

## Description of *Cheilosia ranunculi* spec. nov. from Europe, a sibling species of *C. albitarsis* Meigen (Diptera, Syrphidae)

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Two species are confused under the name *Cheilosia albitarsis* Meigen sensu auctt. These species are very similar in all external morphological characters of the adults, except in the structure of the surstyli, where there are marked differences. Separation of the ♀s remains uncertain. Nomenclatural problems are discussed. For the more widespread species the name *C. albitarsis* is preserved, for the other species the name *Cheilosia ranunculi* **spec. nov.** is proposed. A neotype is designated for *Cheilosia flavimana* Meigen, a synonym of *C. albitarsis*. It is also established that *C. lapponica* Becker is conspecific with *C. albitarsis* (**syn. nov.**). Characteristically, *C. ranunculi* occurs in dry grassland from S England to N Spain and eastwards to Bulgaria. North of the Alps it is more local and rarer than *C. albitarsis*.

### Zusammenfassung

*Cheilosia albitarsis* Meigen sensu auctt. umfasst zwei Arten. In der äußeren Morphologie sind sie einander sehr ähnlich, sie unterscheiden sich aber markant in der Form der Surstyli. Die ♀ sind gegenwärtig nicht sicher zu unterscheiden. Nomenklatorische Probleme werden erörtert. Für die weiter verbreitete Art wird der Name *C. albitarsis* beibehalten, für die andere wird der Name *Cheilosia ranunculi* **spec. nov.** vorgeschlagen. Für *C. flavimana* Meigen wird ein Neotypus festgelegt. *C. lapponica* ist ebenfalls artgleich mit *C. albitarsis* (**syn. nov.**). *C. ranunculi* kommt vorzugsweise auf trockenem Grünland von Süd-England bis Nord-Spanien und nach Osten bis Bulgarien vor. Nördlich der Alpen ist sie lokaler und seltener als *C. albitarsis*.

### Introduction

*Cheilosia albitarsis* auctt. is one of the most widespread species of the genus and, at least in Europe, one of the most common. While many species of the genus *Cheilosia* Meigen usually are difficult to identify and require retention of voucher specimens, *C. albitarsis* has been regarded as an exception because it is comparatively easy to recognize, even in the field.

However, some years ago I observed a marked difference in the shape of the surstyli in material caught in SE France. Subsequent examination of specimens caught in other parts of Europe and discovery of additional features supported the existence of two morphologically well separated species, both of which are widely distributed in Europe. The rarer one was reported for the first time under the provisional name *Cheilosia* aff. *albitarsis*, in a check-list for Baden-Württemberg (SW Germany) (Doczkal et al. 1993), and later from the Balkan Peninsula (Vujčić 1996). It has also been mentioned quite recently from Great Britain (Gibbs 2000, as "form A" of *C. albitarsis*). The nomenclatural situation proved to be chaotic (see below), the more so because the type specimens of the nominal taxa in question either do not exist or are females. Efforts to find characters for reliable separation of the ♀s has remained unsuccessful, leaving the type specimens unidentifiable. This led to the unsatisfying situation that many people knew of the new species but there was neither a name available for it so far nor published information on how to distinguish it from *C. albitarsis* s.s. This article is intended to make the results of the taxonomic studies accessible and to propose a solution for the nomenclatural problems.

#### Material, methods and terminology

About 1500 specimens of *C. albitarsis* auctt. have been checked, but only a part of them has been used for character analysis (tables 1 and 2, and description of *C. ranunculi*). The material is from the collections of the persons and institutions listed in the acknowledgements.

The length of the postpedicellus refers to the distance between its dorsoproximal end and the apex (fig. 1). The length of ta1:5 is taken from the apex to the base, without the stalk articulating that tarsomere to the preceding tarsomere. Its width is taken at the basal corners (fig. 6a). The length of the surstylus is measured from the dorsal end of its articulation with the hypandrium to the apex, its depth as the shortest distance from the former point to the ventral margin (fig. 9).

The drawings have been prepared from dry specimens, except for figs. 7 and 8, which refer to specimens which have been treated with 10% KOH, and which are stored in glycerol.

In general, the morphological terminology of McAlpine (1981) has been followed. The term postpedicellus is used for the 3<sup>rd</sup> antennal segment (cf. Stuckenberg 1999).

