

Hoverflies (Diptera, Syrphidae) from Kirgizia (regions Chuy, Naryn and Issyk-Kul) with description of two new species, *Platycheirus nigratarsis* sp. n. and *Platycheirus kirgizorum* sp. n.

AXEL SSYMANK & TORE R. NIELSEN

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A material of 109 hoverflies (Diptera, Syrphidae) from Kirgizia (regions Chuy, Naryn and Issyk-Kul) has been examined. *Platycheirus nigratarsis* sp. n. (of the *ambiguus* group) and *Platycheirus kirgizorum* sp. n. (of the *manicatus* subgroup) are described as new to science, and poorly known species like *Cheilosia barkalovi* Ståhls, 1997, *Chrysotoxum bajkalicum* Violovitsh, 1973, *Chrysotoxum tjanshanicum* Peck, 1973 and *Eristalis acutifacies* Peck, 1971 are parts of the material.

Key words: Diptera, Syrphidae, *Platycheirus nigratarsis*, *Platycheirus kirgizorum*, new species, Kirgizia.

Axel Ssymank, Falkenweg 6, 53343 Wachtberg, Germany. E-mail: Ssymanka@t-online.de

Tore R. Nielsen, Sandvedhagen 8, NO-4318 Sandnes, Norway. E-mail: tore@nielsen.cc

Introduction

The material studied was kindly collected by Prof. Joachim Oehlke from Eberswalde during an entomological expedition of the University of Greifswald in summer 2007, lead by Prof. Müller-Motzfeld (1941–2009). The expedition visited mainly high-altitude habitats in the Tianshan-mountains, south and west of Bishkek, at altitudes ranging between 1700 and 3800 m a.s.l. and with five collecting points above 3000 m. At lower altitudes Picea-forests, river basins and alluvions were sampled, at higher altitudes bogs, river banks and glacial scree as well as mountain passes.

Material and methods

All hoverflies were caught by hand-netting during the excursion, sent as dry fresh material to the first author and subsequently pinned.

Sampling localities. Numbers of localities are printed on the locality labels of all voucher specimens (Table 1-2). The material is mainly deposited in the collection of A. Ssymank, with the exception of a few specimens in the collection of T.R. Nielsen and of C. Claußen (Flensburg) and part of the type material as stated in the species descriptions. Regions (Oblasts) of Kirgizia (Kyrgyzstan) are given in brackets.

Determination was done with the keys to Syrphidae of Russian Far East (Mutin & Barkalov 1999), together with a preliminary unpublished key of Valerie Mutin from 2007, keys of the Swedish fauna (Bartsch 2009a, b), the Finnish Fauna (Haarto & Kerppola 2007) and a key to the *Platycheirus* species of the *ambiguus* group (Nielsen 2004). In addition for the genus *Chrysotoxum* the key of Violovitsh (1974) was used. Claus Claußen, Flensburg, kindly determined the *Cheilosia* species and checked some additional species.

