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A New Species, a New Synonym, and New Records of the Hover-Fly Genus *Cheilosia* Meigen (Diptera, Syrphidae)

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Abstract—A new species, *Cheilosia richterae* sp. n., is described in the nominotypical subgenus, being most closely related there to *Ch. annulifemur* Stackelberg, 1930. Two species, *Ch. sootryeni* Nielsen, 1970 and *Ch. rufimana* (Becker, 1984), are recorded from Russia for the first time. *Ch. kuznetzovae* Skufjin, 1977 is recorded for the first time from the Urals and western Siberia. The subgenus *Nephocheila* Barkalov, 2002 is synonymized with *Nephomyia* Matsumura, 1916. Figures of the male and female heads and the male genitalia are given for all the species.

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The present paper continues a series of studies dealing with a revision of the genus *Cheilosia* Meigen in the fauna of Russia and adjacent territories. *Cheilosia* is one of the largest genera in the family Syrphidae: in the fauna of Russia it comprises 129 known species. The total number of species of the family in the fauna of Russia is most likely not less than 145.

The material used in the study is deposited at the Zoological Museum of the Institute of Animal Systematics and Ecology (Novosibirsk) and at the Zoological Institute, Russian Academy of Sciences (St. Petersburg).

Cheilosia* (*Cheilosia*) *richterae Barkalov, sp. n.

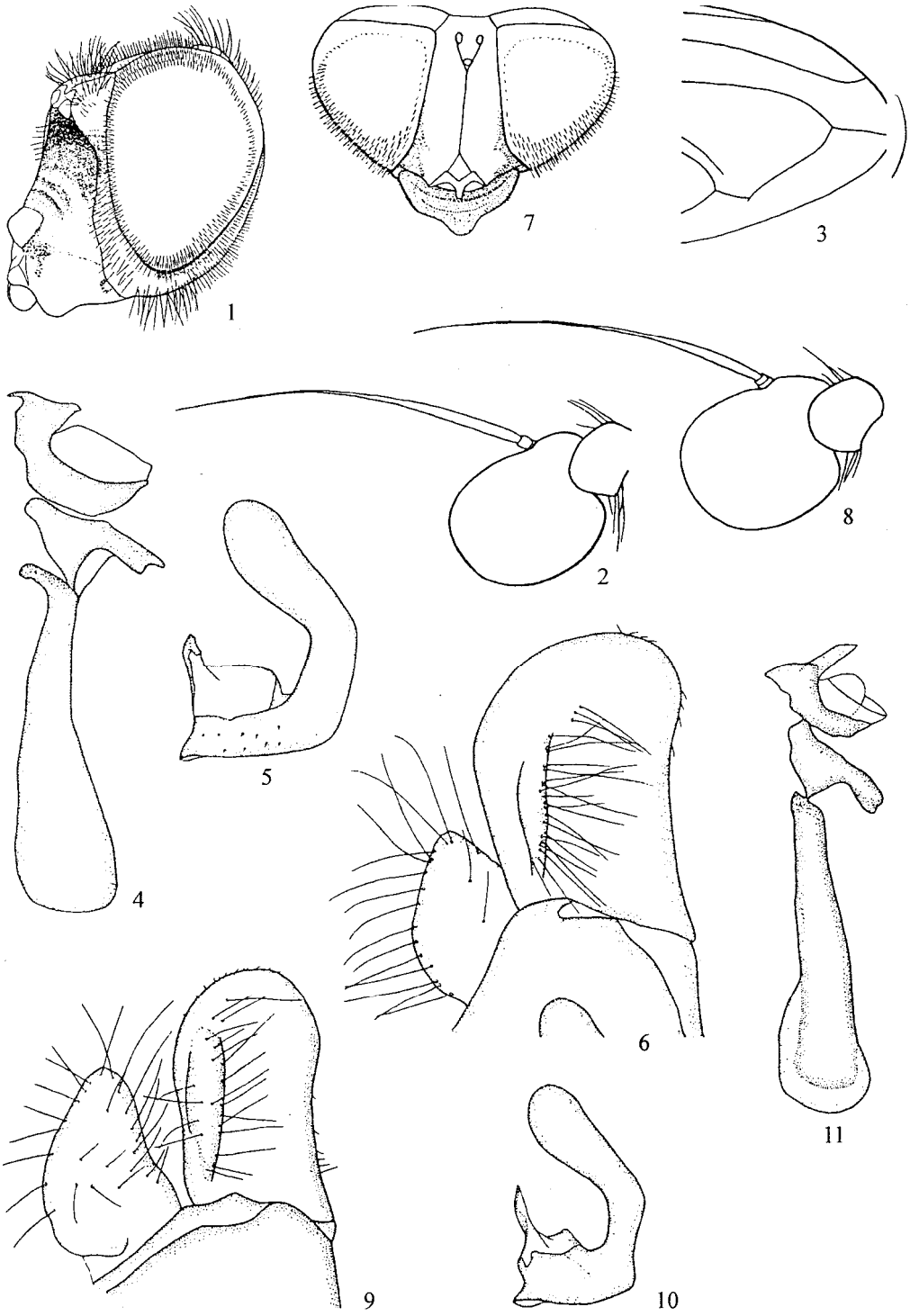
Description. Male. Head. Face weakly widened downwards, obviously extended forwards and downwards, black (except for margin of mouth), covered with relatively dense gray pruinosity, without distinct hairs; median tubercle small, situated in lower half of face (Fig. 1); mala rather wide, slightly narrower than 3rd antennal segment (22 : 30), covered with weak gray pruinosity (dense in paratype) and rather short sparse yellow hairs; mala low, black, shining, with sparse long yellow hairs. Frons wide, weakly convex, shining in middle and with gray pruinosity along margins of eyes, covered with long yellow hairs; frontal angle rectangular; lunula pale brown; antennal sockets distinctly separated. Antenna yellow, 3rd segment oval (Fig. 2); arista moderately long, regularly thickened, glabrous, yellow. Eye entirely covered with long dense yellow hairs; distance of contact between eyes subequal to length of frons without lunula. Vertex distinctly convex, shining, covered with long yellow hairs; parietal triangle isosceles.

