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NEW DATA ON THE STYLOPID FAUNA (STREPSIPTERA: STYLOPIDAE) OF THE EUROPEAN PART OF RUSSIA

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Summary. New faunistic data on 11 species of the strepsipterans family Stylopidae collected from bees in the Tambov, Voronezh, Kursk, Belgorod, Lipetsk oblasts, and the Mari El Republic of Russia is given. Seven species, *Crawfordia labiata, Eurystylops ogloblini, Halictoxenos arnoldi, Stylops ater, S.* sp. aff. *maxillaris, S. melittae* and *S. praecocis*, are new for the fauna of the Russia. First instars, dissected adult females and their cephalothoraxes are illustrated. Brief information on distribution and biology of these species is given.

Key words: stylopids, Stylopidae, bees, fauna, new records, Europe.

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Резюме. Приведены новые фаунистические данные о 11 видах веерокрылых семейства Stylopidae, собранных с пчел на территории Тамбовской, Воронежской, Курской, Белгородской, Липецкой областей и Республики Марий-Эл. Семь видов (*Crawfordia labiata*, *Eurystylops ogloblini*, *Halictoxenos arnoldi*, *Stylops ater*, *S.* sp. aff. *maxillaris*, *S. melittae* и *S. praecocis*) являются новыми для фауны России. Проиллюстрированы триунгулины, отпрепарированные взрослые самки и их цефалотораксы. Приведены данные по распространению и биологии каждого вида.

INTRODUCTION

Strepsiptera, also known as twisted-winged parasites, is a small insect order with around 600 described species (Kathirithamby, 2018). They are obligate parasites of other insects and parasitize insects from seven orders (Kathirithamby, 1989; Cook, 2014). All strepsipterans have three endoparasitic larval stages and for the majority of the species females remain as endoparasites in their adulthood (Pohl & Beutel, 2008). In contrast, the males live their short adult life, only lasting hours, as free-living (Kathirithamby, 1989; Cook, 2014).

Previously, the authors published information on distribution of the strepsipterans family Stylopidae (endoparasites of bees) in the European part of Russia (Ostrovsky & Ivlev, 2024). The present study aims to contribute new data to the already published results.

MATERIAL AND METHODS

Collections of bees collected in the Tambov, Voronezh, Kursk, Belgorod, Lipetsk oblasts, and the Mari El Republic were processed. All bees stylopized by strepsipterans were dissected to examine the twisted-winged parasites. Extracted parasites were dehydrated in absolute alcohol, mounted in Faure's liquid on celluloid micro-slides, and pinned with the specimen from whom they originated. The illustrations of the first instars were taken with a Sony Alpha NEX-5N Mirrorless Camera through the eyepiece of a microscope Micromed S-12. The illustrations of dissected adult females and their cephalothoraxes were taken with a Xiaomi Redmi Note 8 Pro Smartphone Camera through the eyepiece of a binocular stereoscopic microscope MBS-10. The examined material is stored in the authors' private collections.

LIST OF THE SPECIES

Family Stylopidae Kirby, 1813

Subfamily Stylopinae Kirby, 1813

Genus *Crawfordia* Pierce, 1908

***Crawfordia labiata* Ogloblin, 1924**
Fig. 1

MATERIAL EXAMINED. **Russia:** Voronezh Oblast, 25 km NE of Voronezh, Venevitenovo Biostation, 51.810500°N, 39.396025°E, post-fire areas of pine forest, 30.VI 2023, K.S. Ivlev leg. – 1♀ of *Panurginus labiatus* (Eversmann, 1852) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Crawfordia labiata* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 11 km NE of the vill. Inzhavino, near vill. Karai-Pushchino, Voronina (Voroninsky) Nature Reserve, 52.394040°N, 42.617662°E, along the road in a dry meadow, 25.VI 2024, K.S. Ivlev leg. – 1♂ of *Panurginus labiatus* (Eversmann, 1852) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Crawfordia labiata* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Currently known from Poland and Ukraine (Ogloblin, 1925; Huflejt & Liana, 2004; Cook, 2019).

REMARKS. *Crawfordia labiata* is a parasite of solitary bees *Panurginus labiatus* (Eversmann, 1852), *P. annulatus* (Sichel, 1859), *P. turcomanicus* Popov, 1936, *P. corpanus* Warncke, 1972, *P. lactipennis* Friese, 1897 (Hymenoptera: Andrenidae) (Cook, 2019).

