poland.

**Type material examined.** HOLOTYPE: ♀ in moderate condition (Fig. 22), labelled: ‘Schlesien Scholtz // Coll. H. Loew // 14496 // *Scatella pumilio* m. [handwritten] // Holotypus [red]’ (ZMHB).

**Other material examined.** BELGIUM: Knokke (Zwijen), 5.iii.1950, M. Bequaert leg., 1 ♂ (RBINS). GERMANY: Berlin-Jungferheide, 22.iii.1908, L. Oldenberg leg., 1 ♂ (SDEI).

**Diagnosis.** Body grey with pattern on mesonotum (Figs 24, 25); face not shiny, without whitish microtomentum; acrostichal setulae similar in size; wing with conspicuous spots (Figs 21, 22); margin of wing at apex of vein  $R_{4+5}$  rounded (Fig. 21); knob of halter light brown; male terminalia (Figs 10–12) with epandrial anterior margin slightly projected medially (Fig. 10), phallopodeme Y-shaped, split posteriorly (Fig. 12).

**Distribution.** Palaearctic: Belgium (BASTIN 1931, ZATWARNICKI 2023), Czech Republic (KUBÁTOVÁ-HIRŠOVÁ 2006, ZATWARNICKI & KEJVAL 2022), Germany (BÄHRMANN 1988, HOLLMANN-SCHIRRMACHER & ZATWARNICKI 1999), Hungary (PAPP & ADÁM 1996), Poland (LOEW 1860, the type locality), Portugal (STUKE et al. 2024). Old records



Figs 21–25. *Scatophila pumilio* (Loew, 1860). 21 – wing, dorsal view; 22 – holotype, antero-oblique view; 23 – head and thorax, lateral view; 24 – head and thorax, latero-oblique view; 25 – head and thorax, dorsal view. Scale bar = 0.2 mm.

by BEUTHIN (1887), KRÖBER (1910, 1935), SAAGER (1970) are possibly misidentification of other *Scatophila* species. **Remarks.** Labels of the holotype and short redescription of *Scatophila pumilio* were provided by PAPP (1975). The species was erroneously synonymized with *S. noctula* (Meigen, 1830) by ZATWARNICKI (1987), then resurrected from synonymy by ZATWARNICKI & MATHIS (1994).