Thorax. Humeral calli black, shining. Mesoscutum black, shining, with greenish tint and with 3 narrow longitudinal stripes of brown pruinosity, covered with long, relatively dense pale yellow hairs, without any setae. Scutellum with fine pale yellow hairs, posterior margin glabrous; lower margin with dense long pale hairs. Sides of thorax shining, without pruinosity, with long dense yellow hairs; sternopleura entirely covered with hairs, without glabrous area in middle; metasternum with long yellow hairs.

Legs. Coxae black, trochanters pale brown; fore and middle femora black, with narrowly yellow apices, covered with yellow hairs; hind femur narrowly yellow at base and apex, covered on lower side with short recumbent and long yellow hairs; tibiae yellow, with black median ring of moderate width; fore and hind tarsi yellow, with black upper surfaces of 1st and 5th segments; middle tarsus yellow, with black 5th segment.

Wings slightly brownish along anterior longitudinal veins and all cross-veins; inner angle between veins M_1 and R_{4+5} slightly exceeding 90° (Fig. 3). Halteres yellow, with dark capitulum; postwing plates white, with yellow cilia.

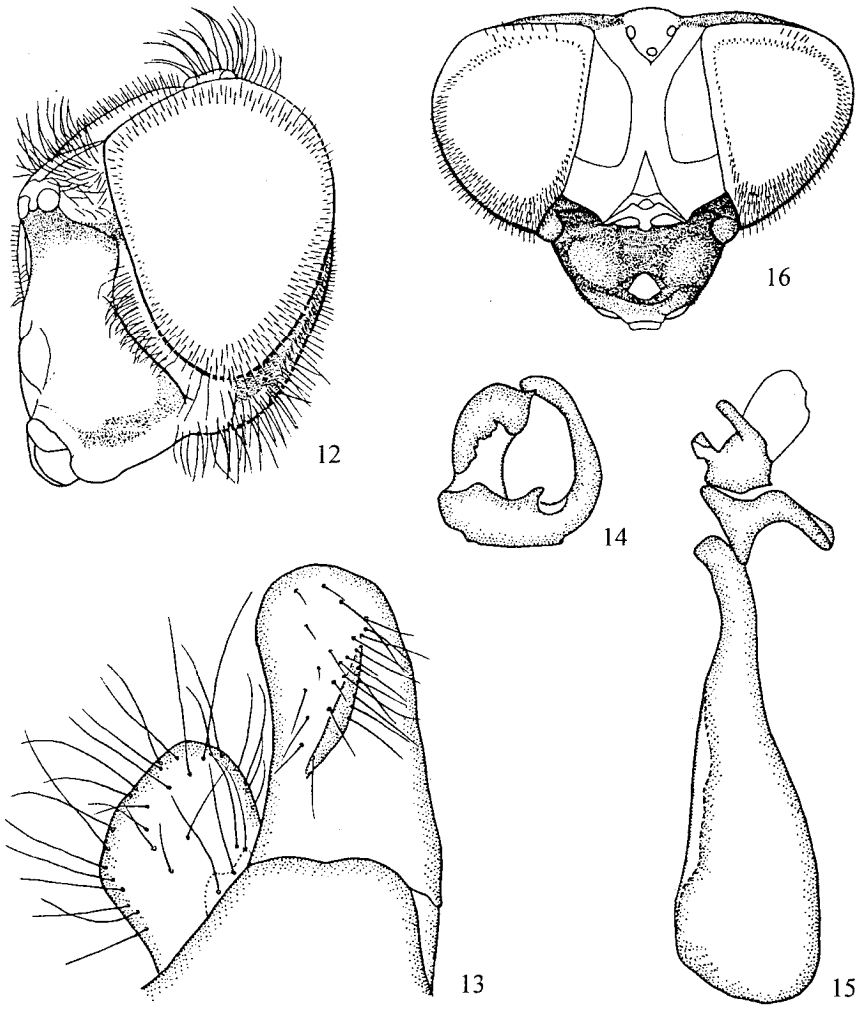
Abdomen oblong-oval, slightly narrower than mesoscutum, black, matte in middle and shining at sides, covered with moderately long, dense, raised,