Genus *Eurystylops* Bohart, 1943

***Eurystylops ogloblini* Benda et Straka, 2025**
Figs 2, 9

MATERIAL EXAMINED. **Russia:** Belgorod Oblast, vill. Borisovka, Belogorye Nature Reserve, 50.607918°N, 36.009085°E, steppe, VI-VII 2004, author of collection unknown – 1♀ of *Rophites hartmanni* Friese, 1902 (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova)) stylopized by 1♀ of *Eurystylops ogloblini* (between IV and V tergites)

(A.M. Ostrovsky det.); Voronezh Oblast, Liski suburb, near vill. Selyavnoe, 50.986656°N, 39.368360°E, feather grass steppe slopes with chalk outcrops, 16.VI 2024, K.S. Ivlev leg. – 1♀ of *Rophites quinquespinosus* Spinola, 1808 (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova)) stylopized by 1♀ and numerous first instars of *Eurystylops ogloblini* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, 52.357995°N, 42.593527°E, a glade dominated by Agrostis gigantea Roth in a mixed forest, 17.VI 2024, K.S. Ivlev leg. – 1♀ of *Rophites quinquespinosus* Spinola, 1808 (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova)) stylopized by 1♀ of *Eurystylops ogloblini* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, 52.366369°N, 42.603885°E, overgrown mowed meadow along a mixed forest, 23.VI 2024, K.S. Ivlev leg. – 1♀ of *Rophites quinquespinosus* Spinola, 1808 (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova)) stylopized by 1♀ of *Eurystylops ogloblini* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 11 km NE of the vill. Inzhavino, near vill. Karai-Pushchino, Voronina (Voroninsky) Nature Reserve, Olkhovyi kust, 52.409318°N, 42.637615°E, the steppe thyme slope, 28.VI 2024, K.S. Ivlev leg. – 3♂ of *Rophites quinquespinosus* Spinola, 1808 (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova)) stylopized by 3♀ of *Eurystylops ogloblini* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Distributed in the western Palaearctic region. Reported from Czech Republic (type locality), Slovakia, Turkey, Greece, Ukraine and Azerbaijan (Ulrich, 1930; Benda & Straka, 2025).

REMARKS. *Eurystylops ogloblini* is a typical parasite of *Rophites* bees (Hymenoptera: Halictidae), in particular, *R. clypealis* Schwammberger, 1976, *R. hartmanni* Friese, 1902 and *R. quinquespinosus* Spinola, 1808 (Benda & Straka, 2025).

Genus *Halictoxenos* Pierce, 1908

Halictoxenos arnoldi Perkins, 1918

Figs 5, 10

MATERIAL EXAMINED. **Russia:** Voronezh Oblast, 25 km NE of Voronezh, Venevitenovo Biostation, 51.813305°N, 39.383930°E, steep bank of the Usman River, 28.VIII 1994, A.V. Lopatin leg. – 1♂ of *Lasioglossum* (*Lasioglossum*) *sexnotatum* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova and Yu.A. Pesenko)) stylopized by 1♀ and single first instars of *Halictoxenos arnoldi* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Currently known from Czech Republic, Germany, Great Britain, Hungary and Turkey (Kinzelbach, 1978; Pohl, 2010; Cook, 2019).

REMARKS. Parasitizes a wide range of species from the subgenera *Lasioglossum*, *Leuchalictus* and *Sphecodogastra* of the genus *Lasioglossum* (Hymenoptera: Halictidae), including *L.* (*Lasioglossum*) *xanthopus* (Kirby, 1802), *L.* (*Sphecodogastra*) *costulatum* (Kriechbaumer, 1873), *L.* (*Leuchalictus*) *leucozonium* (Schrank, 1781) and *L.* (*Lasioglossum*) *quadrinotatum* (Kirby, 1802) (Kinzelbach, 1978; Straka *et al.*, 2006). However, *L.* (*L.*) *sexnotatum* is a new host of *Halictoxenos arnoldi*. In European Russia *L.* (*L.*) *sexnotatum* is a common species.

