

## A review of the World species of the genus *Spaziphora* Rondani, 1856 (Diptera: Scathophagidae)

### Обзор видов рода *Spaziphora* Rondani, 1856 (Diptera: Scathophagidae) мировой фауны

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KEY WORDS: Diptera, Scathophagidae, *Spaziphora*, new species.

КЛЮЧЕВЫЕ СЛОВА: Diptera, Scathophagidae, *Spaziphora*, новый вид.

ABSTRACT. Flies of the genus *Spaziphora* Rondani, which includes three species in the World, are reviewed. One of them, new to science, *Spaziphora tomkovichii*, is described and the other species are redescribed. Genus diagnosis, keys for determination of species and data on distribution are summarized.

РЕЗЮМЕ. Ревизованы двукрылые рода *Spaziphora* Rondani, который включает три вида в мировой фауне. Приведено описание *Spaziphora tomkovichii*, нового для науки вида и переописание остальных видов рода. Даны диагноз рода и ключ для определения видов *Spaziphora*, а также суммированы данные по распространению видов.

#### Introduction

*Spaziphora* is one of the small genera within the family Scathophagidae, which until the present time has comprised two species: — *S. cincta* (Loew, 1863) in Nearctic and — *S. hydromyzina* (Fallén, 1819) in Palaearctic.

Adults (Fig. 1) are common on shore of lakes and ponds (Fig. 2), also near rivers with slow flowing. I have caught flies of both sexes of *Spaziphora hydromyzina* in Moscow Region on stems of *Sparganium* sp.

Larvae of *S. cincta* are “free-living and aquatic, predaceous on other organisms” [Ferrar, 1987]. Immature stages of *S. hydromyzina* were described by Graham [1939]. Larvae of this species attack aquatic larvae i.e. psychodids and chironomids and feed on algal and fungal growth in the sewage beds. Data on immature morphology and biology was summarized by Ferrar [1987] and later by Andersson [1997]. Nelson [1995] reported the larvae of *Spaziphora hydromyzina* from the nest of a *Fulica atra* Linnaeus.

While determining materials of Scathophagidae from Chukotka, collected by P.S. Tomkovich in 2011 I discovered one more undescribed species of *Spaziphora*. Genus diagnosis, a description of a new species and redescription of the other species, key for determination of species are given below.

Terminology follows McAlpine [1981] and Cumming et al. [2009]. The following abbreviations are used for depositories of the studied specimens: CNC — Canadian National Collection of Insects, Ottawa, Canada; MCZ — Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA; MNHN — Muséum National d'Histoire Naturelle, Paris, France; MZLU — Lund University, Lund, Sweden; NMW — Naturhistorisches Museum, Wien, Austria; USNM — National Museum of Natural History, Washington, USA; ZMUH — Museum für Naturkunde der Humboldt-Universität, Berlin, Germany; ZMUM — Zoological Museum, Moscow State University, Moscow, Russia. Other abbreviations used: *a* — anterior; *d* — dorsal; *p* — posterior; *v* — ventral; and combinations of these latter four, all used for leg chaetotaxy.

#### Taxonomic part

##### *Spaziphora* Rondani

*Spaziphora* Rondani, 1856: 99. Gender: feminine. Type-species: *Cordylura hydromyzina* Fallén, 1819, by original designation.

*Spaziophora*, emend. [e.g. Mik, 1884: 254; Becker, 1894: 160; Sack, 1937: 88; Hackman, 1956: 59].

*Spaziophora*, error.