Abbreviations: F/E = ratio (length of frons from the dorsal margin of the lunule to the anterior eye angle) : (distance from the anterior eye angle to the front margin of the anterior ocellus); L/D = ratio length : depth; L/W = ratio length : width; f = femur (e.g. f1 = fore femur); t = tibia (e.g. t3 = hind tibia); ta = tarsus (e.g. ta1:5 = 5<sup>th</sup> tarsomere of fore tarsus); T = tergite(s); S = sternite(s); mal = anterior flat part of thoracic anepisternum (Speight 1987); ETHZ = Eidgenössische Technische Hochschule Zürich; HLDH = Hessisches Landesmuseum Darmstadt; MNHN = Muséum National d'Histoire Naturelle Paris; MHNG = Muséum d'Histoire Naturelle Genève; NHMB = Naturhistorisches Museum Basel; SMNK = Staatliches Museum für Naturkunde Karlsruhe; SMNS = Staatliches Museum für Naturkunde Stuttgart; ZMHB = Zoologisches Museum der Humboldt-Universität Berlin.

Characterisation of the *Cheilosia albitarsis* group

*C. albitarsis* auctt. is included in all European keys (e.g. Bradescu 1991; Goot 1981; Stubbs & Falk 1983; Torp 1994; Verlinden 1991) and can be identified without difficulties. The taxon belongs to the group with hairy eyes, bare face, and scutellar bristles present (group D sensu Becker (1894), but ♀ with practically bare eyes). The black legs with the median tarsomeres of at least the fore tarsi pale in combination with the black mesonotal pile is diagnostic for the ♂, the first character in combination with bare eyes, broad abdomen and size for the ♀.

*C. albitarsis* and *C. ranunculi* belong to a well characterised species group that is probably monophyletic. At least three synapomorphic characters exist:

1. ta1:5 angular basally (both sexes, but better developed in the ♂)
2. integument of the central knob of the face wrinkled (both sexes)
3. secondary reduction of the eye hairs of the ♀.

Whether there are additional species belonging to the *C. albitarsis* group outside Europe has not been checked. However, *Cheilosia hiawatha* Shannon from the Nearctic (1♂ examined, det. F.C. Thompson, coll. T.R. Nielsen) belongs to the *C. albitarsis* group and is morphologically indistinguishable from *C. albitarsis* s.s. (possible synonym).

*Cheilosia ranunculi* spec. nov.

= *Cheilosia* aff. *albitarsis*: Doczkal et al. (1993); Vujić (1996).

= *Cheilosia albitarsis* form A: Gibbs (2000).

Holotype: ♂ (1) D, Baden-Württemberg, Ettlingen-Oberweier, Bammert, 140-155m, 7016SW [= number of the topographical map published by the Landesvermessungsamt (= state surveying department) of Baden-Württemberg and quadrant in which the collecting site is located], 21.4.1994, leg. D. Doczkal; (2) Meßprot. Nr. CA123 [no. referring to a data set]; (3, red) Holotypus *Cheilosia ranunculi* Doczkal 2000. Deposited in the collection of the SMNS.

Paratypes (114 specimens): (Because of the uncertain distinction of the ♀s only ♂ specimens have been designated as paratypes.) All specimens deposited in the collection of the collector unless stated otherwise.

**Bulgaria:** 1♂ Rodope hg., Szatovcsa, 29.V.1982, leg. S. Tóth, coll. C. Claußen; 1♂ Pirin hegység Pirin, 21.V.1982, leg. S. Tóth, coll. C. Claußen. **France:** 5♂ Haute Provence, Lac St. Croix, UTM NP75, 3.V.1991, leg. D. Doczkal; 1♂ Pyr. Orient., Urbanya, 900m, 8.VI.1991, leg. C. Kassebeer; 1♂ Alsace, Ottmarsheim, 14.V.1961, leg. F. Keiser, coll. NHMB; 1♂ Lac d'Ambléon, 800m, 23.V.1996, leg. L. Verlinden; 1♂ Vars, St. Marcellin [?], 30.V.1996, leg. L. Verlinden; 1♂ Dordogne, Le Bugue, 19.IV.1984, leg. L. Verlinden; 1♂ Dordogne, Trémolat, 20.IV.1984, leg. Verlinden; 1♂ Hte. Savoie, Bossy/Frangy, 4.V.1991, leg. J. Steffen, coll. MHNG; 1♂ Isère, St. Laurent-en-Beaumont, 27.IV.1991, leg. A. Moussa, coll. MHNG. **Germany:** Baden-Württemberg: 1♂ Malsch near Karlsruhe, Glöcklesberg, 4.V.1985, leg. D. Doczkal; 1♂ Malsch, Holdfeld, 180m, 25.IV.1988, leg. D. Doczkal; 1♂ Merklingen near Ulm, Mönchsteig, UTM NU57/67, 670-690m, 8.V.1990, leg. D. Doczkal; 2♂ Deggenhausertal, Falkenhalde, UTM NT39, 570-610m, 9.V.1990,