Halictoxenos spencei (Nassonov, 1893)

Figs 3, 11

MATERIAL EXAMINED. **Russia:** Voronezh Oblast, 10 km SW of Bobrov, near vill. Nikolo-Varvarinka, 51.006968°N, 39.978228°E, steppe, 10.VII 1991, A.V. Lopatin leg. –1♂

Figs 1–8. Ventral view of dissected adult females (1–4) and female cephalothoraxes (5–8) of stylopids: 1 – *Crawfordia labiata* Ogloblin, 1924; 2 – *Eurystylops ogloblini* Benda et Straka, 2025; 3 – *Halictoxenos spencei* (Nassonov, 1893); 4 – *Stylops praecocis* Luna de Carvalho, 1974; 5 – *Halictoxenos arnoldi* Perkins, 1918; 6 – *Stylops ater* Reichert, 1914; 7 – *Stylops* sp. aff. *maxillaris*; 8 – *Stylops melittae* Kirby, 1802

of *Lasioglossum* (*Sphecodogastra*) *calceatum* (Scopoli, 1763) (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova and Yu.A. Pesenko)) stylopized by 1♀ of *Halictoxenos spencei* (between III and IV tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 14 km SW of Liski, Divnogorye Natural, Architectural, and Archaeological Museum-Reserve, Bolshiye Divy, 50.963849°N, 39.296147°E, mixed grass-cereal steppe, 28.VI 1998, A.V. Lopatin leg. – 1♀ of *Lasioglossum* (*Hemihalictus*) *quadrisignatum* (Schenck, 1853) (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova and Yu.A. Pesenko)) stylopized by 1♀ and numerous first instars of *Halictoxenos spencei* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 21 km E of Liski, near vill. Peski-Kharkovskiye, 50.944492°N, 39.251867°E, feather grass steppe on the chalks, 19.V 2024, K.S. Ivlev leg. – 1♀ of *Lasioglossum* (*Hemihalictus*) *villosulum* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova and Yu.A. Pesenko)) stylopized by 1♀ of *Halictoxenos spencei* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 25 km NE of Voronezh, near vill. Maklok, 51.808226°N, 39.412411°E, the edge of the forest, 25.V 2024, D.A. Kirpach leg. – 1♀ of *Lasioglossum* (*Hemihalictus*) *punctatissimum* (Schenck, 1853) (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova and Yu.A. Pesenko)) stylopized by 1♀ and numerous first instars of *Halictoxenos spencei* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km

NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, 52.362594°N, 42.602732°E, along a road in a mixed forest, 27.VI 2024, K.S. Ivlev leg. – 1♀ of *Lasioglossum* (*Hemihalictus*) *villosulum* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by Yu.V. Astafurova and Yu.A. Pesenko)) stylopized by 1♀ of *Halictoxenos spencei* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Widely distributed in the western Palaearctic region. Reported from Austria, Belgium, Great Britain, Canary Islands, Czech Republic, Denmark, Norway, Finland, France, Germany, Greece (mainland and Crete), Hungary, Ireland, Italy (including Sardinia), Netherlands, Poland, Russia, Slovakia, Spain, Ukraine and Turkey (Kinzelbach, 1978; Huflejt & Liana, 2004; Batelka & Straka, 2005; Ronayne & O'Connor, 2006; Pohl, 2010; Soon *et al.*, 2011; Cook, 2019; Smit *et al.*, 2020).

REMARKS. Parasitizes a wide range of species from the subgenera *Hemihalictus* and *Sphecodogastra* of the genus *Lasioglossum* (Hymenoptera: Halictidae) (Kinzelbach, 1978; Straka *et al.*, 2006). However, *L.* (*Hemihalictus*) *quadrisignatum* is a new host of *Halictoxenos spencei*. In European Russia *L.* (*H.*) *quadrisignatum* is a common species.