TABLE 1. Sampling localities

Locality no.	Locality name	Position	Altitude	Date
6991	South of Sonovka (Chuy)	42°38' N, 73°53' E	2350 m a.s.l.	25.VI.2007
6992	Mountain range Moldo-Too N, Kyzyl-Söök-ravine, south of Min-Kusch (3rd camp) (Naryn), Picea-forest,	41°37'21.7"N, 74°25'33.2"E	2440 m a.s.l.	28.VI.2007
6993	Son-Köl-Plateau, South; Moldo-Aschuu-Paá (Naryn)	41°40'08.6"N, 75°02'10.8"E	3200 m a.s.l.	30.VI.2007
6994	Mountain range Moldo-Too South, Suulu-Kurtka-valley (Naryn), bog	41°38'41.5"N, 75°02'00.8"E	2400 m a.s.l.	01.VII.2007
6995	Mountain range Moldo-Too South, Suulu-Kurtka-Paá (Naryn)	41°41'41.2"N, 74°58'23.2"E	3000 m a.s.l.	01.VII.2007
6996	Müdüürüm-valley, Orto-Kaschka-Suu, bank of the Ak-Saj (7th camp) (Naryn)	41°08'53.0"N, 76°49'15.5"E	3300 m a.s.l.	03.VII.2007
6997	Mountain range At-Baschy, East; Gori Bezbeltschir, north of Kyndy-Paá (Naryn)	41°09'33.4"N, 76°26'57.9"E	3250 m a.s.l.	05.VII.2007
6998	Mountain range Dshany-Dsher, North; Dshal-Dshir-river, Artschaly-Mdg. (9th camp) (Naryn)	41°18'14.8"N, 76°44'35.3"E	2900 m a.s.l.	06.VII.2007
6999	At-Baschy-valley, Balykty-alluvions (Naryn)	41°15'38.4"N, 76°30'37.5"E	2700 m a.s.l.	07.VII.2007
7000	Terkej Alatao, screes at glacial front end, Arabel-Suu-high plateau (Issyk-Kul)	41°50'28.6"N, 77°44'47.5"E	3800 m a.s.l.	11.VII.2007
7000a	Kitschi-Naryn-valley (10th camp) (Naryn)	41°40'17.4"N, 76°28'06.8"E	2500 m a.s.l.	08.VII.2007
7001	Terkej Alatao, Barskoon-valley, camp (Issyk-Kul)	41°57'11.5"N, 77°39'00.5"E	2700 m a.s.l.	11.VII.2007
7002	Issyk-Kul-basin, Tosor-valley, lower course of the river (Issyk-Kul)	42°09'05.5"N, 77°23'49.2"E	1700 m a.s.l.	13.VII.2007

Results

The total material comprises the species listed in Table 2.

Platycheirus nigratarsis sp. n.

(Figures 1–9)

Type material. Holotype: male labelled "FO 6998: Kirgistan 41°18'14.8"N, 076°44'35.3"E, Chrebet Dshany-Dsher, N; Dshal-D[shir-river, Artschaly-Mdg. (9th camp)], 2900 m NN [m a.s.l.], 28, leg. J. Oehlke, 6.VII.2007". Paratypes: 1 female paratype labelled: "FO 7001: Kirgistan, 41°57'12[11.5]°N, 77°39'01[00.5]°E, Terkej Alatao, Barskoon-valley, Lag[er=camp], 2700 m a.s.l. NN; leg. J. Oehlke, 11.07.2007.

Holotype and the paratypes mentioned above

are deposited in the Department of Natural History, Bergen Museum, University of Bergen, Bergen, Norway (ZMBN). Two paratypes, 1 male and 1 female, with same data as holotype in coll. Ssymank.

Diagnostic characters. *Platycheirus nigratarsis* belongs to the *ambiguus* group (Vockeroth 1990) with the following characteristics: legs slender in both sexes, and male fore femur posteriorly on at least apical half usually with a row of stiff straight black setae. The last seta is longer and with its apex curved.

P. nigratarsis is similar to *P. clauseni* Nielsen, 2004 and *P. goeldlini* Nielsen, 2004, but differing in black tarsi on all legs. In the female *P. nigratarsis* the abdominal spots on tergite 3 are lying close to base of tergite (on some distance in *P. goeldlini*),

TABLE 2. Hoverflies recorded in 2007 in Kirgizia. SN = number of localities where a species was collected, Sum = total number of specimens collected; Locality number correspond to the text but are written vertically in the header of the table; "Number of species" is the number of species per locality and the total number of species at the end of column SN