in Malaise trap, leg. D. Doczkal; 1 ♂ Lomersheim near Mühlacker, Burgrain, UTM MV82, 22.IV.1990, leg. C. Schmid-Egger; 2 ♂ Malsch, Dämmel, TK7116NW, 130-140m, 22.IV.1994, leg. D. Doczkal; 1 ♂ Gausbach near Forbach, Heustadelwiese SW Sportplatz, TK7316NW, 390-590m, 12.V.1994, leg. D. Doczkal; 1 ♂ Lautenbach-Sohlberg, Sumpfwiese N Steighof, TK7414SE, 640-670m, 30.IV.1994, leg. D. Doczkal; 2 ♂ dto., 8.V.1995, leg. D. Doczkal; 1 ♂ Oberweier near Ettligen, Gartenäcker, TK7016SW, 170-185m, 8.V.1994, leg. D. Doczkal; 2 ♂ Geisingen, Hörnekopf, UTM MU71, 750-780m, 7.V.1990, leg. D. Doczkal; 1 ♂ Reichental near Gernsbach, Großer Schöllkopf, Quellflur, TK7216SE, 460m, 1.V.1998, leg. D. Doczkal; 1 ♂ Michelbach near Gaggenau, *Caltha*-Wiese W Schloßköpfel, TK7116SW, 205-230m, 30.IV.1998, leg. D. Doczkal; 1 ♂ Hörden near Gaggenau, Laufbachtal, TK7216NW, 220-250m, 23.IV.1995, leg. D. Doczkal; 1 ♂ Oberprechtal, Wiesen S Hirschfels, TK7715SW, 7.V.1995, leg. D. Doczkal; 1 ♂ Blankenloch near Karlsruhe, 23.V.1972, leg. K. Kormann, coll. SMNK; 1 ♂ Freiburg, Schönberg, 15.V.1991, leg. C. Kassebeer; 1 ♂ Freiburg i.Br., Schönberg, 10.IV.1990, leg. J.-H. Stuke; 1 ♂ dto. 20.IV.1990. **Hessen:** 1 ♂ Darmstadt, 3.V.[19]28, leg. H. Meyer, coll. HLDH. **Bayern:** 1 ♂ Hersbruck, Kainebach, 2.V.1977, leg. G. Röder; 4 ♂ Hersbruck, S Heidmannsberg, 12.V. 1992, leg. G. Röder; 1 ♂ München, 27.V.?, leg. ?, coll. DEIC; 1 ♂ Würzburg, leg. M. Zwecker, coll. DEIC. **Thüringen:** 1 ♂ Gera, Lasur, TK5238NE, 11.V.1997, leg. F. Dziock; 1 ♂ dto. 8.V.1997; 4 ♂ Jena, Leutralal, TK5135NW, 14.V.1997, leg. F. Dziock. **Hungary** (all leg. S. Tóth): ♂ ♀ (in copula) Gyékényes, Lankóci-erdő, 6.V.1997, coll. D. Doczkal; 4 ♂ Bátorliget, 8.V.1993; 1 ♂ Potony, 9.V.1973; 3 ♂ Zengővárkony, 8.V.1986; 1 ♂ Obánya, 8.V.1985; 2 ♂ Dudar, 14.V.1992; 1 ♂ Püspökszentlászló, 8.V.1986; 