### Acknowledgements

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## References

- BARTÁK M. 1996: Diptera communities of "Osecká" dump near Duchcov and its environment. *Dipterologica Bohemoslovaca* 7 [1995]: 5–16.
- BÄHRMANN R. 1988: Über den Einfluss von Luftverunreinigungen auf Ökosysteme XIV. Öko-faunistische Untersuchungen an Zweiflüglern (Diptera Brachycera) industriennaher *Agropyron*- und *Puccinellia*-Rasen bei Jena/Thüringen. *Zoologische Jahrbücher, Abteilung für Systematik* 115: 49–68.
- BASTIN F. 1931: Liste des Ephydridae et Canaceidae de Belgique. *Mémoires de la Société Entomologique de Belgique* 23 (5): 177–182.
- BECKER T. 1896: Dipterologische Studien IV. Ephydridae. *Berliner Entomologische Zeitschrift* 41: 91–276.
- BEUTHIN H. 1887: Erster Beitrag zur Kenntnis der Dipteren der Umgegend von Hamburg. *Verhandlungen des Vereins für Naturwissenschaftliche Unterhaltung zu Hamburg* 6: 44–86.
- CUMMING J. M. & WOOD D. M. 2017: Adult morphology and terminology. Pp. 89–133. In: KIRK-SPRIGGS A. H. & SINCLAIR B. J. (eds): *Manual of Afrotropical Diptera. Vol. 1. Introductory chapters and keys to Diptera families. Suricata* 4. SANBI Graphics and Editing, Pretoria, 425 pp.
- DAHL R. G. 1959: Studies on Scandinavian Ephydridae (Diptera Brachycera). *Opuscula Entomologica, Supplement* 15: 1–224.
- FREY R. 1954: Diptera Brachycera und Sciaridae von Tristan da Cunha (with contribution by J. Bequaert, Cambridge, USA). *Results of the Norwegian Scientific Expedition to Tristan da Cunha* 4 (26): 1–55.
- HOLLMANN-SCHIRRMACHER V. & ZATWARNICKI T. 1999: Ephydridae. Pp. 149–152. In: SCHUMANN H., BÄHRMANN R. & STARK A. (eds): *Entomofauna Germanica 2. Checkliste der Dipteren Deutschlands. Studia Dipterologica. Supplement* 2: 1–354.
- KARL O. 1937: Die Fliegenfauna Pommerns. Diptera Brachycera. (Fortsetzung und Schluss.). *Stettiner Entomologische Zeitung* 98: 125–159.
- KRÖBER O. 1910: Fauna Hamburgensis. Verzeichnis der in der Umgegend von Hamburg gefundenen Dipteren. *Verhandlungen des Vereins für Naturwissenschaftliche Unterhaltung zu Hamburg* 14: 3–113.
- KRÖBER O. 1935: Dipterenfauna von Schleswig-Holstein und den benachbarten westlichen Nordseegebieten. II. Teil: Diptera Brachycera: Pyrgotidae bis Milichiidae. *Verhandlungen des Vereins für Naturwissenschaftliche Heimatforschung zu Hamburg* 24: 45–156.
- KUBÁTOVÁ-HIRŠOVÁ H. 2006: Notes to the checklist of Ephydridae (Diptera) of the Czech Republic and Slovakia. *Entomofauna Carpathica* 18 (3–4): 43–46.
- LOEW H. 1860: *Die Europaischen Ephydrinidae und die bisher in Schlesien beobachteten Arten derselben. Neue Beiträge zur Kenntnis der Dipteren. Teil 7.* Mittler und Sohn, Berlin, 46 pp.
- MATHIS W. N., ZATWARNICKI T. & IRWIN A. G. 2021: 100 Ephydridae (Ephydroidea) (shore flies). Pp. 2193–2230. In: KIRK-SPRIGGS A. H. & SINCLAIR B. J. (eds): *Manual of Afrotropical Diptera. Vol. 3. Brachycera-Cyclorhapha, excluding Calyptratae. Suricata* 8. SANBI Graphics and Editing, Pretoria, pp. xv + 1365–2379.
- NARTSHUK E. P. 1970: 94. Fam. Ephydridae-Beregovushki. Pp. 363–388. In: STACKELBERG A. A. & NARTSHUK E. P. (eds): *Keys to the Insects of the European USSR, 5 (Flies, Fleas), Part 2.* Nauka, Leningrad, 943 pp. (in Russian).
- PAPP L. 1975: Four new species of Ephydridae (Diptera) from Hungary. *Annales Historico-Naturales Musei Nationalis Hungarici* 67: 213–217.
- PAPP L. & ADÁM L. 1996: High insect diversity in a poor habit (dry sheep-runs in Hungary). *Folia Entomologica Hungarica* 57: 171–196.
- SAAGER H. 1970: Die Dipterenammlung des Naturhistorischen Museums zu Lübeck. 3 Teil und 1. Nachtrag. *Berichte des Vereins "Natur und Heimat" und des Naturhistorischen Museums zu Lübeck* 11: 88–103.
- STENHAMMAR C. 1844: Försök till gruppering och revision af de svenska Ephydrinae. *Kongliga Vetenskaps-Akademiens Handlingar, Series 3* 1843: 75–272.
- STUKE J.-H., ANDRADE R. & GONÇALVES A. 2024: Records of shoreflies (Diptera: Ephydridae) from mainland Portugal, with an updated checklist. *Boletín de la Sociedad Entomológica Aragonesa (S.E.A.)* 73 [2023]: 11–31.
- WAGNER R., BARTÁK M., BORKENT A., COURTNEY G., GODDEERIS B., HAENNI J.-P., KNUTSON L., PONT A., ROTHERAY G. E., ROZKOŠNÝ R., SINCLAIR B., WOODLEY N., ZATWARNICKI T. & ZWICK P. 2008: Global diversity of dipteran families (Insecta Diptera) in freshwater (excluding Simuliidae, Culicidae, Chironomidae, Tipulidae and Tabanidae). *Hydrobiologia* 595: 489–519.
- ZATWARNICKI T. 1987: New synonyms and records of Palearctic *Scatophila* (Diptera, Ephydridae). *Polskie Pismo Entomologiczne* 57(2): 277–298.
- ZATWARNICKI T. 1991: Changes in nomenclature and synonymies of some genera and species of Ephydridae (Diptera). *Deutsche Entomologische Zeitschrift* 39 (4–5): 295–333.
- ZATWARNICKI T. 2023a: A review of Belgian Ephydridae (Diptera). *Bulletin de la Société royale Belge d'Entomologie/Bulletin van de Koninklijke Belgische Vereniging voor Entomologie* 159 (1): 54–105.
- ZATWARNICKI T. 2023b: Major lineages of shore flies (Diptera: Ephydridae) and resultant subfamilial classification. *Annales Zoologici* 73 (4): 659–682.
- ZATWARNICKI T. & IRWIN A. G. 2018: Taxonomic notes on the genera *Scatella* and *Scatophila* (Diptera: Ephydridae) with a remark on *Trixoscelis chilensis* (Trixoscelididae). *Zootaxa* 4377: 91–109.
- ZATWARNICKI T. & KAHANPÄÄ J. 2014: Checklist of the family Ephydridae of Finland (Insecta, Diptera). Pp. 339–346. In: KAHANPÄÄ J. & SALMELA J. (eds): *Checklist of the Diptera of Finland. ZooKeys* 441: 1–408.
- ZATWARNICKI T. & KEJVAL Z. 2022: Nové pozoruhodné nálezy březnic (Diptera: Ephydridae) v České republice. [New remarkable records of shore flies (Diptera: Ephydridae) from the Czech Republic]. *Západočeské Entomologické Listy* 13: 68–75. Online: <https://www.entolisty.cz>.
- ZATWARNICKI T. & KEJVAL Z. 2024: Two new species of *Hydrellia* (Diptera: Ephydridae) from Central Europe, with redescriptions of *H. aurifer* and *H. frontalis*. *Acta Entomologica Musei Nationalis Pragae* 64 (2): 345–353.
- ZATWARNICKI T., KUBÁTOVÁ-HIRŠOVÁ H. & BARTÁK M. 2001: Ephydridae. Pp. 439–447. In: BARTÁK M. & VAŇHARA J. (eds): *Diptera in an Industrially Affected Region (North-Western Bohemia, Bilina and Duchcov Environs), II. Folia Facultatis Scientiarum Naturalium Universitatis Masarykianae Brunensis, Biologia* 105: 1–514.
- ZATWARNICKI T. & MATHIS W. N. 1994: Phylogeny and classification of the genus *Scatophila* Becker (Diptera: Ephydridae). *Annales de la Société Entomologique de France* 29 (4) [1993]: 351–370.
- ZATWARNICKI T. & MATHIS W. N. 2024: Revision of the Nearctic species of the shore-fly genus *Scatophila* Becker (Diptera: Ephydridae). *Zootaxa* 5487 (1): 1–100.
- ZATWARNICKI T. & PAPP L. 2001: Ephydridae. Pp. 352–363. In: PAPP L. (ed.): *Checklist of the Diptera of Hungary.* Hungarian Natural History Museum, Budapest, 550 pp.