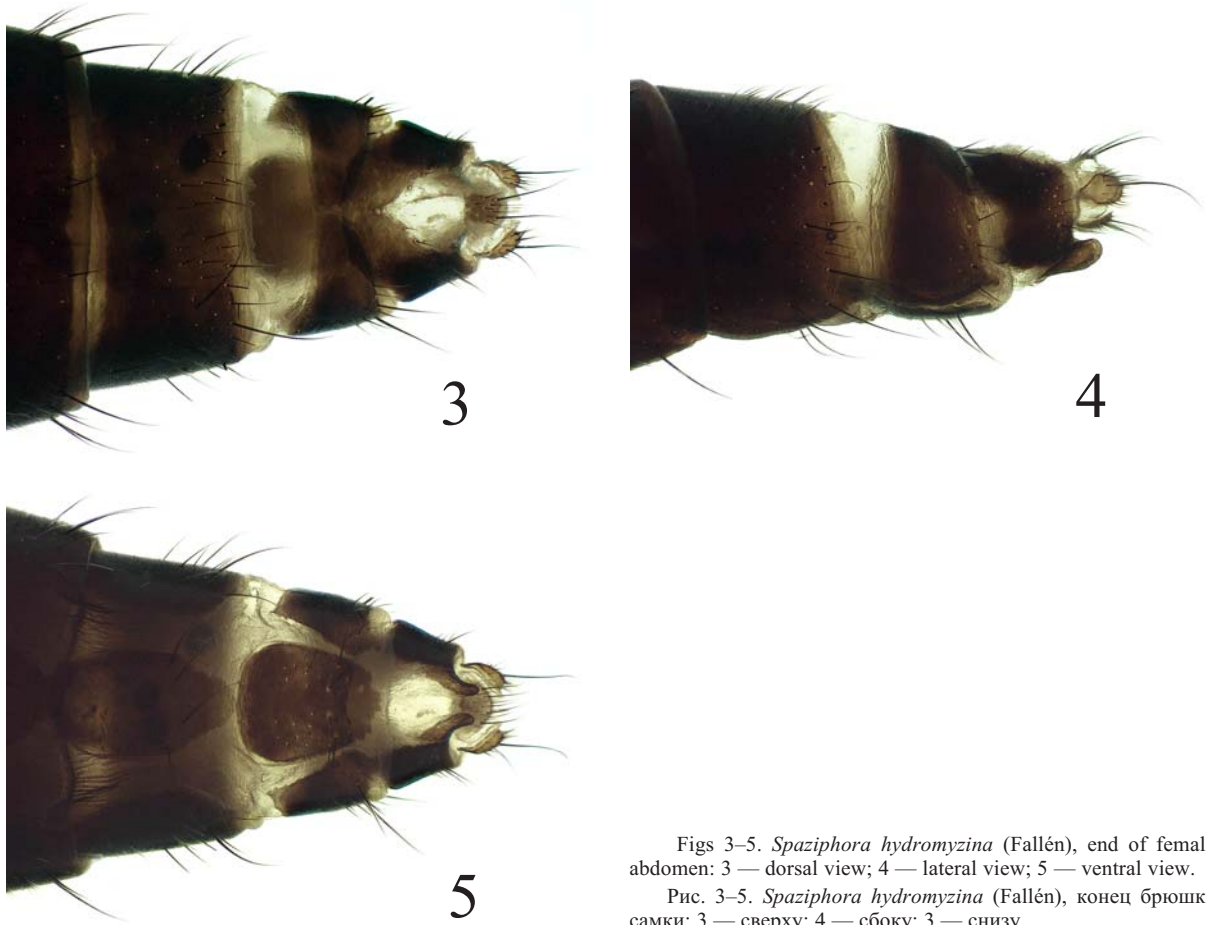
Postpedicel with acute upper apical corner. Arista bare. Palpus distinctly spatulate. Proepisternum covered with hair-like setulae at middle or in anterior part. Anepisternum covered with setulae usually along dorsal margin and in posterior part only, without setulae posterior to anterior spiracle. Anepimeron bare. Katepisternum with 1 strong seta in posterodorsal corner. Postmetacoxal (= postcoxal, metepimeral) bridge



Fig. 1. *Spaziphora hydromyzina* (Fallén): syntype ♂ of *Spathiophora fascipes* Becker from ZMUI collection.  
Рис. 1. *Spaziphora hydromyzina* (Fallén): синтип ♂ *Spathiophora fascipes* Becker из коллекции ZMUI.



Fig. 2. Typical biotope for *Spaziphora hydromyzina* (Fallén) in Moscow Region.  
Рис. 2. Typical biotope for *Spaziphora hydromyzina* (Fallén) in Moscow Region.



Figs 3–5. *Spaziphora hydromyzina* (Fallén), end of female abdomen: 3 — dorsal view; 4 — lateral view; 5 — ventral view.

Рис. 3–5. *Spaziphora hydromyzina* (Фаллен), конец брюшка самки: 3 — сверху; 4 — сбоку; 5 — снизу.

absent. Scutellum with 2 pairs of strong setae: basal and apical. Foretibia of both sexes without posteroventral row of strong setae. Male sternite 5 symmetrical, with three pairs of tubercles (Figs 7, 8, 12, 13, 17, 18). Cerci and surstyli simple, symmetrical (Figs 9, 10, 14, 15, 19, 20). Ovipositor short, cylindrical (Figs. 3–5), tergite 7 divided medially (Fig. 3), sternite 8 divided medially and partly fused with tergite 8 (Fig. 5).

#### KEY TO THE SPECIES OF *SPAZIPHORA* OF RUSSIA (MALES)

1. Proximal tubercle of male sternite 5 with two spurs (Figs 17, 18). Surstyli as in Figs 19, 20 .....  
..... *Spaziphora tomkovichii* sp.n.
- Proximal tubercle of male sternite 5 without spurs (Figs 7, 8, 12, 13). Surstyli as in Figs 9, 10, 14, 15 ..... 2
2. Proximal tubercle of male sternite 5 clearly bifurcated (Fig. 7). Surstyli as in Figs 9, 10.. *Spaziphora cincta* (Loew)
- Proximal tubercle of male sternite 5 not bifurcated (Fig. 12). Surstyli as in Figs 14, 15 .....  
..... *Spaziphora hydromyzina* (Fallén)

*Spaziphora cincta* (Loew, 1863)  
Figs 6–10.

*cincta* Loew, 1863: 25 (*Cordylura*). Type-locality: “District Columbia”; HT ♂, in MCZ.