2 ♂ Hosszúhetény, Püspökszentlászlói arboretum, 9.V.1985; 1 ♂ Hárskút, Esztergáli-v., 12.V.1992; 3 ♂ Hárskút, Esztergáliskút, 8.V.1992. **Italy:** **South Tirol:** 1 ♂ Mals, Planeital, 1600-1750m, 30.V.1993, leg. D. Doczkal; 1 ♂ ditto, 1750-1850m; 6 ♂ ditto, 1750-2100m, 27.VI.1992; 1 ♂ ditto, 2100m, 28.VI.1992; 7 ♂ Mals, Planeital, 1800-2000m, 27.VI.1992, leg. J.-H. Stuke; 2 ♂ Mals, Planeital, 1600-1700m, 25.VI.1992, leg. C. Claußen; 1 ♂ Basilicata, M. Pollino, Piani Pollino (PZ), 1800m, 9.VI.1989, leg. M. Daccordi, coll. C. Claußen; 1 ♂ Basilicata, M.te Vulture, Laghi di Monticchio, 19.V.1990, leg. M. Daccordi, coll. C. Claußen; 1 ♂ Campania, Monte Falto (NA), 1100m, 20.V.1984, leg. G. Boffa, coll. C. Claußen; 1 ♂ Val Venosta, Prato a. Stelvio, 1000m, 2.VI.1985, leg. L. Verlinden; 1 ♂ Tubre, Val d'Avigna, 1600m, 12.VI.1985, leg. L. Verlinden; 1 ♂ Prov. Cuneo, Bobbio Pellice, 800-1000m, 8.V.1990, leg. L. Verlinden; 1 ♂ Prov. Cuneo, Val Maira, Prazzo, 1100m, 19.V.1991, leg. L. Verlinden; 1 ♂ Gardasee, Gargnano, V.1904, leg. ?, coll. DEIC. **Romania** (all leg. M. Jessat, coll. Mauritianum Altenburg): 1 ♂ Sacarnas, 4.VI.1995; 2 ♂ Mures-Aue near Bata, 1.VI.1997; 5 ♂ Muntii Trascaului, Rimet-Klamm, 26.VII.1997; 1 ♂ Muntii Trascaului, Turda-Klamm, Zufluß zum Aries, 26.VII.1997. **Spain:** 1 ♂ NE Spain, Vizcaya Prov., near Bilbao, 8.V.1978, leg. M.C.D. Speight. **Switzerland:** 1 ♂ Wallis, Sierre, 15.V.1991, leg. M. Hauser, coll. C. Claußen; 1 ♂ Wallis, Rast E3 Aigle, 17.V.1991, leg. C. Kassebeer; 1 ♂ Jura, Bözingen, 16.V.1910, leg. T. Steck, coll. NHMB; 1 ♂ Jura, St. Blaise, 9.V.1918, leg. T. Steck, coll. NHMB; 1 ♂ Allschwil, 1.V.1955, leg. F. Keiser, coll. NHMB; 1 ♂ AG, Villnachern, Wald, 340m, 26.V.1986, leg. C. Meier, coll. ETHZ. **Yugoslavia:** Istrien: 1 ♂ Monte Maggine [?], 20.V.1930, leg. Oldenberg, coll. DEIC.