Genus *Hylecthrus* Saunders, 1850

Hylecthrus rubi Saunders, 1850

Fig. 12

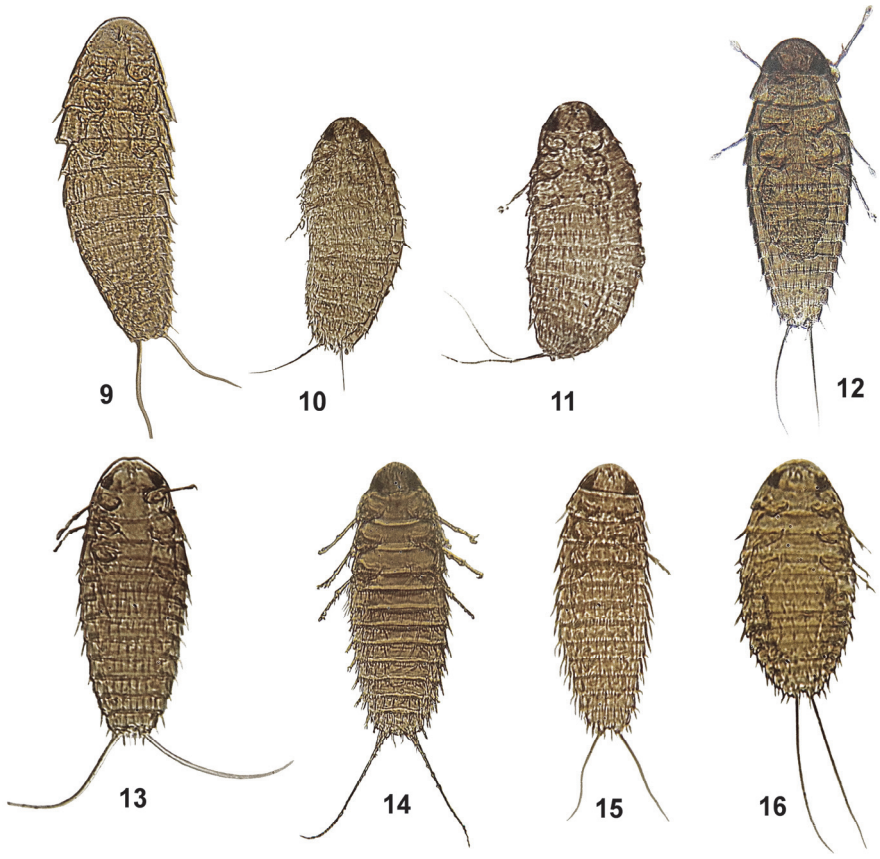
MATERIAL EXAMINED. **Russia:** Voronezh Oblast, 25 km NE of Voronezh, Venevitenovo Biostation, 51.813305°N, 39.383930°E, floodplain meadow, 11.VII 2013, students coll. – 1♀ of *Hylaeus* (*Lambdopsis*) *annularis (*Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Kursk Oblast, 9,3 km NW of the vill. Zolotukhino, near vill. Tifinskoye, Yamnoye, 52.163311°N, 36.330019°E, the edge of the forest along the field, 02.VIII 2022, K.S. Ivlev leg. – 1♀ of *Hylaeus* (*Hylaeus*) *communis* Nylander, 1852 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 25 km NE of Voronezh, Venevitenovo Biostation, 51.814856°N, 39.383414°E, floodplain meadow along the Usman River, 12.VI 2023, K.S. Ivlev leg. – 1♀ of *Hylaeus* (*Prosopis*) *gibbus* Saunders, 1850 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Mari El Republic, 24 km N of Yoshkar-Ola, gardening non-commercial partnership Avtodorozhnik, 56.809470°N, 47.926185°E, the edge of the forest, 08.VIII 2023, A.S. Lezhnina leg. – 1♀ of *Hylaeus* (*Prosopis*) *gibbus* Saunders, 1850 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 16 km NE of Novokhopersk, near vill. Varvarino, Khopersky State Nature Reserve, 51.219560°N, 41.704802°E, a road in a deciduous forest, 21.VI 2024, O.G. Seredina-Rostovtseva leg. – 1♀ of *Hylaeus* (*Hylaeus*) *angustatus* (Schenck, 1859) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, Melnitsa, 52.365192°N, 42.593982°E, meadow near a mixed forest, 22.VI 2024, K.S. Ivlev leg. – 1♂ of *Hylaeus* (*Dentigera*) *brevicornis* Nylander, 1852 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 16 km NE of