Figs. 1–11. *Cheilosia* spp.: (1–8) *Ch. richterae* sp. n.; (9–11) *Ch. annulifemur* Stack. [(1) male head, lateral view; (2) 2nd and 3rd antennal segments of male, lateral view; (3) apex of wing; (4, 11) aedeagus with apodema, lateral view; (5, 10) upper lobe of hypandrium, lateral view; (6, 9) surstylus and gonocercus, lateral view; (7) head of female].

yellow hairs. Sternites matte, with yellow hairs long and raised on sternites I and II and recumbent and semi-recumbent on other sternites. Hypopygium as in Figs. 4–6.

Female. Width of mala exceeding half of 3rd antennal segment, upper half of mala covered with dense gray pruinosity, lower half without pruinosity; hairs on mala short, raised. Frons narrow, sharply narrowed



Figs. 12–16. *Cheilosia kuznetzovae* Skuf.: (12) head of male, lateral view; (13) surstylus and gonocercus, lateral view; (14) upper lobe of hypandrium, lateral view; (15) aedeagus with apodema, lateral view; (16) head of female, dorsal view.

toward vertex (Fig. 7), mainly glabrous, with areas of dense gray pruinosity only in anterior half along margins of eyes, covered with short raised yellow hairs. Third antennal segment slightly enlarged (Fig. 8).

Mesoscutum brightly shining, with green tint, without stripes of brown pruinosity, covered with relatively short yellow hairs equal in length. Upper and lower hair tufts on mesopleura narrowly separated. Hind femur yellow in basal 2/3 on inner side.

Abdomen shining, with greenish tint, covered with short raised and semi-recumbent yellow hairs.

Other characters as those in male.

Length of body 10.2–11.3 mm, length of wing 8.5–9.5 mm.

Material. Holotype: ♂, Primorskii Terr., 30 km N of Ternei Vill., on flowers of *Padus maackii* (Rupr.) Kom., 3.VI.1982 (V. Mutin). Paratypes: 1 ♂, 1 ♀, Kunashir Island, Sernovodsk Vill., 8.VI.1968 (V.A. Richter). The holotype is deposited at the Institute of Animal Systematics and Ecology, Siberian Division of the Russian Academy of Sciences (Novosibirsk), the paratypes, at the Zoological Institute, Russian Academy of Sciences (St. Petersburg).

Diagnosis. *Ch. richterae* belongs to the nominotypical subgenus, being most closely related there to *Ch. annulifemur* Stackelberg, 1930, but differing from it in the yellow pubescence of the frons, in the wing infuscate along the cross-veins, obtuse inner angle between M_1 and R_{4+5}, and structure of the male genitalia (in *Ch. annulifemur*, frons with black hairs with admixture of yellow hairs, angle between veins M_1 and R_{4+5} acute, wings hyaline, genitalia as in Figs. 9–11).

In a key to species of *Cheilosia* of the Russian Far East (Mutin and Barkalov, 1999), the new species can be included as follows:

55. Wing infuscate along cross-veins, inner angle between veins M_1 and R_{4+5} obtuse, genitalia as in Figs. 4–6 ..... *Ch. richterae* sp. n.

—Wing not infuscate along cross-veins, inner angle between veins M_1 and R_{4+5} acute ..... 56.

Etymology. The species is named for a well-known Russian dipterologist, Prof. Vera Andreevna Richter.

Cheilosia* (*Montanocheila*) *kuznetzovae Skufjin, 1977

Skufjin, 1977 : 58.

The species was described from the "Galich'ya Gora" Nature Reserve in Lipetsk Province, being subsequently indicated only from this locality (Peck, 1988; Claussen, 1998). In the collection of the Institute of Animal Systematics and Ecology, Siberian Division of the Russian Academy of Sciences, a large series of this species from Kurgan, Tyumen, and Novosibirsk provinces was found. All the specimens from Novosibirsk Prov. were collected from late April to mid-May on catkins of *Salix* sp. The head of the male and female, and also the male genitalia of *Ch. kuznetzovae* are shown in Figs. 12–16.

