Taxonomy and distribution of six Palaearctic *Cheilosia* species (Diptera, Syrphidae)

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New information on the taxonomy of *Cheilosia subarctica* Hellén, *C. albohirta* Hellén, and *C. brunnipennis* Becker together with drawings of male genitalia is given. *C. rotundicornis* Hellén is synonymised with *C. vernalis* Fallén. The female of *C. reniformis* Hellén and the male of *C. parafasciata* Barkalov are described.

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During work on a revision of the hover-fly genus *Cheilosia* Meigen I studied the type material of W. Hellén (Helsinki) and T. Becker (Berlin), which made it possible to clarify the taxonomy of several species.

Cheilosia subarctica Hellén, 1955

This species differs from *C. velutina* Loew only in small details. In males of *C. subarctica* the facial tubercle is orbicular (Fig. 1A), not pointed apically as in *C. velutina* (Fig. 2A), and the profile of the face is quite different; the 3rd antennal segment is lighter (Fig. 1B, 2B); the mesonotum of *C. subarctica* is entirely covered with mixed black and light hairs so that it looks "dirty", while the mesonotum of *C. velutina* has black hairs laterally and light hairs medially; and the abdomen of *C. subarctica* is entirely light-haired, while in *C. velutina* the posterior margins of the tergites have black hairs. There are also small differences in the genitalia (Fig. 1D–F, 2D–F).

In the key to *Cheilosia* of Siberia (Barkalov 1983) *C. subarctica* goes to couplet 53 of group "D" and differs from *C. velutina* by the characters mentioned above.

Females of *C. subarctica* differ from those of *C. velutina* more distinctly: the frons is covered with mixed long black and short light hairs, all tergites of abdomen have at least marginally light yellow hairs, and mesonotum has erect hairs, while females of *C. velutina* have uniformly light pilosity of frons, mesonotum with backward directed hairs, and II–IV tergites of abdomen with erect white hairs in the front corners and black adpressed hairs on the rest.

In the key to Siberian *Cheilosia* species females of *C. subarctica* go to *C. fraterna* Meigen (group "D" couplet 50), but differ in having erect hairs on mesonotum and scutellum as well as on most of abdomen, while *C. fraterna* has mesonotum, scutellum and abdomen with adpressed hairs.

The study of type material showed that the species is widely distributed in Siberia from the

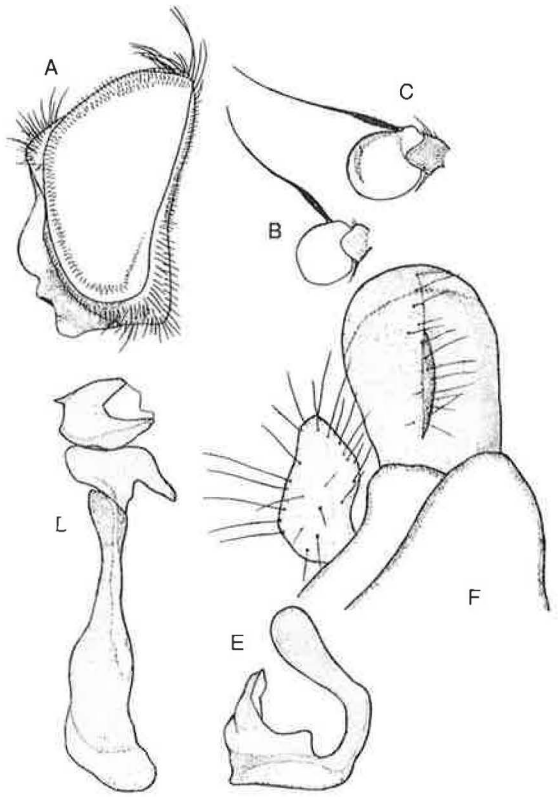

Fig. 1. *Cheilosia subarctica* Hellén, 1955. A – male face in profile, B – 3rd antennal segment of male, C – 3rd antennal segment of female, D – aedeagus, E – superior lobe of hypandrium, F – surstylus and cercus.