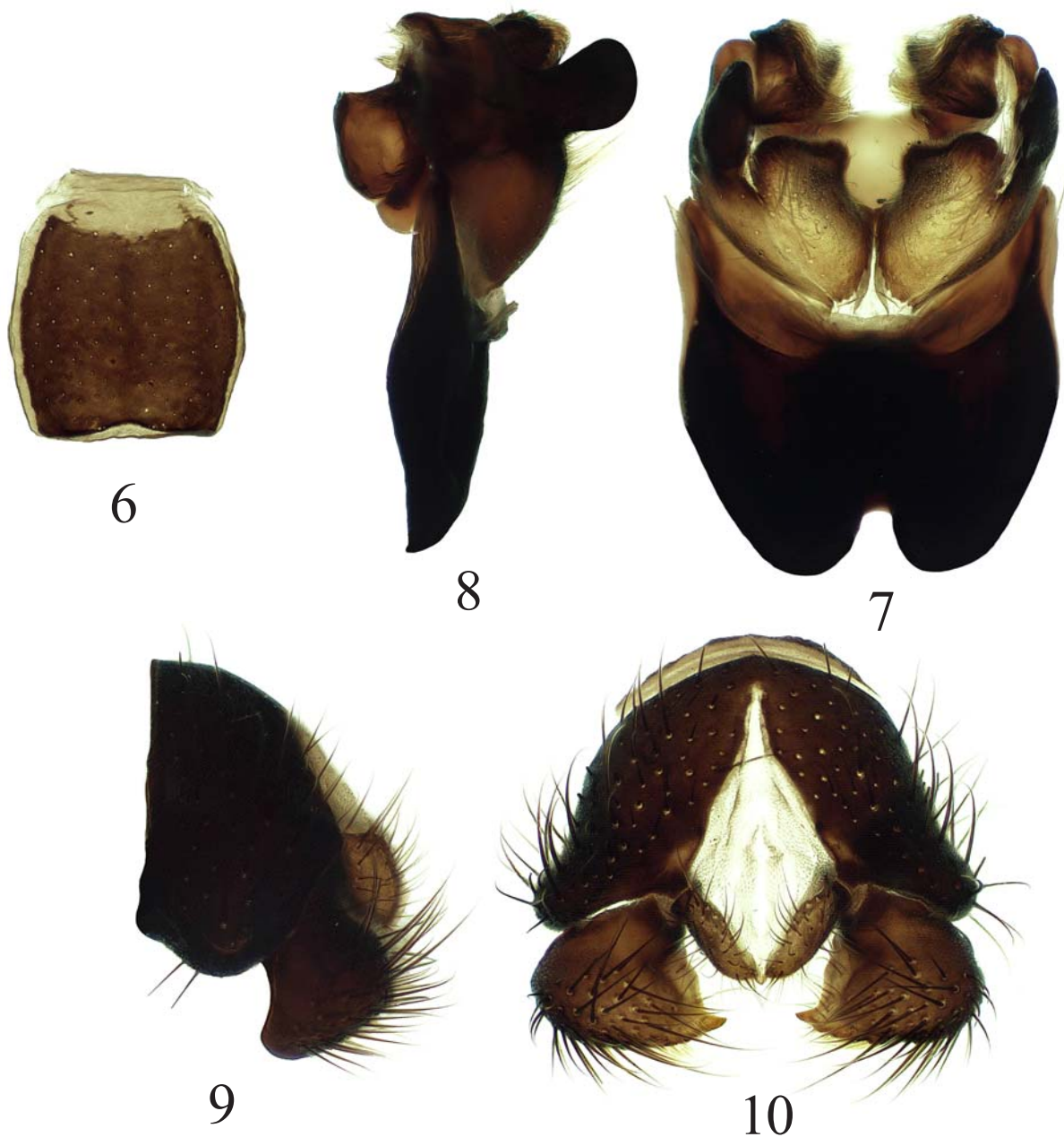
*litoralis* Curran, 1927: 256 (*Spaziphora*) [as var. of *cincta* Loew]. Type-locality: Ottawa, Ontario (Canada); HT ♂, in CNC.

MATERIAL EXAMINED. 1 ♂, Leeward Island, St. Lawrence Is., National Park Ontario, 29.VIII.1976, A. Carter; 1 ♂, 1 ♀, Ottawa River, Remic Rapids, Ont., 18.VI.1949, G.E. She-well; 1 ♀, Christopher L., Sask, 3.IX.1948, A.R. Brooks (ZMUM, all specimens was got in exchange from CNC).

REDESCRIPTION. Length of body 6.2–7.8 mm. Length of wing 5.7–6.2 mm.

Male. *Head*. Frons black in upper part and yellow in lower third, with whitish microtrichia. Ocellar triangle black. Face, parafacial and gena whitish to yellow, with whitish microtrichia. Postcranium black, with black setae and setulae in upper third and with yellow hairs in lower part. Setae: 3 orbitals, 3–4 frontals, 1 ocellar, 1 inner vertical, 1 outer vertical (approximately 0.3 times as long as inner vertical); postocellar setae absent or as setulae; 2 pairs of strong vibrissae and several pairs of short subvibrissae present. Pedicel blackish. Postpedicel black outside and yellow inside or almost entirely black, with acute upper apical corner, approximately 2 times as long as wide. Arista blackish, bare. Palpus yellow, distinctly spatulate. Clypeus and proboscis black.