Novokhopersk, near vill. Varvarino, Khopersky State Nature Reserve, 51.211840°N, 41.681394°E, lake shore, 23.VI 2024, D.A. Kirpach leg. – 1♀ of *Hylaeus* (*Hylaeus*) *angustatus* (Schenck, 1859) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 16 km NE of Novokhopersk, near vill. Varvarino, Khopersky State Nature Reserve, 51.206016°N, 41.717209°E, the shore of the Bolshoe Goloe Lake, 26.VI 2024, D.A. Kirpach leg. – 1♂ of *Hylaeus* (*Prosopis*) *gibbus* Saunders, 1850 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, 52.362594°N, 42.602732°E, along the road in a damp mixed forest, 27.VI 2024, K.S. Ivlev leg. – 1♂ of *Hylaeus* (*Hylaeus*) *annulatus* (Linnaeus, 1758) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, 52.362594°N, 42.602732°E, along the road in a damp mixed forest, 27.VI 2024, K.S. Ivlev leg. – 1♀ of *Hylaeus* (*Prosopis*) *gibbus* Saunders, 1850 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, Novokhopersk, 51.109954°N, 41.622695°E, the slope along the Khoper River, 27.VI 2024, D.A. Kirpach leg. – 1♂ of *Hylaeus* (*Dentigera*) *brevicornis* Nylander, 1852 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 16 km NE of Novokhopersk, near vill. Varvarino, Khopersky State Nature Reserve, 51.206016°N, 41.717209°E, the shore of the Bolshoe Goloe Lake, 28.VI 2024, D.A. Kirpach leg. – 1♂ of *Hylaeus* (*Prosopis*) *gibbus* Saunders, 1850 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 25 km NE of Voronezh, Venevitenovo Biostation, 51.814856°N, 39.383414°E, floodplain meadow along the Usman River, the Merike trap, 16.VII 2024, K.S. Ivlev leg. – 1♀ of *Hylaeus* (*Hylaeus*) *annulatus* (Linnaeus, 1758) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 25 km NE of Voronezh, Venevitenovo Biostation, 51.813305°N, 39.383930°E, floodplain meadow, date unknown, students coll. – 2♀ of *Hylaeus* (*Hylaeus*) *annulatus* (Linnaeus, 1758) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 2♀ and numerous first instars of *Hylecthrus rubi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, S of Ostrogozhsk, 50.853094°N, 39.091060°E, meadow-steppe areas along the road, 24.V 2025, K.S. Ivlev leg. – 1♂ of *Hylaeus* (*Hylaeus*) *annulatus* (Linnaeus, 1758) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 2♀ of *Hylecthrus rubi* (between IV and V tergites) (K.S. Ivlev det.); Voronezh Oblast, 14 km NE of Novokhopersk, vill. Varvarino, Khopersky State Nature Reserve, 56.207663°N, 37.515335°E, floodplain meadow along the Khoper River, 07.VII 2025, O.G. Seredina-Rostovtseva leg. – 1♀ of *Hylaeus* (*Hylaeus*) *leptocephalus* (Morawitz, 1870) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (K.S. Ivlev det.); Voronezh Oblast, 14 km NE of Novokhopersk, vill. Varvarino, Khopersky State Nature Reserve, 56.207663°N, 37.515335°E, hayfield, 09.VII 2025, O.G. Seredina-Rostovtseva leg. – 1♀ of *Hylaeus* (*Hylaeus*) *leptocephalus* (Morawitz, 1870) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and

V tergites) (K.S. Ivlev det.); Voronezh Oblast, 14 km NE of Novokhopersk, vill. Varvarino, Khopersky State Nature Reserve, 56.207663°N, 37.515335°E, floodplain meadow along the Bolshoe Goloe Lake, 11.VII 2025, O.G. Seredina-Rostovtseva leg. – 1♀ of *Hylaeus* (*Hylaeus*) *leptocephalus* (Morawitz, 1870) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Hylecthrus rubi* (between IV and V tergites) (K.S. Ivlev det.).

DISTRIBUTION. Widely distributed in Europe and extending to the Middle East, currently known from Albania, Austria, Bulgaria, Croatia, France, Germany, Great Britain, Greece, Hungary, Israel, Italy, Romania, Sicily, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine, Russia and Belarus (Pohl, 2010; Cook, 2019; Ostrovsky, 2019; Ostrovsky & Ivlev, 2024).

BIOLOGY. *Hylecthrus rubi* is a typical parasite of many *Hylaeus* sp. (Hymenoptera: Colletidae) (Medvedev, 1965; Kinzelbach, 1971).