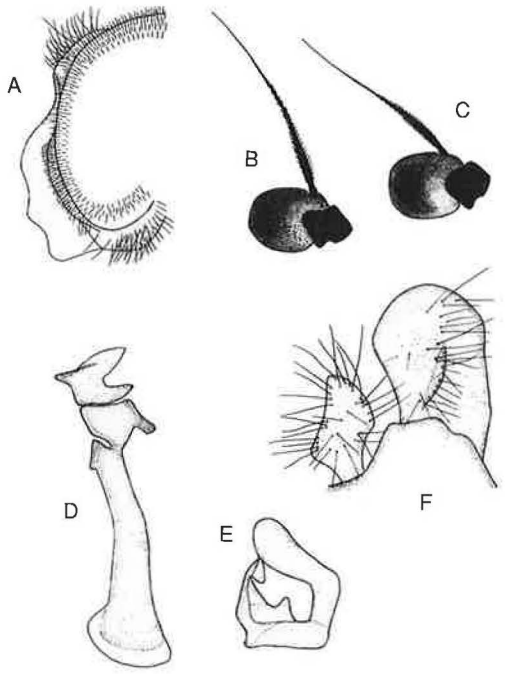

Fig. 2. *Cheilosia velutina* Loew, 1840. A – male face in profile, B – 3rd antennal segment of male, C – 3rd antennal segment of female, D – aedeagus, E – superior lobe of hypandrium, F – surstylus and cercus.

Krasnoyarsk region to the Gorno-Altay Republic. All specimens were caught between 13 and 24 June. Since this species is so similar to *C. velutina* it will probably be found in other collections under that name.

Cheilosia albohirta Hellén, 1930

I have previously (eg. Barkalov 1983) considered *C. albohirta* conspecific with *C. sapporense* Shiraki, but a study of the type material provided distinguishing characters. The most striking difference is in the hypopygium structure where *C. albohirta* (Fig. 3A–E) is distinguished from *C. sapporense* (Fig. 3F–J) by the large angular median projection of the superior lobe of the hypandrium, the diverging lobes of the apical sclerite of the aedeagus, and by the shape of the surstyli. In both sexes *C. albohirta* is characterized by the presence of black bristle-like hairs or bristles on the posterior margin of the scutellum. Although this feature is somewhat variable, it correlates well with the characteristic hypopygium structure. Specimens of *C. sapporense* sometimes have stronger hairs on the posterior margin of the scutellum, but in all examined specimens these hairs were light.

C. albohirta is known from Buryatia, Sabaikalie and South Primorie, and *C. sapporense* from West Sajan, Tuva, Pribaikalie, Yakutia, Magadan region, South Primorie and Japan.