Species	Locality number													SN	Sum
	6991	6992	6993	6994	6995	6996	6997	6998	6999	7000	7000a	7001	7002		
<i>Cheilosia barkalovi</i> Ståhls, 1997									4			1		2	5
<i>Cheilosia</i> aff. <i>barkalovi</i> Ståhls, 1997								2				3		2	5
<i>Cheilosia vtorovi</i> Peck, 1969										6				1	6
<i>Cheilosia zlotini</i> Peck, 1969										3				1	3
<i>Chrysotoxum bajkalicum</i> Violovitsh, 1973								1						1	1
<i>Chrysotoxum</i> sp.									1		1			2	2
<i>Chrysotoxum tjanshanicum</i> Peck, 1974		4												1	4
<i>Dasysyrphus sublumulatus</i> (Peck, 1966)									1					1	1
<i>Eristalis abusiva</i> (Collin, 1931)			1											1	1
<i>Eristalis acutifacies</i> Peck, 1971					6									1	6
<i>Eristalis arbustorum</i> (Linnaeus, 1758)				1										1	1
<i>Eristalis hirta</i> Loew, 1866					2									1	2
<i>Eristalis rupium</i> (Fabricius, 1805)									1					1	1
<i>Eristalis tenax</i> (Linnaeus, 1758)		1												1	1
<i>Eupeodes corollae</i> (Fabricius, 1794)	1							1					1	3	3
<i>Eupeodes luniger</i> (Meigen, 1822)		1												1	1
<i>Eupeodes</i> sp.									1					1	1
<i>Helophilus lapponicus</i> Wahlberg, 1844										1				1	1
<i>Helophilus pendulus</i> (Linnaeus, 1758)		1												1	1
<i>Melanostoma boreomontanum</i> Mutin, 1986		1												1	1
<i>Paragus quadrifasciatus</i> Meigen, 1822				3										1	3
<i>Pipiza notata</i> Meigen, 1822		1												1	1
<i>Platycheirus albimanus</i> (Fabricius, 1781)												3		1	3
<i>Platycheirus fuscitarsis</i> Barkalov & Nielsen, 2007												2		1	2
<i>Platycheirus kirgizorum</i> sp.n.					1									1	1
<i>Platycheirus manicatus</i> (Meigen, 1822)			2	1	1									3	4
<i>Platycheirus nigratarsis</i> sp.n.								3				1		2	4
<i>Platycheirus</i> cf. <i>holarcticus</i> Vockeroth, 1990		2												1	2
<i>Platycheirus tarsalis</i> (Schummel, 1837)					1									1	1
<i>Rohdendorfia montivaga</i> Violovitsh, 1984										10				1	10
<i>Scaeva albomaculata</i> (Macquart, 1842)		1		1		1			1					4	4
<i>Scaeva pyrastris</i> (Linnaeus, 1758)												6	1	2	7
<i>Sphaerophoria scripta</i> (Linnaeus, 1758)		4		1	3						2	1	1	6	12
<i>Syrphus ribesii</i> (Linnaeus, 1758)		1												1	1
<i>Syrphus</i> sp. 1					1									1	1

TABLE 2. continued

Species	Locality number												SN	Sum	
	6991	6992	6993	6994	6995	6996	6997	6998	6999	7000	7000a	7001			7002
<i>Syrphus</i> sp. 2		1												1	1
<i>Syrphus vitripennis</i> Meigen, 1822	1													1	1
<i>Volucella bombylans</i> var. <i>plumata</i> Degeer, 1758	1													1	1
<i>Volucella pellucens</i> (Linnaeus, 1758)		2												1	2
<i>Volucella plumatoides</i> Hervé-Bazin, 1923				1										1	1
number of species	3	12	2	6	7	1	2	3	5	4	2	7	3	40	
number of specimens recorded	3	20	3	8	15	1	2	6	8	20	3	17	3		109

in tergite 4 the spots are touching base of the tergite.

Male (Figures 1–4).

Head. Eye angle 110°. Eyes meeting on a distance which is as long as the sides of the vertical triangle. Frons and face black in ground colour, grey dusted; frons mainly black haired, face with pale hairs. Antennae black, 3rd joint slightly longer than broad, arista black. Lower half of face slightly produced, central prominence a little more produced than upper mouth-edge. Occiput grey dusted except for an undusted shining area behind vertical triangle.

Thorax. Scutum, scutellum and pleurae shining metallic black, partly with slight bluish reflections, the hairs pale yellow orange. The pleurae slightly greyish dusted.