Material. Kurgan Prov., Tselinnyi Distr., Ust-Uiskoe Vill., 3–4.V.2002 (V. Sorokina), 1 ♂, 1 ♀; Tyumen Prov., environs of Tobolsk, 29.V.1931, 1 ♂; environs of Novosibirsk, 3.V.1983 (A. Barkalov), 2 ♂, 2 ♀; 47 km E of Lake Malyi Chan, 13–17.V.1983 (A. Barkalov), 4 ♂, 12 ♀; Kuibyshevskii Distr., Chumakovo Vill., 11–20.V.1961 (N. Violovitsh), 11 ♂, 65 ♀.

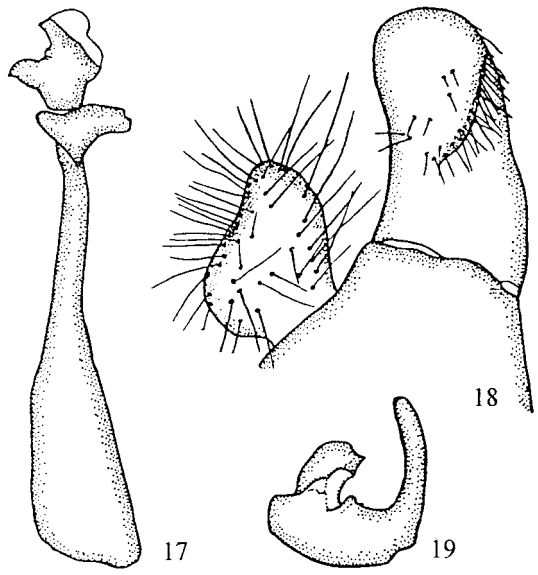
Diagnosis. *Ch. kuznetzovae* belongs to the subgenus *Montanocheila*, being most closely related there to *Ch. alpina* (Zetterstedt, 1838), but differing from it in the coloration of the 3rd antennal segment, 2nd–4th segments of the hind tarsus, hairs on the frons and middle coxa, and also in the structure of the male genitalia (in *Ch. alpine*, 3rd antennal segment and hind tarsus black, male genitalia as in Figs. 17–19).

In a key to the Siberian species (Barkalov, 1983), *Ch. kuznetzovae* can be included as follows:

GROUP C

Males

53 (52). Distal part of aedeagus with symmetric lobes.



Figs. 17–19. *Cheilosia alpina* (Zett.): (17) aedeagus with apodema, lateral view; (18) surstylus and gonocercus, lateral view; (19) upper lobe of hypandrium, lateral view.

54 (55). Hairs on frons and middle coxa black .... *Ch. alpina* (Zett.).

55 (54). Hairs on frons and middle coxa yellow .... *Ch. kuznetzovae* Skuf.

Females

28 (27). Hind femur with yellow hairs.

29 (30). Second to fourth segments of hind tarsus yellow. Frons entirely shining .... *Ch. kuznetzovae* Skuf.

30 (29). Second to fourth segments of hind tarsus dark in basal 2/3 and yellow in apical 1/3. Frons with gray pruinosity in anterior angles .... *Ch. subalbipila* Viol.

Cheilosia* (*Cheilosia*) *sootryeni Nielsen, 1970

Nielsen, 1970 : 115.

Since the publication of the description, this species has never been mentioned in large taxonomic studies. In one of the preceding studies (Barkalov, 1983), the species was misidentified as *Ch. fraterna* (Meigen, 1830). After examination of the paratypes kindly sent by T. Nielsen, this species has appeared to be common in the territory of Russia from the Ural Mountains to Cisbaikalia. At present, it is known from nine localities (Fig. 20).