Figs 9–16. First instars of stylopids: 9 – *Eurystylops ogloblini* Benda et Straka, 2025; 10 – *Halictoxenos arnoldi* Perkins, 1918; 11 – *Halictoxenos spencei* (Nassonov, 1893); 12 – *Hylecthrus rubi* Saunders, 1850; 13 – *Stylops ater* Reichert, 1914; 14 – *Stylops melittae* Kirby, 1802; 15 – *Stylops spretus* Perkins, 1918; 16 – *Stylops thwaitesi* Perkins, 1918.

Genus *Stylops* Kirby, 1802

Stylops ater Reichert, 1914

Figs 6, 13

MATERIAL EXAMINED. **Russia:** Voronezh Oblast, 16 km NE of Novokhopersk, near vill. Varvarino, Khopersky State Nature Reserve, 51.201741°N, 41.726279°E, mixed grass meadow, 26.VI 2024, O.G. Seredina-Rostovtseva leg. – 1♀ of *Andrena* (*Melandrena*) *cineraria* (Linnaeus, 1758) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 2♀ and numerous first instars of *Stylops ater* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Currently known from Sweden, Czech Republic, Germany, Finland, Netherlands and Denmark (Smit *et al.*, 2020; Lähteenaro, 2019; Lähteenaro *et al.*, 2023b).

REMARKS. *Stylops ater* is a parasite of solitary bees *Andrena* (*Melandrena*) *vaga* Panzer, 1799 and *A*. (*M*.) *cineraria* (Linnaeus, 1758) (Hymenoptera: Andrenidae) (Lähteenaro, 2019; Lähteenaro *et al.*, 2023a, b).

Stylops sp. aff. *maxillaris*

Fig. 7

MATERIAL EXAMINED. **Russia:** Kursk Oblast, 17 km NE of the vill. Medvenka, Central Chernozem Nature Biosphere Reserve named after V.V. Alekhin, region of Kazatskaya step, 51.525112°N, 36.288297°E, meadow steppe, 07.VI 1994, T.E. Grechanichenko leg. – 1♂ of *Andrena* (*Proxiandrena*) *proxima* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 2♀ of *Stylops* sp. aff. *maxillaris* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Currently known from Czech Republic and Italy (Lähteenaro *et al.*, 2023b).

REMARKS. Putative *Stylops maxillaris* Pasteels, 1949 was recovered in a subclade that contained specimens associated with hosts in subgenera *Proxiandrena* of the genus *Andrena* (Hymenoptera: Andrenidae), in particular, *Andrena* (*P*.) *proxima* (Lähteenaro *et al.*, 2023a, b).

Stylops melittae Kirby, 1802

Figs 8, 14

MATERIAL EXAMINED. **Russia:** Kursk Oblast, 20 km E of the vill. Manturovo, Bolshoy Les, 51.449477°N, 37.413994°E, near the deciduous forest, 26.V 2024, E.A. Sklyar leg. – 1♀ of *Andrena* (*Melandrena*) *nitida* (Müller, 1776) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Stylops melittae* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Currently known from Great Britain, Austria, Switzerland, Czech Republic, Germany, France, Hungary, Italy, Spain, Belgium, Netherlands and Belarus (Mandery, 2016; Cook, 2019; Smit *et al.*, 2020; Ostrovsky, 2021a).

REMARKS. *Stylops melittae* is a parasite of solitary bees *A*. (*Melandrena*) *nigroaenea* (Kirby, 1802), *A*. (*M*.) *nitida* (Müller, 1776), *A*. (*M*.) *thoracica* (Fabricius, 1775), *A*. (*Zonandrena*) *flavipes* Panzer, 1799, *A*. (*Z*.) *soror* Dours, 1872, *A*. (*Z*.) *gravida* (Imhoff, 1832), *A*. (*Hoplandrena*) *carantonica* Pérez, 1902, *A*. (*H*.) *ferox* Smith, 1847, *A*. (*Hyperandrena*) *florentina* Magretti, 1883 (Hymenoptera: Andrenidae) (Straka *et al.*, 2015; Mandery, 2016; Cook, 2019; Smit *et al.*, 2020; Lähteenaro *et al.*, 2023a, b).