*Thorax* black, densely grey microtrichose. Scutum with following black setae: 1–2 postpronotals (inner small or absent), 2 notopleurals, 1+2 intra-alars, 1+1 supra-alars, 2 postalar, and (2–3)+(3–4) dorsocentrals;



Figs 6–10. *Spaziphora cincta* (Loew), ♂: 6 — sternite 4; 7 — sternite 5, dorsal view; 8 — sternite 5, lateral view; 9 — epandrium, cercus and surstylus, lateral view; 10 — epandrium, cerci and surstyli, dorsal view.

Рис. 6–10. *Spaziphora cincta* (Loew), ♂: 6 — стернит 4; 7 — стернит 5, сверху; 8 — стернит 5, сбоку; 9 — эпандрий, церк и сурстиль, сбоку; 10 — эпандрий, церки и сурстили, сверху.

acrosticals usually as pair of setulae in front of scutellum. Proepisternum and proepimeron with several whitish hairs. Anepisternum covered with hairs in posterior half and row of black setae along posterior margin. Katepisternum with 1 strong seta in posterodorsal corner. Anepimeron bare. Scutellum with 2 pairs of strong setae.

*Legs.* Coxae black. Trochanters yellow. Femora black in central part and yellow basally and apically. Tibiae and tarsi yellow. Forefemur and especially mid-

femur thickened. Forefemur with rows of *d* and *av* setulae. Foretibia with 1 *d* and 1 *p* near middle, 1 preapical *d* and apical *p* and *ad*. Midfemur with row of *ad*, 1–3 *av* in apical half, and 1–2 preapical *pd*. Midtibia with 1 *p*, 1 preapical *d*, and apical *a*, *p*, and *v*. Hindfemur with row of *ad* and 2–4 *av* in apical half. Hindtibia with 2 *ad*, 2 *pd*, 1 preapical *d*, and apical *ad* and *av*.

*Wing.* Tinged with brownish, veins brownish. Calypteres, including margins, and halteres yellowish.

*Abdomen* black, densely grey microtrichose. Syntergite 1+2 with long yellowish setae at sides. Tergites 3–6 with row of marginal setae. Male sternite 5 as in Fig. 7, 8; proximal tubercle of sternite 5 clear bifurcated. Epandrium, cerci and surstyli as in Figs. 9, 10.

Female. Frons black in upper part and yellow in lower quarter. Forefemur and midfemur slightly thickened. Midtibia with 1 *ad*, 1 *p*, 1 preapical *d*, and apical *a*, *p*, and *v*. Tergites 3–6 with row of thin marginal setae.

DISTRIBUTION. Nearctic. — Canada and USA (cent. Alaska to cent. Que., s. to s. Alta, Iowa and Va. [Vockeroth, 1965: 836]).

*Spaziphora hydromyzina* (Fallén, 1819)

Figs 1–2, 3–5, 11–15.

*hydromyzina* Fallén, 1819: 7 (*Cordylura*). Type-locality: “Svecia superiori... Kjellinge Scaniae” (Sweden); ST ♂♀, in MZLU and in MNHN (Becker, 1902: 215).

*albitarsis* Zetterstedt, 1838: 728 (*Cordylura*). Type-locality: “Laponnia Umensi... Degerfors et Lycksele” (Sweden); ST ♂, in MZLU.

*fallenii* Schiner, 1864: 14 (*Hydromyza*). Type-locality: “Greifswalde” (Germany); ST ♂♀, in ?NMW.

*fasciipes* Becker, 1894: 160 (*Spathiophora*). Type-localities: “Zett., Cord. hydromyzina var. b, Dipt. Scand. V. 2037, 35 [Scandinavian præserlim meridionalem & mediam, a fine mensis Maji usque ad medium Septemb., passim; scilicet in Scania: ad Høje-å & Kjellby prope Lund sal frequens; ad Kjöfliuge-å, Ringsjön, Abusa & Esperöd, non parce; in Smolandia, 1). Boheman; in Ostrogothia ad Gusum, Omberg & Wadstena prope lacum Wettern; in Westrogothia, Gyllenhal; in Gottlandia ad Silö & in palude Helvig rarius; in Uplandia ad Holmiam, D. Wahlberg; in Dalecarlia, D. Boheman; in Jemtlandia ad Åreskutan, parcius; ad Hafniam Danorum frequens, D. Staeger. (Ad Gryphiam Maj. 1812, D. Dahlbom).]” (Sweden); ST ♂♀, in MZLU and ZMUH.