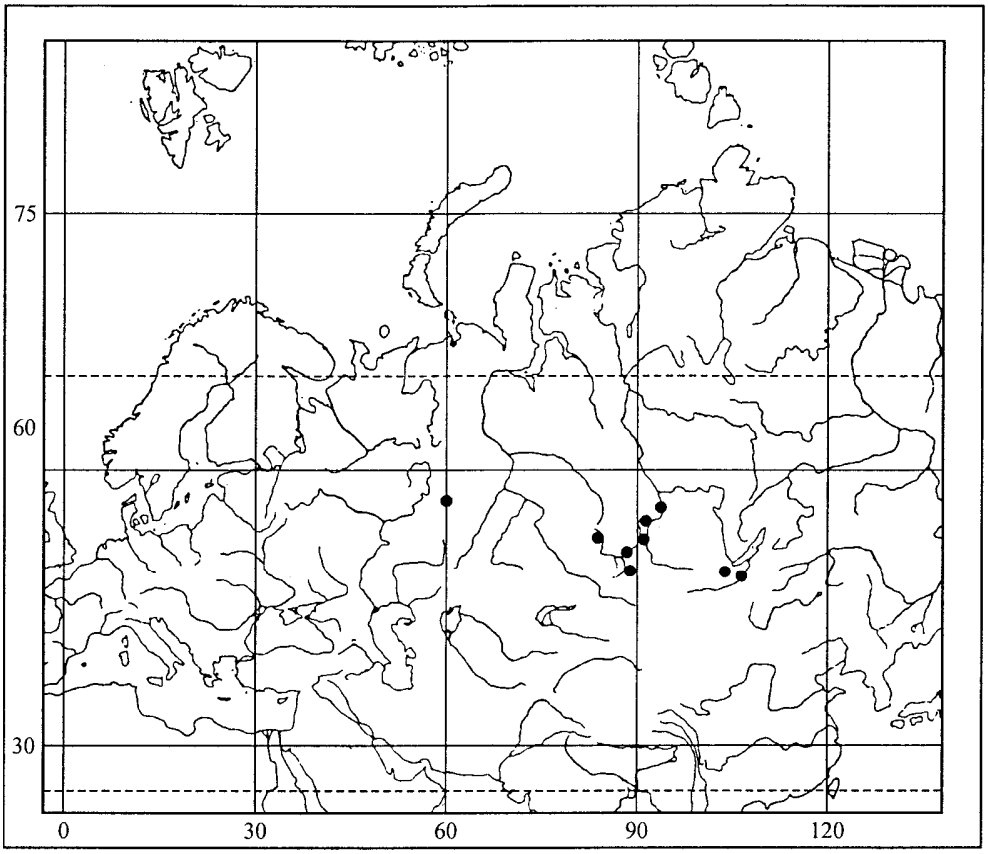
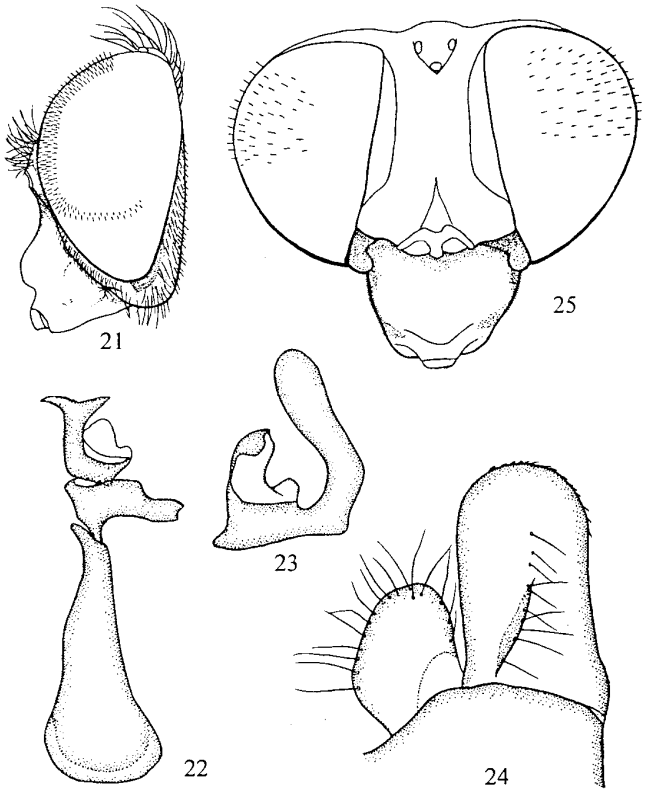


Fig. 20. Collecting sites of *Cheilosia sootryeni* Nielsen in the territory of Russia.



Figs. 21–25. *Cheilosia sootryeni* Nielsen: (21) head of male, lateral view; (22) aedeagus with apodema, lateral view; (23) upper lobe of hypandrium, lateral view; (24) surstylus and gonocercus, lateral view; (25) head of female, dorsal view.