***Stylops praecocis* Luna de Carvalho, 1974**
Fig. 4

MATERIAL EXAMINED. **Russia:** Kursk Oblast, SE of Zheleznogorsk, 52.283516°N, 35.458580°E, the embankment on the dump № 8 of Mikhailovsky Mining and Processing Plant named after A.V. Varichev, 27.III 2023, N.I. Degtyarev leg. – 1♀ of *Andrena* (*Andrena*) *nycthemera* Imhoff, 1868 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Stylops praecocis* (between IV and V tergites) (A.M. Ostrovsky det.).

DISTRIBUTION. Russia (first record). Currently known from Spain, Germany and Netherlands (Mandery, 2016; Straka *et al.*, 2015; Cook, 2019; Smit *et al.*, 2020).

REMARKS. *Stylops praecocis* is a parasite of solitary bees *Andrena* (*Andrena*) *praecox* (Scopoli, 1763) and *A*. (*A*.) *nycthemera* Imhoff, 1868, as well as *A*. (*A*.) *batava* Pérez, 1902, *A*. (*A*.) *clarkella* (Kirby, 1802), *A*. (*A*.) *apicata* Smith, 1847, *A*. (*A*.) *mitis* Schmiedeknecht, 1883 (Hymenoptera: Andrenidae) (Straka *et al.*, 2015; Mandery, 2016; Cook, 2019; Smit *et al.*, 2020; Lähteenaro *et al.*, 2023a, b).

***Stylops spretus* Perkins, 1918**
Fig. 15

MATERIAL EXAMINED. **Russia:** Lipetsk Oblast, 29 km E of Yelets, Galichya Gora Nature Reserve, Morozova Gora, 52.595455°N, 38.920941°E, floodplain of the Don River, 12.IV 1984, V.T. Kuznetsova leg. – 1♀ of *Andrena* (*Micrandrena*) *nanaeformis* Noskiewicz, 1924 (A.Z. Osychnyuk det.) stylopized by 1♀ of *Stylops spretus* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 21 km E of Liski, near vill. Peski-Kharkovskiye, 50.944492°N, 39.251867°E, feather grass steppe on the chalks, 19.V 2024, K.S. Ivlev leg. – 2♀ of *Andrena* (*Micrandrena*) *floricola* Eversmann, 1852 (K.S. Ivlev det.) stylopized by 2♀ and numerous first instars of *Stylops spretus* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, 15 km NE of the vill. Inzhavino, near vill. Karai-Saltykovo, Voronina (Voroninsky) Nature Reserve, 52.363599°N, 42.603420°E, along the road in a mixed forest, 18.VI 2024, K.S. Ivlev leg. – 2♀ of *Andrena* (*Micrandrena*) *falsifica* Perkins, 1915 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 2♀ of *Stylops spretus* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, S of Ostrogozhsk, 50.853094°N, 39.091060°E, meadow-steppe areas along the road, 24.V 2025, K.S. Ivlev leg. – 3♂ of *Andrena* (*Micrandrena*) *nanaeformis* Noskiewicz, 1924 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 4♀ of *Stylops spretus* (between IV and V tergites) (K.S. Ivlev det.); Voronezh Oblast, S of Ostrogozhsk, 50.858575°N, 39.090385°E, the left bank of the Tikhaya Sosna River, 24.V 2025, K.S. Ivlev leg. – 3♂ of *Andrena* (*Micrandrena*) *nanaeformis* Noskiewicz, 1924 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 3♀ of *Stylops spretus* (between IV and V tergites) (K.S. Ivlev det.); Voronezh Oblast, 12,5 km SW of Liski, near vill. Divnogorsky Monastyr, Divnogorye Natural, Architectural, and Archaeological Museum-Reserve, 50.976320°N, 39.306091°E, weedy areas along the road, 25.V 2025, K.S. Ivlev leg. – 1♂ of *Andrena* (*Micrandrena*) *nanaeformis* Noskiewicz, 1924 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Stylops spretus* (between IV and V tergites) (K.S. Ivlev det.).

DISTRIBUTION. Currently known from Great Britain, Spain, Germany, Austria, Finland, Netherlands and Russia (Mandery, 2016; Cook, 2019; Lähteenaro, 2019; Smit *et al.*, 2020; Ostrovsky & Ivlev, 2024).