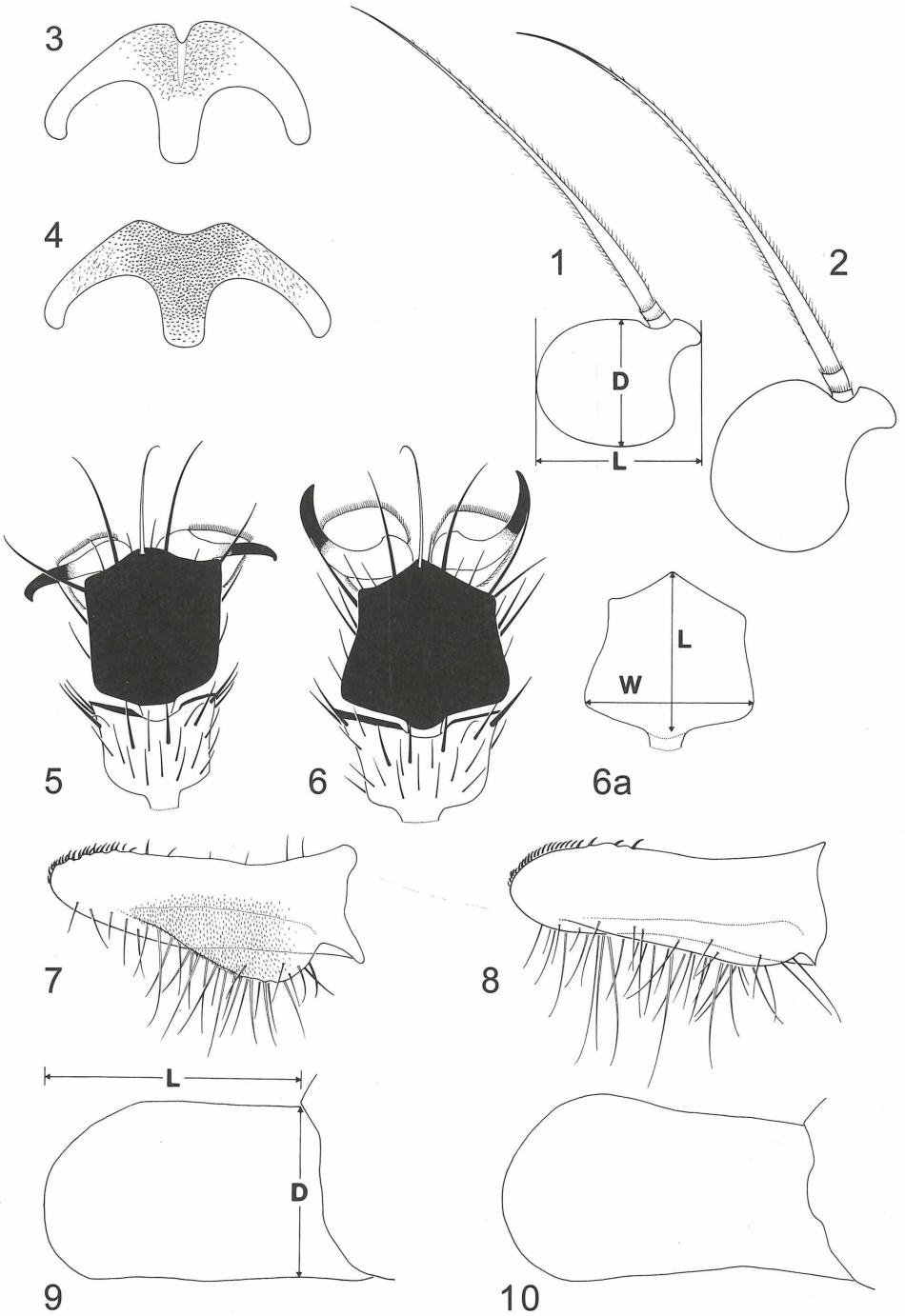
**Etymology:** The specific epithet refers to the flowers preferred by the adults and the presumed host plant of the larva.