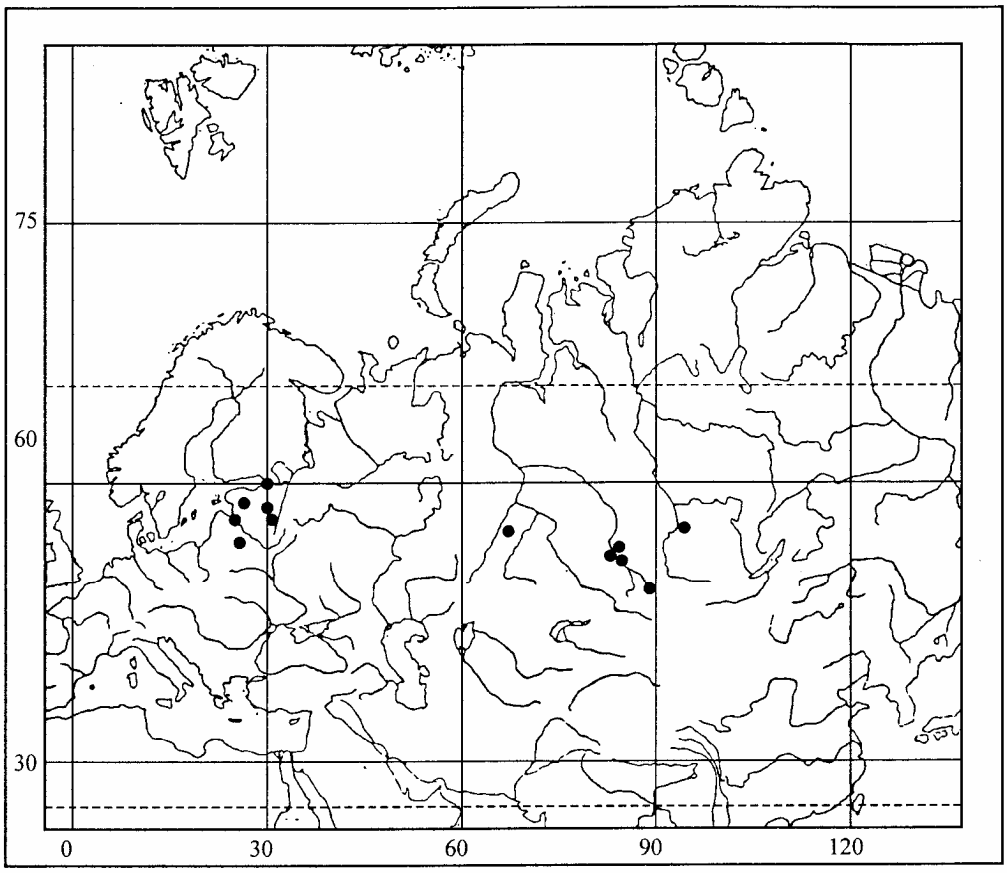


Fig. 26. Collecting sites of *Cheilosia rufimana* (Beck.).

Diagnosis. *Ch. sootryeni* belongs to the nominotypical subgenus, being most closely related to *Ch. fraterna*, but differing from it in the entirely black tarsi and presence of a wide black ring on the tibiae (in *Ch. fraternal*, at least 1st segment of fore tarsus, 1st and 2nd segments of middle tarsus, and 1st–3rd segments of hind tarsus yellow; tibiae yellow or with narrow not entire, dark median rings). Apparently, *Ch. fraterna* should be excluded from the list of species inhabiting Siberia, since the eastern border of its distribution range passes over Ryazan Prov. Record of *Ch. fraterna* in the Caucasus (Stackelberg, 1970) is most likely erroneous; the species has not been included in the latest revision of the Caucasian species of the genus *Cheilosia* (Barkalov, 1993). The heads of the male and female and also the male genitalia of *Ch. sootryeni* are shown in Figs. 21–25.