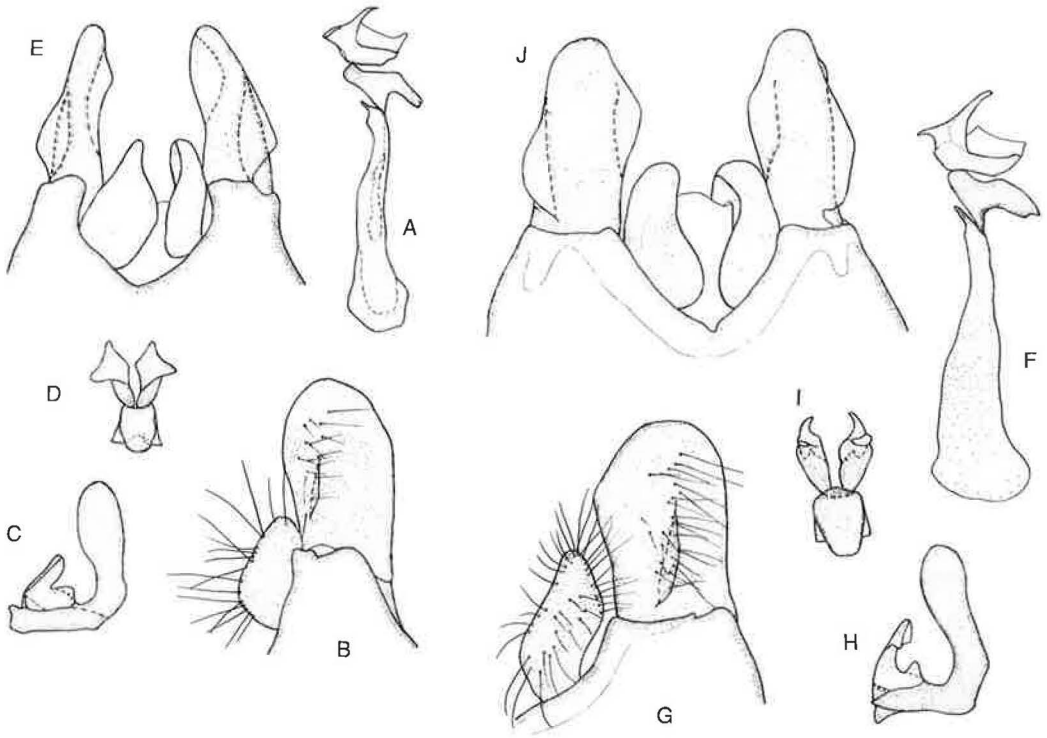

Fig. 3. *Cheilosia albohirta* Hellén, 1930: A–E; *Cheilosia sapporense* Shiraki, 1930: F–J. A, F – aedeagus, B, G – surstylus and cercus, C, H – superior lobe of hypandrium, D, I – aedeagus without apodeme, E, J – surstylus and cercus anteriorly.

Cheilosia reniformis Hellén, 1930

This species was described from a single male caught near Eniseisk. After the study of the type specimen it could be established that the species is common in Siberia from the Omsk region to Yakutia. Among all species known to the author *C. reniformis* is most similar to *C. vernalis* Fallén, but the lack of strong black bristles on the posterior margin of the scutellum brings it to a different group in the key to Siberian species.

Females of *C. reniformis* were unknown up to now. The following description is based on material from different parts of Siberia.

Description of female

Face black, shiny on facial tubercle and along lower margin of eyes, densely grey dusted below antennae and weakly silverish in middle of face, profile in Fig. 4D. Eye margins narrow, width at most half of 3rd antennal segment. Frons relatively wide, slightly narrowing towards vertex (Fig. 4E). Antennal pits widely separated. First antennal segment black, second and third from light brown to orange. Third antennal segment large, arista bare (Fig. 4F). Eyes bare or with minute light hairs dorsally. Mesonotum and scutellum shiny, not dusted, covered with very short erect light yellow hairs and near margins with short black hairs. Scutellum without black bristles or strong hairs on posterior margin. Wings slightly yellow with brown veins. Femora black with narrow yellow distal end. Tibiae yellow with black middle. Front and hind tarsi black (sometimes with reddish tops of 1–2 segments), 1–2 segments of middle tarsus yellow, the next dorsally black (sometimes 2 segments darkened).

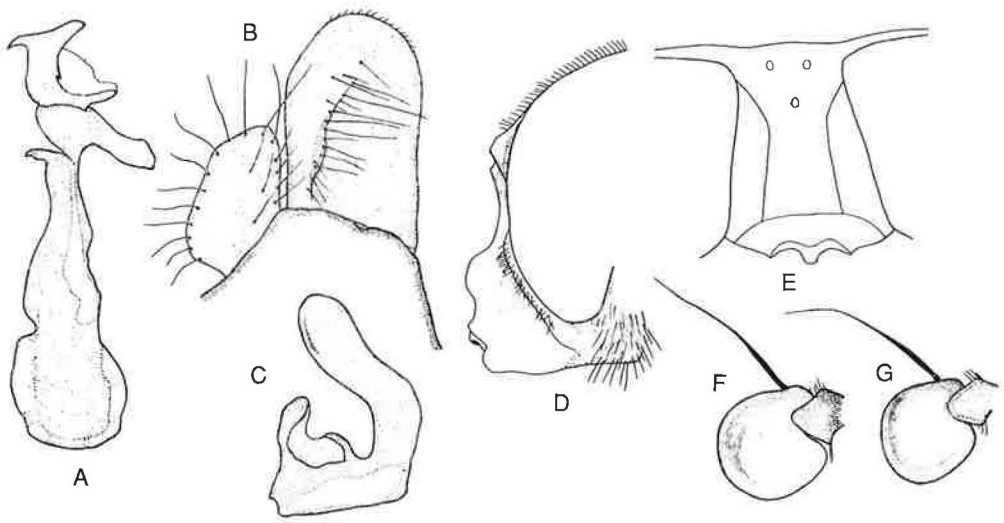

Fig. 4. *Cheilosia reniformis* Hellén, 1930. Male: A – aedeagus, B – surstylus and cercus, C – superior lobe of hypandrium. Female: D – face in profile, E – head from above, F, G – 3rd antennal segment (Novosibirsk and Yakutsk regions).