Legs. Fore and mid femora mainly orange yellow; fore femur a little darkened at base, mid femur black on basal half. Fore femur posteriorly with a row of isolated rather long soft black setae, the foremost seta curled at tip. Hind femur black except for tip narrowly yellow. Ventrally with long yellow hairs about 2.5–3.0x diameter of femur. Tibiae yellow orange on basal half, apical half blackish, hind tibia black except for the base yellow. The hairs on tibia short and yellow, fore tibia posterolaterally with some longer bristly yellow hairs, the longest are not extending beyond tip of tibia. Tarsi of all legs black, hind basitarsus thickened, about 1.3x thicker than tibia at tip.

Wings. The veins light greyish brown, more yellowish towards base. Stigma yellowish grey.

Wing membrane microtrichose except basal 60% of 2nd basal cell and basal part of anal cell. Alula completely microtrichose. Haltere knob light orange. Calypter greyish white, the rim darkened.

Abdomen (Figure 1). Slightly club shaped, segment 3 at tip and segment 4 at base a little expanded. tergites 2–4 otherwise dull black. Tergite 4 narrowly shining at hind margin. Tergite 2 after the middle with a pair of small orange oval spots, tergites 3–4 each with a pair of larger orange spots not reaching the side margins of tergites and widely separated in the middle. The following tergites shining black, the pile on all tergites yellow. Sternites shining black, slightly dulled by greyish dusting.

Female (Figures 5–8).

Head. Frons shining black with bluish reflection and with two triangular grey dust spots, each occupying more than 1/3 the width of frons. Frons mostly white haired with a few black hairs at the ocellar triangle. Occiput laterally grey dusted, white haired, dorsally behind vertical triangle.

Thorax. See male.

Legs. Fore and mid femur yellow, hind femur broadly black in the middle, yellow at base and apex. Fore and mid tibia yellow except for tip greyish black. Hind tibia black on about apical 2/3. Fore and mid tarsi dark grey, hind tarsus black.

Wings. See male.

Abdomen. Sternite 1 black at base, yellow on apical half. Sternites 2–4 yellow with a median black stripe on basal half. Sternite 5 yellow. Abdominal spots on tergites 2–4 larger than in the



FIGURE 1. *Platycheirus nigratarsis* sp. n., male (Holotype), dorsal view (Photo: A. Ssymank).



FIGURE 4. *Platycheirus nigratarsis* sp. n., male (Holotype), head in dorsal view (Stacked Microphoto: A. Ssymank).



FIGURE 2. *Platycheirus nigratarsis* sp. n., male (Holotype), lateral view (Photo: A. Ssymank).



FIGURE 5. *Platycheirus nigratarsis* sp. n., female (Holotype), head in dorsal view (Stacked Microphoto: A. Ssymank).



FIGURE 3. *Platycheirus nigratarsis* sp. n., male (Holotype), head and front leg in lateral view (Stacked Microphoto: A. Ssymank).



FIGURE 6. *Platycheirus nigratarsis* sp. n., female (Paratype), lateral view (Photo: A. Ssymank).



FIGURE 7. *Platycheirus nigritarsis* sp. n., female (Paratype), head and front leg in lateral view (Stacked Microphoto: A. Ssymank).

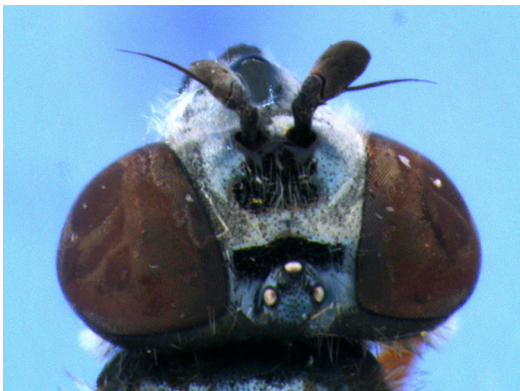


FIGURE 8. *Platycheirus nigritarsis* sp. n., female (Paratype), head and front leg in lateral view (Stacked Microphoto: A. Ssymank).

male (Figure 5).

Body length. Male 9.3 mm, female 8.4 mm.

Wing length. Male 7.2 mm, female 8.0 mm.

Etymology. The epithet refers to the characteristic black tarsi of fore and mid legs of this species.