MATERIAL EXAMINED. RUSSIA: Arkhangelsk (64.51825°N, 40.42155°E), 7.VIII.2011, D.Gavryushin, 5 ♂♂, 2 ♀♀; Arkhangelskaya Oblast', Pechora river (68.175957°N, 53.645394°E), 10.VII.2008, N.Vikhrev, 1 ♂; Kamchatskiy Kray, river Kamchatka (~56.376104°N, 160.886131°E), V.I.Sytchevskaya, 2 ♀♀; Krasnoyarskiy Kray, Khakasiya (54.485°N, 90.224°E and (54.422°N, 90.147°E), 21–26.VI.2011, K.Tomkovich, 2 ♂♂, 1 ♀; environs of Leningrad [=St.-Petersburg], 26.VII.1984, M. Krivosheina, 1 ♀; Moskovskaya Oblast', Stepan'kovo (56°00.271'N, 3537.483'E), 6.VII.2006, A.L. Ozerov, 1 ♂, 1 ♀; Moskovskaya Oblast', Andreevskoe (55.978322°N, 35.58856°E), 9–10.VIII.2007, A.L. Ozerov, 14 ♂♂, 12 ♀♀; Moskovskaya Oblast', Burtsevo (55.937787°N, 37.388687°E), 13.V.2010, A.L. Ozerov, 1 ♀; Moskovskaya Oblast', Burtsevo (55.985743°N, 35.620969°E), 19.VIII.2007, A.L. Ozerov, 1 ♂, 1 ♀; Moskovskaya Oblast', Burtsevo (55.977290°N, 35.587480°E), 8.VIII.2007, A.L. Ozerov, 2 ♂♂; Moskovskaya Oblast', Burtsevo (55.987704°N, 35.600864°E), 2.IX.2007, A.L. Ozerov, 2 ♂♂; Moskovskaya Oblast', Yur'ev (56.005799°N, 35.545089°E), 9.VIII.2007, A.L. Ozerov, 1 ♀; Moskovskaya Oblast', Burtsevo (55.985743°N, 35.620969°E), 19.VIII.2007, A.L. Ozerov, 1 ♂, 1 ♀; Murmanskaya Oblast', Kola (68.870179°N, 32.990957°E), 20.VII.2011, A.L. Ozerov, 2 ♂♂, 1 ♀; Tverskaya Oblast', Ostashkov, 12–13.VII.1936, B.Rohdendorf, 2 ♀♀; Tverskaya Oblast', Ostashkov, 13.VII.1936, V. Polezhaev, 2 ♂♂, 1 ♀; Tverskaya Oblast', lake Volgo (56.876617°N, 33.243999°E), 18–19.VIII.2011, A.L. Ozerov, 3 ♂♂, 2 ♀♀; Tyumenskaya Oblast', [???], 16.VIII.1987, 1 ♀; Ul'yanskiy Oblast', Radishevo (52.836°N, 48.367°E), 7–9.V.2011, K.Tomkovich, 2 ♀♀ (all material in ZMUM).

REDESCRIPTION. Length of body 6.3–8.5 mm. Length of wing 5.5–6.4 mm.

Male. *Head*. Frons black in upper part and yellow in lower half or third, with whitish microtrichia. Ocellar triangle black. Face, parafacial and gena yellow, with whitish microtrichia. Postcranium black, with black setae and setulae in upper third and with yellow hairs in lower part. Setae: 3 orbitals, 3–4 frontals, 1 ocellar, 1 inner vertical, 1 outer vertical (approximately 0.3 times as long as inner vertical); postocellar setae absent or as setulae; 2 pairs of strong vibrissae and several pairs of short subvibrissae present.

Pedicele blackish. Postpedicele yellow to black, with acute upper apical corner, approximately 2 times as long as wide. Arista yellow to black, bare. Palpus yellow, distinctly spatulate. Clypeus and proboscis black.

*Thorax* black, densely grey microtrichose. Scutum with following black setae: 1–2 postpronotals (inner small or absent), 2 notopleurals, 1+2 intra-alars, 1+1 supra-alars, 2 postalar, and (3–4)+(3–4) dorsocentrals; acrosticals usually as pair of setulae in front of scutellum. Proepisternum and proepimeron with several whitish hairs. Anepisternum covered with hairs in posterior half and row of black setae along posterior margin. Katepisternum with 1 strong seta in posterodorsal corner. Anepimeron bare. Scutellum with 2 pairs of strong setae.

*Legs*. Coxae black. Trochanters yellow to black. Femora from entirely yellow to almost entirely black, but usually black in central part and yellow basally and apically. Tibiae and tarsi yellow. Forefemur and especially midfemur thickened. Forefemur with rows of *d* and *av*. Foretibia with 1 *d* and 1 *p* near middle, 1 preapical *d* and apical *p*. Midfemur with row of *ad*, 1–3 *av* in apical half, and 1–2 preapical *pd*. Midtibia with 1 *p*, 1 preapical *d*, and apical *a*, *p*, and *v*. Hindfemur with row of *ad* and 2–4 *av* in apical half. Hindtibia with 2 *ad*, 2 *pd*, 1 preapical *d*, and apical *ad* and *av*.

*Wing*. Tinged with brownish, veins brownish. Calypteres, including margins, and halteres yellowish.

*Abdomen* black, densely grey microtrichose. Syntergite 1+2 with long yellowish setae at sides. Tergites 3–6 with row of marginal setae. Male sternite 5 as in Fig. 12, 13. Epandrium, cerci and surstyli as in Figs. 14–15.