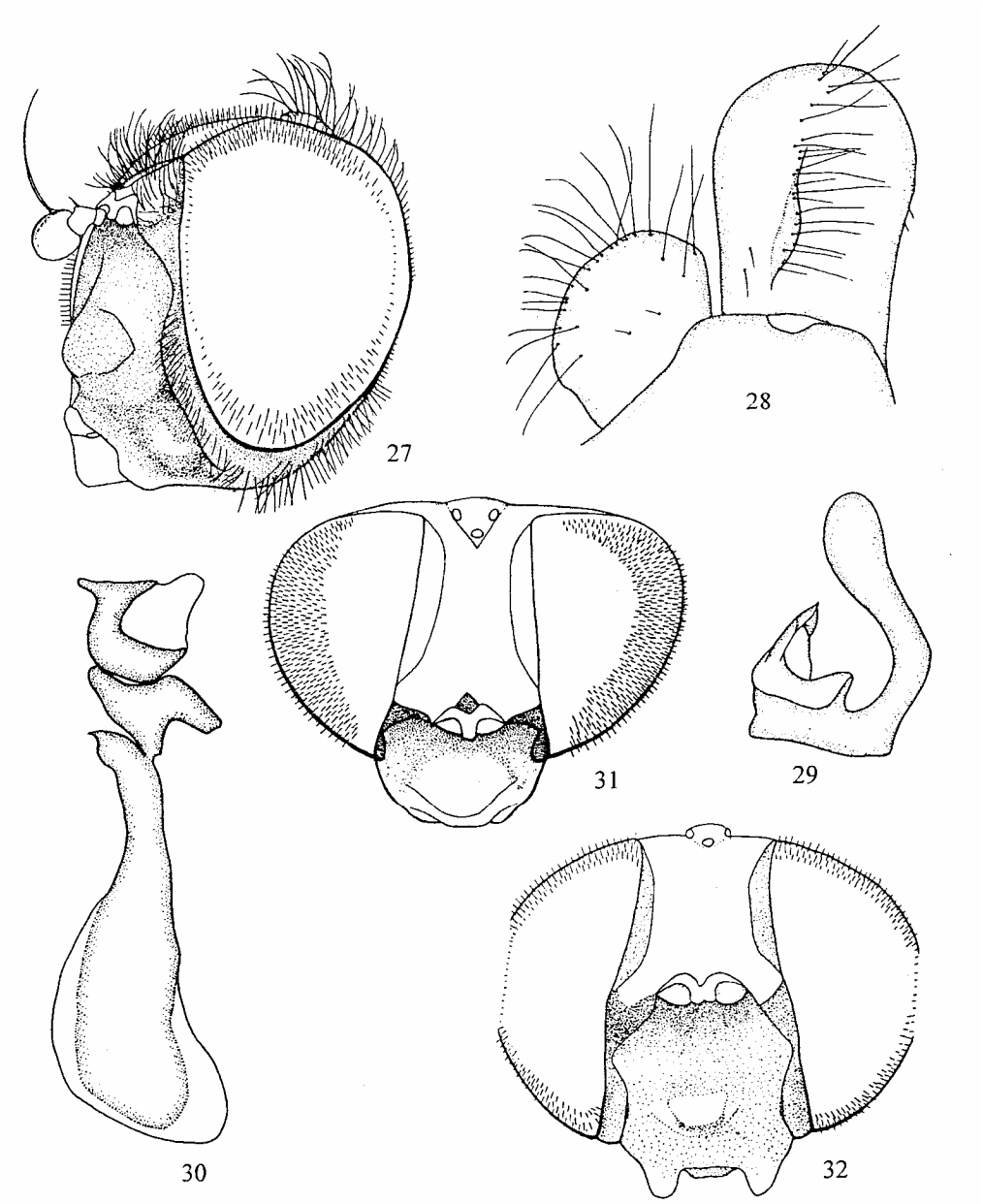
In a key to the Siberian species (Barkalov, 1983), the name *Ch. fraterna* should be replaced by *Ch. sootryeni* in couplets 10, 44, and 58 of group D (males) and in couplets 32 and 50 (females):

Cheilosia* (*Cheilosia*) *rufimana (Becker, 1894)

Becker, 1894 : 473 (*Cheilosia*).

The species is indicated for the territory of Russia for the first time, being earlier known from Central and northern Europe (Peck, 1988; Nielsen and Claussen, 2001). I found it from the western parts of Krasnoyarsk Prov. In addition, this species is distributed in Latvia, Estonia, Ukraine, and Kazakhstan. A total of 17 males and 36 females from 12 localities have been examined (Fig. 26).

Diagnosis. *Ch. rufimana* belongs to the nominotypical subgenus, being placed in the *Ch. velutina* group, according to Barkalov (1983), or in the *Ch. proxima* group (sensu Nielsen and Claussen, 2001). In this group, the species is most closely related to *Ch. gigantea* (Zetterstedt, 1838), even being long regarded as its form with a pale coloration of the antennae. A revision of the type material (Nielsen and Claussen, 2001) has shown that the morphs with the black and orange antennae belong to different species. In a key to the Siberian species of the genus (Barkalov, 1983),



Figs. 27–32. *Cheilosia* spp.: (27–31) *Ch. rufimana* (Beck.) [(27) head of male, lateral view; (28) surstylus and gonocercus, lateral view; (29) upper lobe of hypandrium, lateral view; (30) aedeagus with apodema, lateral view; (31) head of female, dorsal view; (32) *Ch. velutina* Lw., head, front view].

Ch. rufimana should be placed in couplet 57, instead of *Ch. gigantea.*

GROUP D

Males

56 (55). Mesoscutum covered with pale or combined pale and black hairs.

57 (58). Median tubercle situated in middle of face (Fig. 27) ..... *Ch. rufimana* (Beck.).

58 (57). Median tubercle situated more closely to lower margin of face (Fig. 21) .... *Ch. sootryeni* Nielsen.

Females

52 (47). Frons without pruinosity, shining or with narrow stripes of pruinosity along margins of eyes.

53 (54). Fore coxa with characteristic tooth in lower outer angle ..... *Ch. impressa* Lw.