Ecology. Alpine tundra, 2700–2900 m a.s.l.

(Figure 9).

***Platycheirus kirgizorum* sp. n.**

(Figures 10–11).

Type material. Holotype: female labelled "FO: 6995 Kirgistan 41°41'41"N, 07°58'23"E; Chrebet Molod-Too S, Suulu-Kurtk, 3000 mNN 16, leg. J. Oehlke, 01.07.2007", in coll. Bergen Museum, University of Bergen.

Diagnostic characters. *P. kirgizorum* sp.n. belongs to the *manicatus* subgroup (Vockeroth 1990) with the following characters: legs in both sexes without distinctive vestiture. Male fore tibia at most very slightly broadened toward apex, much narrower than first tarsal segment. Fore tarsus with the first two segments broadened. Face slightly to strongly protruding below.

The *P. kirgizorum* female holotype is about the size of *P. manicatus* (Meigen, 1822) and larger than *P. groenlandicus* Curran, 1927 and *P. migriaulii* Stuke and Nielsen, 2002. In *P. kirgizorum* the hairs on scutum are 1.5–2.0 times longer than 3rd antennal segment, while they are of the same length as 3rd antennal segment in the *P. groenlandicus* female. *P. kirgizorum* female differs from the *P. migriaulii* female in yellow tibia of fore and mid legs, while they are black on apical two thirds in *P. migriaulii*.

Male. Unknown.

Female. (Figures 10–11).

Head (Figure 11). Face produced, upper mouth-edge a little more than central prominence. Face (except central prominence) with light white dusting; the hairs yellow white, face widening downwards when seen from in front. Frons wide, below vertical triangle with faint yellow white dusting, the hairs black. The antennae are black, 3rd segment roundish, only about 1.2 times longer than wide. Upper part of frons (on each side of the vertical triangle) shining black, nearly undusted. Occiput is broad with greyish yellow dusting; the hairs yellow on dorsal part, white along the sides and ventrally.

Thorax (Figures 10–11). Scutum and scutellum shining black with long light hairs, those on anterior part of scutum nearly twice as long as thickness of hind femur. Pleurae light yellow haired.



FIGURE 9. Habitat and type locality of *Platycheirus nigritarsis* sp. n. (Photo: J. Oehlke, 6 June 2007).



FIGURE 10. *Platycheirus kirgizorum*, sp. n., female Holotype, dorsal view (Photo: K. Solheim).



FIGURE 11. *Platycheirus kirgizorum*, sp. n., female Holotype, lateral view (Photo: K. Solheim).

Legs. All femora black except for the tips broadly yellow. Tibia on fore and mid legs orange yellow. Hind tibiae yellow on about basal $\frac{1}{3}$, black on the distal $\frac{2}{3}$. The tarsi of all legs black, except for basitarsus of fore and mid legs broadly orange on basal half.

Wings. Microtrichose except for about basal $\frac{2}{3}$ of 2nd basal cell (m) and about basal $\frac{1}{3}$ of anal cell (Cu2) bare. Halter and calypter light yellow.

Abdomen (Figure 10). All tergites shining black, slightly dulled by dark greyish brown dusting. Tergites 2–5 each with a pair of very light silvery white dust spots, often best seen from an oblique angle. Tergites also with long whitish yellow hairs. The hairs are longest upon and around the dust spots and along the side margins of tergite 2 (the longest hairs as long as half the width of the tergite at base). The sternites black (sternite 3 reddish on about $\frac{1}{5}$ of width of each side), slightly dulled by dark greyish dusting, white haired.

Body length: 8.8 mm.

Wing length: 8.0 mm.

Etymology. The species name kirgizorum refers to the country where this species was first recognised.

Ecology. Alpine tundra, altitude 3000 m a.s.l.

Comments on other selected species

Cheilosia barkalovi Ståhls, 1997

A *Cheilosia* from the *Nigrocheilosia* group, described originally from Talgar, Kazakstan in the revision of Barkalov & Ståhls (1997) with all material studied from high mountain areas above 1500 m a.s.l. in south Kazakstan. The species is stated as being extremely variable in the diagnosis, the *Cheilosia* aff. *barkalovi* is probably a closely related yet undescribed species. First records from Kirgizia.