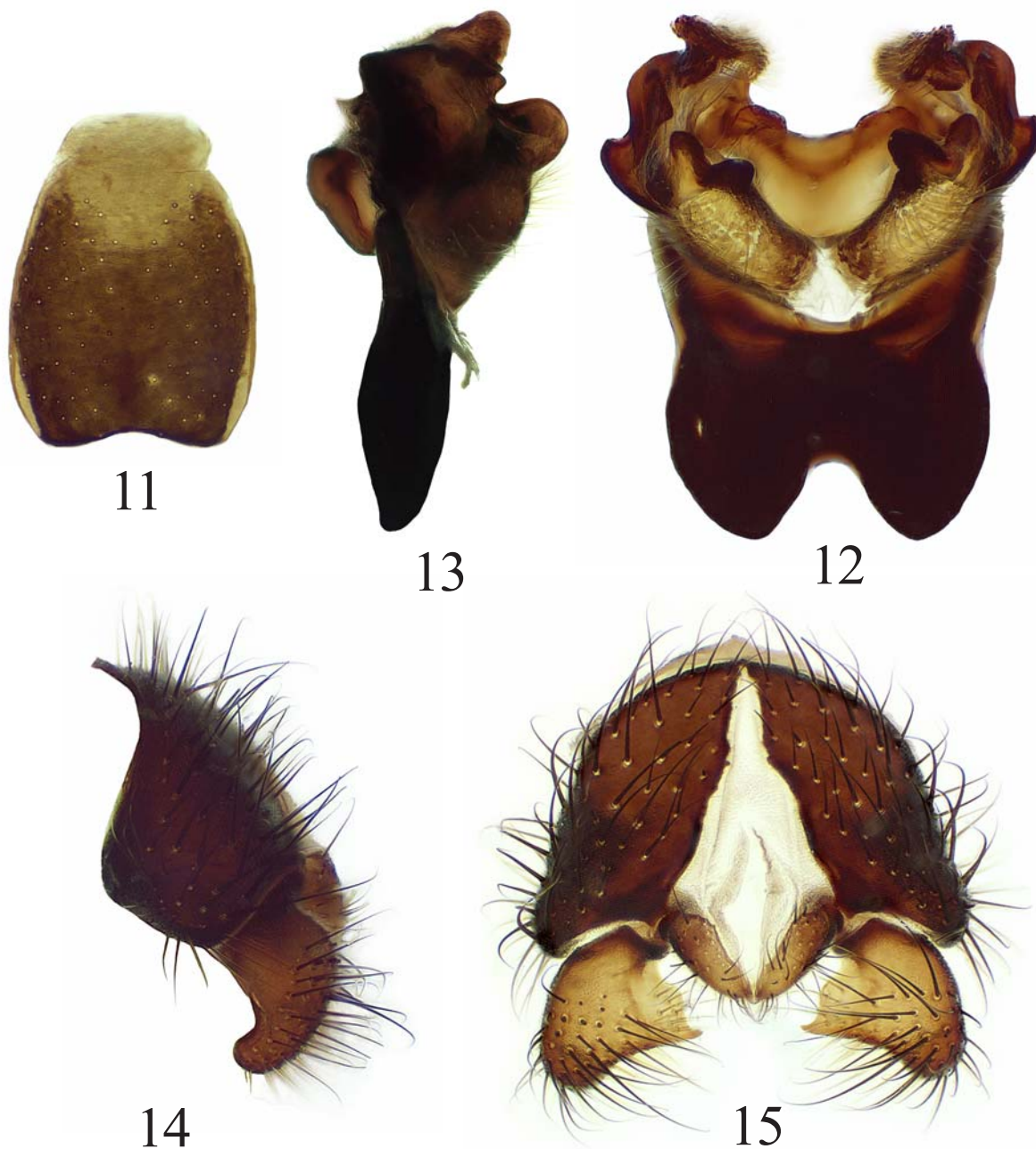
Female. Frons black in upper part and yellow in lower third or quarter. Forefemur and midfemur slightly thickened. Midtibia with 1 *ad*, 1 *p*, 1 preapical *d*, and apical *a*, *p*, and *v*. Tergites 3–6 with row of thin marginal setae.

DISTRIBUTION. Russia: all european part, West Siberia; widespread in Europe, Kazakhstan, Mongolia [Gorodkov, 1986; Šifner, 2005].

*Spaziphora tomkovichii* sp.n.

Figs 16–20.

MATERIAL. Holotype ♂, RUSSIA: Chukotka, Anadyr' Distr., Meynipyly'gino (62.567°N, 177.033°E), lake-morene, 10–13.VII.2011, P.S. Tomkovich (ZMUM). Holotype gummed on pin, abdomen dissected and stored in microvial with glycerine on the same pin with specimen.