BIOLOGYBIOLOGY. *Stylops spretus* is a typical parasite of many *Andrena* (*Micrandrena*) spp. (Hymenoptera: Andrenidae) (Straka *et al.*, 2015; Mandery, 2016; Cook, 2019; Lähteenaro, 2019; Smit *et al.*, 2020; Lähteenaro *et al.*, 2023a, b; Ostrovsky & Ivlev, 2024). However, *A.* (*M.*) *floricola* is a new host of *Stylops spretus*. In European Russia *A.* (*M.*) *floricola* is a common species.

***Stylops thwaitesi* Perkins, 1918**
Fig. 16

MATERIAL EXAMINED. **Russia:** Voronezh Oblast, 14 km SW of Liski, Divnogorye Natural, Architectural, and Archaeological Museum-Reserve, Bolshiye Divy, 50.963849°N, 39.296147°E, mixed grass-cereal steppe on the plateau, 15.VII 1995, A.V. Lopatin leg. – 4♀ of *Andrena* (*Taeniandrena*) *ovatula* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 4♀ and numerous first instars of *Stylops thwaitesi* (between IV and V tergites) (A.M. Ostrovsky det.); Tambov Oblast, SE of Tambov, 52.721295°N, 41.452750°E, 02.VII 1998, R.Yu. Belevitin leg. – 1♀ of *Andrena* (*Taeni-andrena*) *ovatula* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Stylops thwaitesi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, near Voronezh, 51.006968°N, 39.978228°E, 25.VII 2003, students coll. – 1♀ of *Andrena* (*Taeniandrena*) *gelriae* van der Vecht, 1927 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Stylops thwaitesi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 17 km NE of Voronezh, near vill. Shuberskoe, 51.814856°N, 39.383414°E, 29.V 2024, K.S. Ivlev leg. – 1♀ of *Andrena* (*Taeniandrena*) *gelriae* van der Vecht, 1927 (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Stylops thwaitesi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, Liski suburb, near vill. Selyavnoe, 50.986656°N, 39.368360°E, feather grass steppe slopes with chalk outcrops, 16.VI 2024, K.S. Ivlev leg. – 1♀ of *Andrena* (*Taeniandrena*) *ovatula* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ and numerous first instars of *Stylops thwaitesi* (between IV and V tergites) (A.M. Ostrovsky det.); Voronezh Oblast, 40 km SW of Boguchar, 4,5 km SE of vill. Novonikolsk, Khripunskaya step, 49.587756°N, 40.404694°E, 18.V 2025, O.V. Selivanova, E.S. Negrobov leg. – 1♀ of *Andrena* (*Taeniandrena*) *ovatula* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Stylops thwaitesi* (between IV and V tergites) (K.S. Ivlev det.); Voronezh Oblast, Novokhopersk, 51.100286°N, 41.631461°E, an observation deck with steppe vegetation, 08.VII 2025, O.G. Seredina-Rostovtseva leg. – 1♀ of *Andrena* (*Taeniandrena*) *ovatula* (Kirby, 1802) (K.S. Ivlev det. (it was compared by copies, rechecked by A.Z. Osychnyuk)) stylopized by 1♀ of *Stylops thwaitesi* (between IV and V tergites) (K.S. Ivlev det.).

DISTRIBUTION. Currently known from Great Britain, Austria, Finland, France, Germany, Hungary, Italy, Netherlands, Portugal, Spain, Switzerland, Ukraine, Russia, Belarus, former Yugoslavia (Cook, 2019; Lähteenaro, 2019; Smit *et al.*, 2020; Ostrovsky, 2021a, b; Ostrovsky & Ivlev, 2024).

BIOLOGY. *Stylops thwaitesi* is a typical parasite of many *Andrena* (*Taeniandrena*) spp. (Hymenoptera: Andrenidae) (Straka *et al.*, 2015; Cook, 2019; Lähteenaro, 2019; Smit *et al.*, 2020; Lähteenaro *et al.*, 2023a, b; Ostrovsky & Ivlev, 2024).

CONCLUSION

Currently, 22 species of strepsipterans inhabiting Russia are reliably known, and seven species (*Crawfordia labiata, Eurystylops ogloblini, Halictoxenos arnoldi, Stylops ater, S.* sp.

aff. *maxillaris, S. melittae, S. praecocis*) are recorded for the first time in this article. Many species recorded here are widely distributed in Europe and their presence in European Russia is unsurprising. However, despite the records and material listed above, the order Strepsiptera remains quite poorly studied in Russia, and new country records and further details relating to host species and distributions can still be expected.

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