54 (53). Fore coxa without tooth in lower outer angle.

55 (56). Eye without hairs in lower 1/4 .... *Ch. sootryeni* Nielsen.

56 (55). Eye entirely covered with hairs.

57 (58). Frons nearly parallel-sided, relatively wide (Fig. 32); mesoscutum with semi-recumbent hairs ..... *Ch. velutina* Lw.

58 (57). Frons distinctly narrowed toward vertex, relatively narrow (Fig. 31); mesoscutum with raised hairs ..... *Ch. rufimana* (Beck.).

COMMENT ON SYNONYMY

The subgenus *Nephocheila* was described for the species inhabiting eastern Eurasia and possessing a distinctive structure of the male genitalia (Barkalov, 2002). *Cheilosia bombiformis* (Matsumura, 1916), designated as the type species of the subgenus, was initially described in the monotypical genus *Nephomyia* Matsumura, 1916. Later (Shiraki, 1968), this species was transferred in *Cheilosia,* and its initial generic name became, respectively, a junior synonym. According to the criterion of validity of the Code of the Zoological Nomenclature (2000, article 10.6), the name of a taxon of a generic group, becoming a junior synonym, reserves priority in a case of its succeeding usage for another taxon of a generic group. Thus, the name *Nephocheila* should be considered a junior synonym of the name *Nephomyia,* i.e., *Nephomyia* Matsumura, 1916 = *Nephocheila* Barkalov, 2002, **syn. n.**

REFERENCES

1. Barkalov, A.V., "*Cheilosia* Meigen, 1822," in *Syrphidae of Siberia*, Ed. by N.A. Violovitsh (Nauka, Novosibirsk, 1983), pp. 73–87 [in Russian].
2. Barkalov, A.V., "Hover-flies of the Genus *Cheilosia* Meigen, 1822 (Diptera, Syrphidae) of the Caucasus," Entomol. Obozr. **72** (3), 698–727 (1993).
3. Barkalov, A.V., "Subgeneric Classification of the Genus *Cheilosia* Meigen, 1822 (Diptera, Syrphidae)," Entomol. Obozr. **81** (1), 218–234 (2002) [Entomol. Rev. **82** (5), 518–531 (2002)].
4. Barkalov, A.V. and Pek, L.V., "Hover-flies of the Genus *Cheilosia* (Diptera, Syrphidae) of Middle Asia," Zool. Zh. **76** (12), 1370–1380 (1997).
5. Becker, Th., "Revision der Gattung *Cheilosia* Meigen," Nova Acta Caesar. Leop.-Carol. **62** (3), 195–521 (1894).
6. Claussen, C., "Die europäischen Arten der *Cheilosia alpina*-Gruppe (Diptera, Syrphidae)," Bonn. Zool. Beitr. **47** (3–4), 381–410 (1998).
7. International Code of the Zoological Nomenclature, 4th ed. (St. Petersburg, 2004).
8. Matsumura, S., *Thousand Insects of Japan: 2 (Diptera.)* (1916), pp. 185–474.
9. Mutin, V.A. and Barkalov A.V., "Family Syrphidae," in *A Key to Insects of the Russian Far East. Dipterans and Fleas* (1999), Vol. 6, No. 1, pp. 342–500 [in Russian].
10. Nielsen, T.R., "*Cheilosia sootryeni* nov. sp. (Dipt., Syrphidae), a Norwegian Species Resembling *Ch. vernalis* Fallén," Norsk Entomol. Tidsskr. **17** (2), 115–118 (1970).
11. Nielsen, T.R. and Claussen, C., "On *Cheilosia ingerae* spec. nov. (Diptera, Syrphidae) from Northern Fennoscandia," Dipteron. **4** (1), 43–56 (2001).
12. Peck, L.V., "Family Syrphidae," in *Catalogue of Palaearctic Diptera*, Ed. by A. Soos (Budapest, 1988), Vol. 8, pp. 11–245.
13. Shiraki, T., "Syrphidae (Insecta)," in *Fauna Japonica* (1968), Vol. 2.
14. Skufjin, K.V., "A New Species and Subspecies of the Genus *Cheilosia* Mg. (Diptera, Syrphidae) from the "Galich'ya Gora" Nature Reserve (Lipetsk Province)," in *New and Little-known Species of Insects of the European Part of the USSR*, Ed. by O.A. Skarlato (Zool. Inst., Leningrad, 1977), pp. 57–60 [in Russian].
15. Stackelberg, A.A., "Family Syrphidae," in *A Key to Insects of the European Part of the USSR*, Ed. by G.Ya. Bei-Bienko (Nauka, Leningrad, 1970), Vol. 5, No. 2, pp. 11–96 [in Russian].