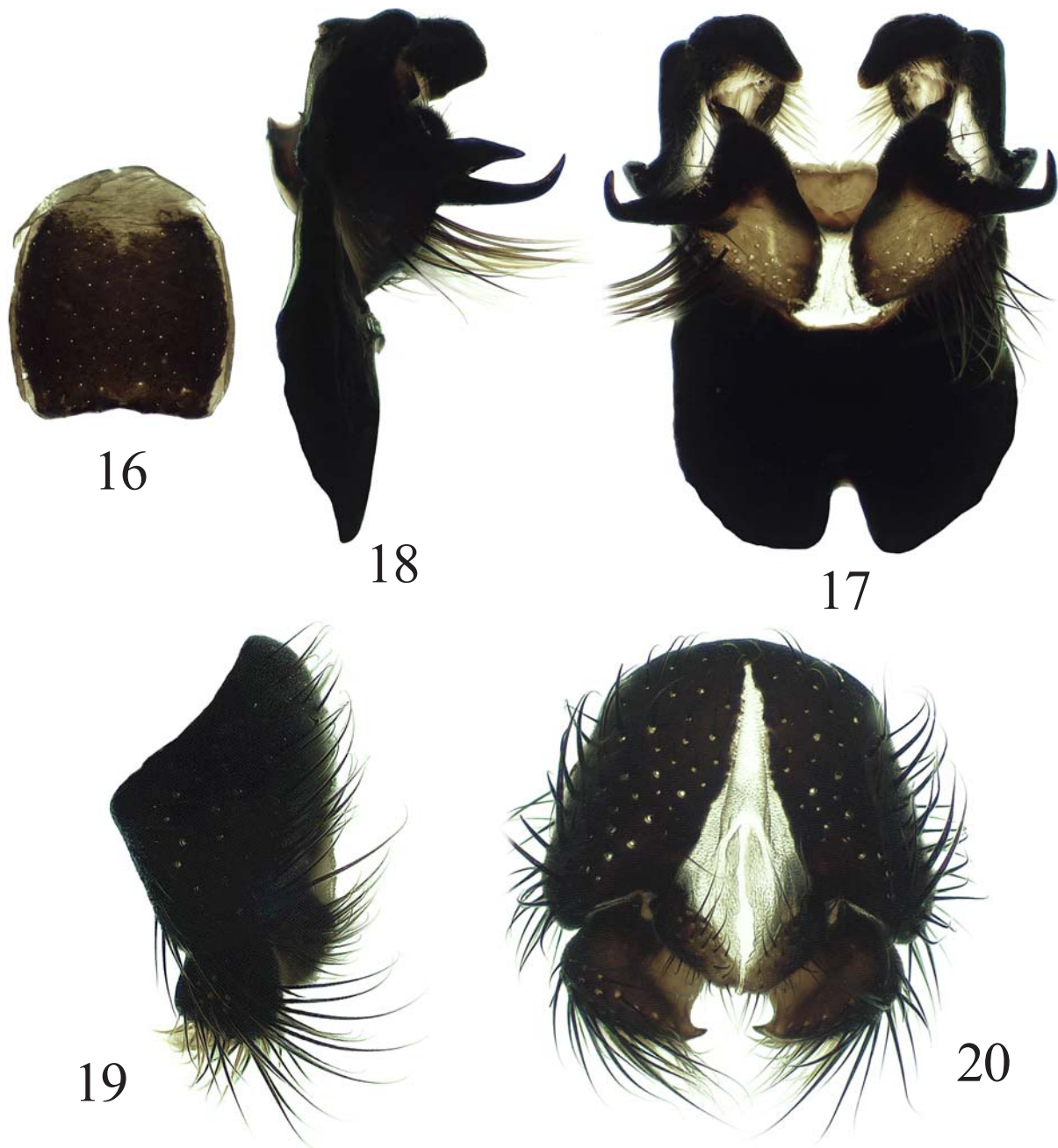
Figs 11–15. *Spaziphora hydromyzina* (Fallén), ♂: 11 — sternite 4; 12 — sternite 5, dorsal view; 13 — sternite 5, lateral view; 14 — epandrium, cercus and surstylus, lateral view; 15 — epandrium, cerci and surstyli, dorsal view.

Рис. 11–15. *Spaziphora hydromyzina* (Fallén), ♂: 11 — стернит 4; 12 — стернит 5, сверху; 13 — стернит 5, сбоку; 14 — эпандрий, церк и сурстиль, сбоку; 15 — эпандрий, церки и сурстили, сверху.

**DESCRIPTION.** Length of body 6.0 mm. Length of wing 5.3 mm.

**Male. Head.** Frons black in upper part and yellow in lower third, with whitish microtrichia. Ocellar triangle black. Face, parafacial and gena whitish, with white microtrichia. Postcranium black, with black setae and setulae in upper third and with yellow hairs in lower part. Setae: 3 orbitals, 3–4 frontals, 1 ocellar, 1 inner

vertical, 1 outer vertical (approximately 0.3 times as long as inner vertical), 1 short postocellar; 2 pairs of strong vibrissae and several pairs of short subvibrissae present. Antenna black, tip of pedicel and basal part of postpedicel reddish. Postpedicel with acute upper apical corner, approximately 1.5 times as long as wide. Arista black, bare. Palpus white, distinctly spatulate. Clypeus and proboscis black.



Figs 16–20. *Spaziphora tomkovichi* sp.n., HT ♂: 16 — sternite 4; 17 — sternite 5, dorsal view; 18 — sternite 5, lateral view; 19 — epandrium, cercus and surstylus, lateral view; 20 — epandrium, cerci and surstyli, dorsal view.

Рис. 16–20. *Spaziphora tomkovichi* sp.n., HT ♂: 16 — стернит 4; 17 — стернит 5, сверху; 18 — стернит 5, сбоку; 19 — эпандрий, церк и сурстий, сбоку; 20 — эпандрий, церки и сурстиги, сверху.

*Thorax* black, densely grey microtrichose. Scutum with following black setae: 2 postpronotals (inner small), 2 notopleurals, 1+2 intra-alars, 1+1 supra-alars, 2 post-alar, and (2–3)+(3–4) dorsocentrals; acrosticals as pair of setulae in front of scutellum. Proepisternum and proepimeron with several whitish hairs. Anepisternum covered with hairs in posterior half and row of black setae along posterior margin. Katepisternum with 1

strong seta in posterodorsal corner. Anepimeron bare. Scutellum with 2 pairs of strong setae.