Cheilosia vtorovi Peck, 1969

Only known from Kirgizia, Type locality "Tien Shan, Ak-shiyrak Mts., Pokroskie syrty" (Peck 1988). The newly collected material is from another mountain range about 40 km west of the type locality. Body length 11–12 mm, a rather big black-haired *Cheilosia* with broad abdomen, hairy eyes, without scutellar bistles.

Cheilosia zlotini Peck, 1969

A medium-sized, black-legged *Cheilosia* with black antennae and hairy eyes, only known from

Kirgizia, described from the same type locality as *Cheilosia vtorovi* (see Peck 1969: 205).

***Chrysotoxum bajkalicum* Violovitsh, 1973**

Similar to *C. arcuatum* (Linnaeus, 1758), but the dark band along the wing fore margin is reaching the distal end of cell R1, that is almost the wing tip (in *C. arcuatum* usually ending at the pterostigma). *C. bajkalicum* is also generally less hairy, eye hairs are white (brown and more dense in *C. arcuatum*), the yellow spots on sternite 3 are touching the front margin of the sternite (placed in the middle of sternite 3 in *C. arcuatum*). Described from Trans-Bajkal of Russia. New to Kirgizia.

***Eristalis acutifacies* Peck, 1971**

Described by Peck (1971) from Tien Shan, Kara Korum pass, Psem range and paratypes from Sandalash range, only known from Kirgizia according to Peck 1988. Figure 12 shows the head of this characteristic species with its elongated face.

***Eristalis hirta* Loew, 1866**

syn. *tundrarum* Frey, 1932

A northern circumpolar species: in the arctic parts of Europe, Russia and North America, but also found in Altai (Hippa & al. 2001).

***Helophilus lapponicus* Wahlberg, 1844**

The present record is far from the expected range of this species. It has its main distribution in the northern parts of Fennoscandinavia, northern Russia, in Greenland and North America south to northern USA (Bartsch 2009b, Mutin & Barkalov 1999).

***Platycheirus fuscitarsis* Barkalov & Nielsen, 2007**

Described from Yakutia, East Siberia. It is similar to *P. albimanus* (Fabricius, 1781) and *P. nigrofemoratus* Kanervo, 1934 but differs in e.g. the dirty greyish tarsal joints of the male fore and mid legs (Barkalov & Nielsen, 2007).

***Rhodendorfia montivaga* Violovitsh, 1984**

Previously known from Tien-Shan, Kirgizia Kashgaria and Dzhungarskij Alatau. The genus

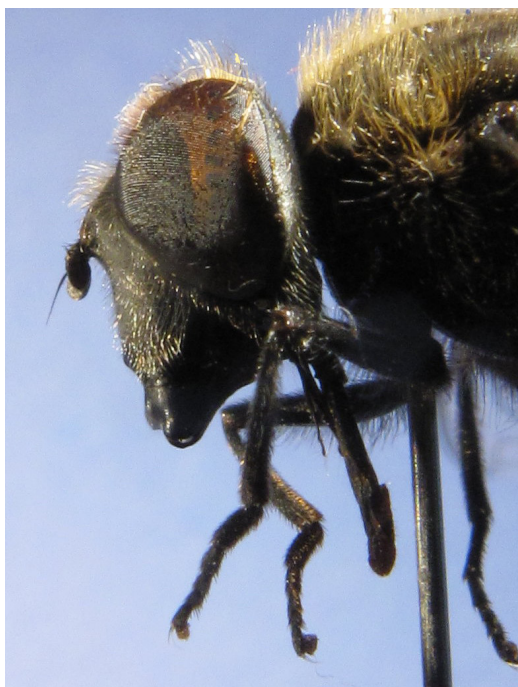


FIGURE 12. *Eristalis acutifacies* Peck, 1971, face in lateral view (Stacked Microphoto: A. Ssymank).

was recently revised; see Barkalov & Nielsen, 2010.