Squamae white, halteres entirely yellow. Abdomen oval, shiny, covered with short erect yellow hairs, hairs in the middle of I–IV tergites depressed.

Body length 6.6–8.3 mm.

Variability. The size of the third antennal segment and the pubescense of eyes are most variable: in Yakutian specimens the third antennal segment is slightly smaller (Fig. 4G) and the eyes have distinct white hairs in the dorsal half.

In the key to Siberian *Cheilosia* species *C. reniformis* should be included in group "A" under couplet 31 (p. 76). In group "C" the species goes to *C. sichotana* Stackelberg, but differs by the black front tarsi and the smaller size (length body of *C. sichotana* 9–12.8 mm).

Cheilosia vernalis (Fallén, 1817)

Cheilosia rotundicornis (Hellén, 1914) syn. n.

The study of the female type specimen of *C. rotundicornis* showed that this specimen belongs to one of the morphs of *C. vernalis* Fallén. The absence of eye pilosity noted by Hellén was sometimes found in different populations of *C. vernalis*. The other distinguishing characters of *C. rotundicornis* also lie within the limits of variability of *C. vernalis*.

Cheilosia brunnipennis (Becker, 1894)

The species is closely related to *C. sareptana* Becker. I studied 2 males and 1 female from the collection of T. Becker (Berlin). Since his revision of 1894 where the male of *C. brunnipennis* and the female of *C. sareptana* were described no detailed comparison between males and females of these two species has been made. The specimens of *C. sareptana* were from the type locality (identification by Prof. A. A. Stackelberg).

The species differ mainly in the structure of the genitalia (Fig. 5D–E, I–J): the surstyle of *C. brunnipennis* is without distinct projection interiorily, and the basal part of the superior lobes of the hypandrium have a characteristic shape. The shape of the third antennal segment (Fig. 5B–C, G–H) is also a good feature for differentiation. Faces differ slightly: the facial tubercle in *C. sareptana* is more sharply turned up (Fig. 5A, F).