**Diagnosis:** ta1:5 with angular base. Central knob of face with rough integument, dull. ♀ with bare eyes. ♂: Mesonotal pile nearly all black, but with a narrow band of pale hairs anteriorly. Tergites of the ♂ without any black hairs at the lateral margins. Posteromedian hairs of T4 recumbent. Surstylus with a weak carina, without microtrichia dorsally. For additional differences from the very similar *C. albitarsis* cf. table 1. ♀ indistinguishable from *C. albitarsis*.

## Description

♂: Head: eyes hairy, length of hairs in upper part of the eye about 0.15 mm, hairs pale brown. Anterior eye angle 75-90°. Frons short ( $F/E = 0.54 - 0.65$ ), with a strong median furrow, dusted, although  $\pm$  thin in median part, with black hair. Ocellar triangle equilateral, with long black hairs. Postocular orbit densely dusted grey, in upper part with long black and short yellow setae, in lower part with yellow hairs only. Genae dusted, with yellow hairs, one or a few black hairs may occur. Face at the level of the central knob 0.45 times the width of the head; lateral corner of the subcranial cavity less projecting than central knob and antero-median edge of the subcranial cavity. Central knob with rough integument, dull. Face almost entirely dusted, without long hairs. Orbital strip as wide as  $ta1:2$  (dorsal view), with short white hairs, densely dusted. Antennal pits completely separated by the median process of the lunule, which is fused with the face. Lunule much lighter in colour than the frons, reddish, the median process usually without a longitudinal furrow, with rough surface in median part (fig. 4), but variable. Clypeus short and broad ( $L/W = 1.2-1.4$ ). Distal part of labellum (beyond furca) 1.5 times as long as deep. – Antenna: scapus and pedicellus blackish, the latter at the distal outer margin and the apico-dorsal corner usually red. Postpedicellus (fig. 2) small, at most two times as deep as the width of the orbital strip, cinnamon-coloured or reddish brown, about as long as deep ( $L/W 0.9-1.16$ ). Arista dark brown, about 3-4 times as long as the postpedicellus, slightly thickened on basal  $1/4 - 1/3$ , covered with very short (less than half of maximum diameter of arista) adpressed hairs.

Thorax: Mesonotum undusted except for thin grey dusting at the lateral margin, the postalar callus, and the margin of the scutellum, with black pile of uneven length and a narrow band of pale ( $\pm$  white) hairs anteriorly; postsutural area with short, slightly reclinate hairs and 2-2.5 times longer hairs. Posterior margin of scutellum with several bristles which are about as long as the scutellum, ventral scutellar fringe pale yellow, usually with a few pale hairs mixed with the black pile dorsally. Pleurae entirely dusted, with black pile, usually mixed with a few pale hairs on the anepisternum and on the dorsal katapisternal hair patch. The hairs on the proepimeron of the propleura always pale, the hairs of the ventral katapisternal hair patch partly bristle-like; dorsal and ventral katapisternal hair patches separated, but with an area of shorter hairs below the dorsal hair patch,  $ma1$  without long hairs. Metasternum with pale or mixed pale and black hairs. – Wing: membrane yellowish to pale brown, cell  $bc$  with a blackish stripe in basal part, but in distal part not much darker than cell  $c$ ; epaulette black with black hairs, contrasting with the reddish basal part of the costal vein; veins in basal half of wing yellowish, dark brown or black in distal half, pterostigma yellow. Marginal fringe of calyptra usually with only pale hairs, but a few black hairs may occur. – Legs:  $fl-3$  and  $t1-3$  black,  $ta1:2-4$  and apex of  $ta1:1$  yellow, strongly contrasting with the black  $ta1:1+5$ ; similar colouration, but often less distinct, at  $ta2$ ;  $ta3:3+4$  and apices of  $ta3:1+2$  reddish. Anterior apical corner of  $ta1:4$  tooth-like, black ventrally,  $ta1:5$  (fig. 6) angular



basally, as wide as or wider than long, sides convergent towards the apex. Legs entirely dusted, black haired, but f1 anteriorly in distal half with pale or mixed black and pale hairs, the long hairs of the posterior side of f2 usually predominantly white, as are the long hairs of f3; t1 anteriorly and ventrally, and t3 posteriorly and ventrally with yellow hairs (as usual in *Cheilosia*). Claws yellowish red basally, black distally.

Abdomen: T1-4 with yellow pile, without any black hairs at the lateral margins, but a few short black hairs may occur near the median line of T2-4, the pile long and erect laterally, shorter and  $\pm$  inclined at the median part; posterior margin of T4 in the median part with recumbent hairs only. T1 entirely dusted grey, T2+3 each with a large, trapezoidal patch of brown dusting; laterally with thin grey dusting and with a bare area near the lateral margins. T4 anteriorly and laterally dusted grey to a variable extent. S1-4 entirely dusted, with long erect pale hairs on S1+2 and at the sides of S3+4, on S3+4 leaving 2/3 or more of the width of the sternite free of long hairs, the short adpressed hairs of S3+4 usually all pale or predominantly pale. – Genitalia: without constant differences from *C. albitarsis*, except in the surstyli, which are slightly longer (fig. 10),  $L/D = 1.75-2$ , with a weak carina and without a dorsal patch of microtrichia (fig. 8).

Size: body length (without antennae) 8-10 mm; wing length 8.5-9.5 mm.