Discussion

The hoverfly fauna of Kirgizia is not well-known and determination of species with existing literature has been difficult. Therefore it is not surprising that undescribed species are among the material. Apart from the new *Platycheirus*-species, two females of *Syrphus* sp. belonging to two different probably undescribed species were obtained.

Remarkable was *Rhodendorfia montivaga*, *Cheilosia vtorovi* and *C. zlotini*, all exclusively recorded only at locality No. 7000, at the highest collecting point with Syrphidae at an altitude of 3800 m a.s.l. Also *Eristalis acutifacies* was only present at altitudes above 3000 m a.s.l.

This paper is a small contribution to the hoverfly fauna of high altitude mountain zones of Kirgizia.

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References

- Barkalov, A. V. & Nielsen, T.R. 2007. *Platycheirus* species (Diptera, Syrphidae) from Yakutia, Eastern Siberia, with description of two new species. *Volucella* 8, 87–94.
- Barkalov, A. V. & Nielsen, T.R. 2010. Revision of the genus *Rhodendorfia* Smirnov, 1924 (Diptera, Syrphidae). *Norwegian Journal of Entomology* 57, 154–161.
- Barkalov, A.V. & Ståhls, G. 1997. Revision of the Palaearctic bare-eyed and black-legged species of the genus *Cheilisia* Meigen (Diptera, Syrphidae). *Acta Zoologica Fennica* 208, 1–74.
- Bartsch, H., Binkiewicz, E., Rådén, A. & Nasibov, E. 2009a. Nationalnyckeln till Sveriges flora och fauna. Tvåvingar: Blomflugor: Syrphinae. Diptera: Syrphidae: Syrphinae. ArtDatabanken, SLU, Uppsala.
- Bartsch, H., Binkiewicz, E., Klintbjer, A., Rådén, A. & Nasibov, E. 2009b. Nationalnyckeln till Sveriges flora och fauna. Tvåvingar: Blomflugor: Eristalinae & Microdontinae. Diptera: Syrphidae: Eristalinae & Microdontinae. ArtDatabanken, SLU, Uppsala.
- Haarto, A. & S. Kerppola. 2007. *Suomen kukkakärpäset ja lähialueiden lajeja*. (Finnish Hoverflies and some species in adjacent countries.) 1–647. Kirjaa myy Edita (Otava, Keuruu).
- Hippa, H., Nielsen, T.R. & Steenis, J. v.d. 2001. The West Palaearctic species of the genus *Eristalis* Latreille (Diptera, Syrphidae). *Norwegian Journal of Entomology* 48, 289–327.
- Mutin, V.A. & Barkalov, A.V. 1999. 62. Cem. Syrphidae. In: Keys to the insects of Russian Far East. Vol. VI. Diptera and Siphonaptera. Pt.1. VI.1, 342–500.
- Nielsen, T.R. 2004. European species of the *Platycheirus ambiguus* group (Diptera, Syrphidae), with description of new species. – *Volucella* 7, 1–30.
- Peck, L.V. 1969. [Some new species of hover-flies (Diptera, Syrphidae) from Tian-Shan] (in Russian) *Entomologicheskoe Obozrenie* 48, 201–210.
- Peck, L.V. (1971): [A description of new and little-known flies of the genera *Cheilisia*, *Eristalis* and *Eumerus* (Diptera, Syrphidae) from Kirghiza] (in Russian) *Entomologicheskoe Obozrenie* 50, 695–705.
- Peck, L.V. 1988. *Syrphidae – Conopidae*. In: SOÓS, A. & PAPP, L. (Eds.): Catalogue of Palaearctic Diptera 8. Budapest (Akadémiai Kiadó), 11–230.
- Violovitsh, N.A. 1974.: A review of the palaearctic species of the genus *Chrysotoxum* Mg. (Diptera, Syrphidae). *Entomological Review, Washington* 53, 140–153.
- Vockeroth, J.R. 1990. Revision of the Nearctic *Platycheirus* (Diptera, Syrphidae). *Canadian Entomologist* 122, 659–766.

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