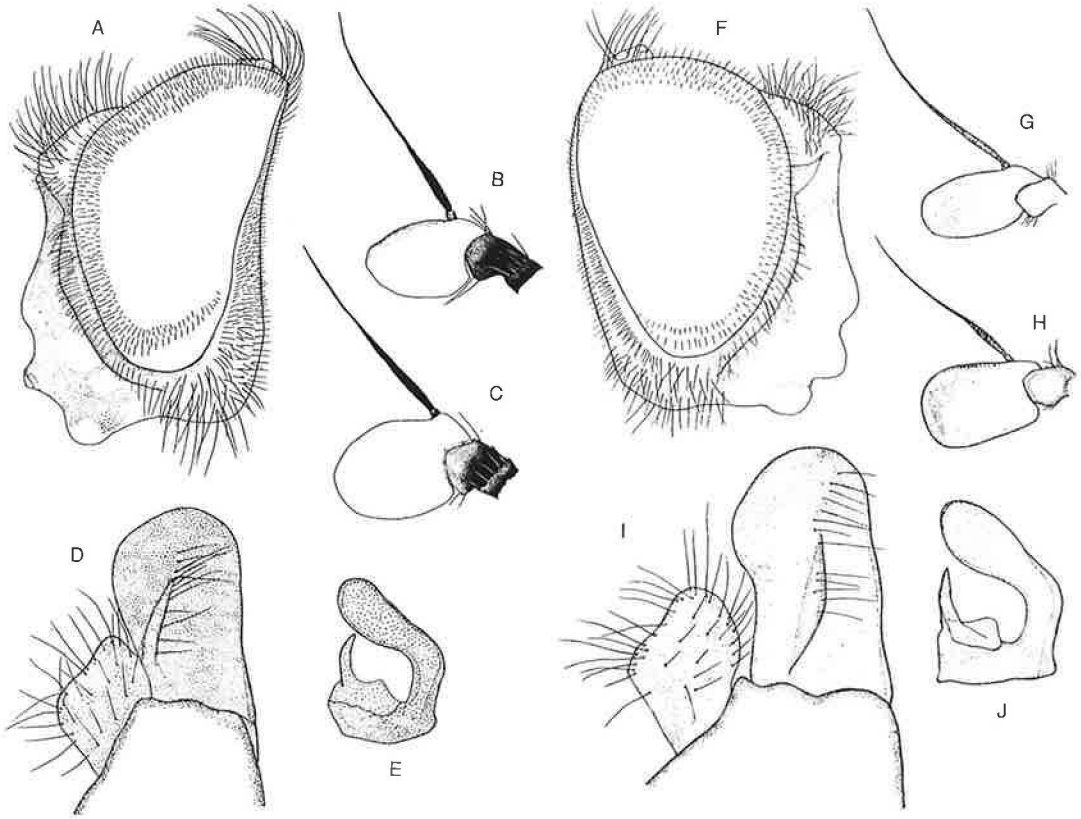

Fig. 5. *Cheilosia brunnipennis* Becker, 1894: A–E; *Cheilosia sareptana* Becker, 1894: F–G. A, F – male face in profile, B, G – 3rd antennal segment of male, C, H – 3rd antennal segment of female, D, I – surstylus and cercus, E, J – superior lobes of hypandrium.

Cheilosia parafasciata Barkalov, 1990

Description of male

Face wide, black without distinct hairs, densely silver dusted, only top of facial tubercle and mouth edge shiny, profile see Fig. 6A. Eye-margins moderate in width, covered with dense silver dusting and rather long upstanding silver hairs (Fig. 6A). Cheeks broad with silver dusting and hairs of the same colour. Frons moderately convex with deep longitudinal furrow, covered with dense grey dusting and black hairs. Frons angle more than 90°. Lunula light yellow. Antennal pits separate. 1st and 2nd antennal segments black, 3rd orange, small relative to size of body (Fig. 6E). Arista distinctly pubescent. Eyes with long black hairs. Connection of eyes slightly shorter than frons length. Vertex distinctly convex with black hairs, triangle equilateral.

Mesonotum with dense grey pubescense and upstanding long black and shorter yellow hairs. Scutellum with long but not very strong black bristles on hind margin. Pleurae with dense, mostly white pubescence, only mesopleura with knot of black hairs. Legs mostly black with ends of femora, ends and basal third of tibiae and ends of 1st to 3rd joints of all tarsi yellow. Hind femur with short strong black bristles ventrally. Halteres light yellow with black head. Wings hyaline with brownish veins.

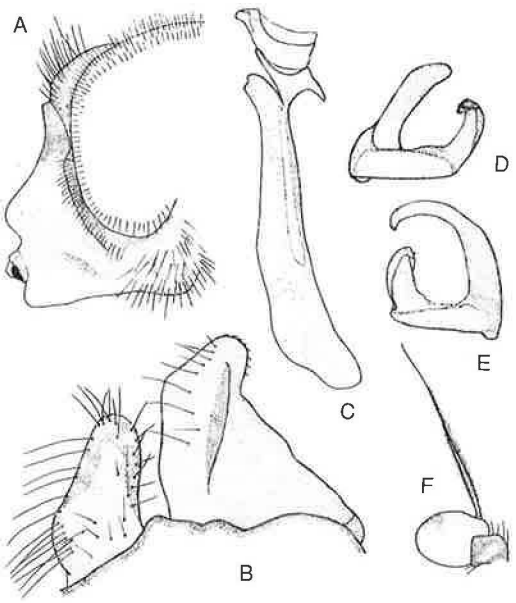

Fig. 6. *Cheilosia parafasciata* Barkalov, 1990, male: A – face in profile, B – surstylus and cercus, C – aedeagus, D, E – superior lobe of hypandrium, F – 3rd antennal segment.

Abdomen black with big greyish-blue spots of dusting at front corners of tergites, spots connected on IV tergite. Hairs upstanding laterally and semidepressed medially, laterally mainly white with some black hairs on the middle part of abdomen, from III tergite predominantly black. Hypopygium see Fig. 6B–E.

Body length 8.0, wing length 6.9 mm.

Material studied: 1 male from Khabarovsk region 14.VI.1928.

In the key to Siberian *Cheilosia* species *C. parafasciata* goes to *C. melanura* Becker (group "D"), but differs from it by the dense pubescence of the face and frons and the presence of grey-blue spots on the abdomen.

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