*Legs.* Coxae and trochanters black. Femora black, with yellow spot ventrally near apex, slightly thickened. Tibiae and tarsi yellow. Forefemur with rows of *d* and *av* setulae. Foretibia with 1 *d* and 1 *p* near middle, 1 preapical *d* and apical *p* and *ad*. Midfemur with row of *ad*, 1 *av* in apical half, and 1 preapical *pd*.

Midtibia with 1 *p* and apical *a*, *p*, and *v*. Hindfemur with row of *ad* and 2–4 *av* in apical half. Hindtibia with 2–3 *ad*, 3 *pd*, 1 preapical *d*, and apical *ad* and *av*.

*Wing*. Tinged with brownish, veins brown. Calyp-teres, including margins, and halteres whitish.

*Abdomen* black, densely grey microtrichose. Syntergite 1+2 with long yellowish setae at sides. Tergites 3–6 with row of marginal setae. Male sternite 5 as in Fig. 3, proximal tubercle of sternite 5 with two spurs. Epandrium, cerci and surstyli as in Figs. 1–2.

Female unknown.

**ETYMOLOGY.** The new species is named in honour of collector, Russian ornithologist Dr. Pavel S. Tomkovich.

**COMPARISON.** The new species differs from the other species of *Spaziphora* by structure of male sternite 5 and surstyli (see key above).

**DISTRIBUTION.** Russia (Chukotka).

**ACKNOWLEDGMENTS.** I wish to thank Dr. Pavel Tomkovich (ZMUM) for the material of Scathophagidae from Chukotka and Dr. James O'Hara (CNC) for the exchange of Nearctic species of Scathophagidae.

## References

- Becker T. 1894. Dipterologische Studien. I. Scatomyzidae // Berliner Entomologische Zeitschrift. Bd.39. H.1. P.77–196.
- Cumming J.M., Wood D.M. 2009. Adult morphology and terminology // Brown B.V., Borkent A., Cumming J.M., Wood D.M., Woodley N.E., Zumbado M. (eds.). Manual of Central American Diptera. Vol. 1. National Research Council Press, Ottawa. P. 9–50.
- Curran C.H. 1927. Some new Canadian Scatophagidae (Diptera) // The Canadian Entomologist. Vol.59. No.11. P.253–261.
- Fallén C.F. 1819. Scatomyzides. Lundae. 10 pp.
- Ferrar P. 1987. A guide to the breeding habits and immature stages of Diptera Cyclorrhapha // Entomograph. Vol.8. Part.1–2. 907 pp.
- Gorodkov K.B. 1986. Family Scathophagidae // Soós Á, Papp L (eds): Catalogue of Palaearctic Diptera. Vol. 11. Scathophagidae-Hypodermatidae. Akadémiai Kiadó, Budapest, P.11–41.
- Graham J.F. 1939. The external features of the early stages of *Spathiophora Hydromyzina* (Fall.) (Dipt., Cordyluridae) // Proceedings of the Royal Entomological Society of London. Series B, Taxonomy. Vol.8. P.157–162.
- Hackman W. 1956. The Scatophagidae (Dipt.) of Eastern Fennoscandia // Fauna fennica II. Helsingfors. 67 pp
- Loew H. 1863. Diptera Americana septentrionalis indigena // Berliner Entomologische Zeitschrift. Bd.7. S.1–55.
- McAlpine J. F. 1981. Morphology and terminology-adults // McAlpine J.F., Peterson B.V., Shewell G.E., Teskey H.J., Vokeroth J.R., Wood D.M., Coordinators. Manual of Nearctic Diptera. Volume 2. Research Branch. Agriculture Canada. Monograph 27. Ottawa. P. 9–63.
- Mik J. 1884. Fünf neue österreichische Dipteren // Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien. Bd.33(1883). P.251–262.
- Nelson J.M. 1995. Dung-flies (Diptera: Scathophagidae) in birds' nests, with particular reference to *Trichopalpus fraterna* (Meigen) // Entomologist's Gazette. Vol.46. P.285–287.
- Rondani C. 1856. Dipterologiae Italicae Prodromus. Vol. I. Genera Italica ordinis dipterorum ordinatim disposita et distincta et in familias et stirpes aggregata. Parmae. 228 pp.
- Sack P. 1937. Die Fliegen der Palaearktischen Region. 62a. Cordyluridae. (Scatomyzidae) // Lindner E. (Hrsg.). Die Fliegen der palaearktischen Region. Stuttgart. Bd.7. 103 S.
- Schiner J.R. 1864. Fauna Austriaca. Die Fliegen (Diptera). II. Theil. Wien: Druck und Verlag von Carl Gerold's Sohn. 658 S.
- Šifner F. 2008. A catalogue of the Scathophagidae (Diptera) of the Palaearctic region, with notes on their taxonomy and faunistics // Acta Entomologica Musei Nationalis Pragae. Vol.48. No.1. P.111–196.
- Zetterstedt J.W. [1838]. Sectio tertia. Diptera // Insecta Lapponica. '1840', Leopold Voss, Lipsiae [= Leipzig], vi + P. 477–868.