♀: The only absolutely reliable character to separate *C. ranunculi* from *C. albitarsis* is confined to the ♂ (surstylus). But even characters that are only usually reliable are confined to this sex. Only some of the less reliable characters are also present in the ♀. These are the  $L/D$  ratio of the postpedicellus and the structure of the lunule. The shape of ta1:5 is similar to that of the ♂, but with the differences between the species less distinct in the ♀s, most specimens showing an intermediate condition.

The colour of the mesonotal pile is usually pale in ♀s believed to be *C. ranunculi* and predominantly black in ♀s of *C. albitarsis* (according to specimens from Scandinavia and the lowland plain of NW Germany, where so far only *C. albitarsis* is known), but the latter quite often has a pale mesonotal pile, too, especially in southern populations, where both species occur sympatrically. Therefore this character is of little use for identification.

Altogether it seems the ♀s of *C. albitarsis* and *C. ranunculi* have some slight differences which display in each species a strong intra-specific variability, and which are widely overlapping between the species. For this reason identification of ♀ specimens is at present unreliable and no description is given here.

← Figs. 1-10: *C. albitarsis* ♂ (1, 3, 5, 7, 9) and *C. ranunculi* ♂ (2, 4, 6, 6a, 8, 10). – 1, 2. Postpedicellus with arista, inner view; – 3, 4. Lunula; – 5, 6. ta1:4-5, dorsal view; – 7, 8. Surstylus, dorsal view; – 9, 10. Surstylus, lateral view, hairs omitted.

| <b>character</b>   | <b><i>C. albatarsis</i> Meigen</b>  | <b><i>C. ranunculi</i> spec. nov.</b>   |
|--|---|---|
| dorso-lateral carina of surstylus                        | wide (fig. 7)   | narrow (fig. 8)   |
| L/D of surstylus (cf. table 2)                           | shorter: 1.4-1.6 (fig. 9)   | longer: 1.75-2 (fig. 10)  |
| dorsal patch of microtrichia on surstylus                | present   | absent  |
| hairs at the posterior margin of T4                      | ± erect, if recumbent hairs are present they are mixed with erect hairs                               | at the median part with recumbent hairs only                                  |
| colour of hairs on anterior surface of distal half of fl | black   | pale or mixed black and pale  |
| proportions of ta1:5 (cf. table 2)                       | as long as wide or longer, with parallel or slightly divergent lateral margins (fig. 5)               | as long as wide or shorter, with convergent lateral margins (fig. 6)          |
| black hairs at the anterior corner of T2                 | almost always present (often very few or even a single black hair only)                               | absent  |
| light hairs at the anterior margin of the mesonotum      | usually absent, but often with a few light hairs, rarely forming a band                               | always present and almost always forming a ± narrow band                      |
| colour of cell bc *)                                     | entirely dark brown or blackish, its distal half much darker than cell c                              | with a dark stripe basally, in distal part not contrasting with cell c        |
| dusting on frons   | usually along the eye margins only  | usually covering the whole frons, although often very thin at the median part |
| S3+4: extent of area without long hairs                  | about ½ the width of the sternite   | 2/3 or more of the width of the sternite                                      |
| colour of the short adpressed hairs of S3+4              | black, rarely mixed with some light hairs   | usually yellow, but some specimens with extensive black hairs                 |
| colour of ventral scutellar fringe                       | usually yellow mixed with ± numerous black hairs  | yellow, rarely with a few black hairs   |
| lunule   | usually smooth or weakly wrinkled, with a ± well developed longitudinal furrow from dorsally (fig. 3) | usually rough in the median part, dull, without a furrow (fig. 4)             |
| L/D of postpedicellus (cf. table 2)                      | slightly longer than deep (fig. 1)  | about as long as deep (fig. 2)  |

\*) Care is required in specimens without strong infuscation that they are not teneral, because the condition of this character is dependent on the age of the specimen.



| character             |           | <i>C. albitarsis</i> | <i>C. ranunculi</i> |
|-----------------------|-----------|----------------------|---------------------|
| L/D of postpedicellus | n         | 32                   | 25                  |
|                       | $\bar{x}$ | 1.16                 | 1.02                |
|                       | SD        | 0.086                | 0.078               |
|                       | min - max | 0.96-1.35            | 0.9-1.16            |
| L/W of ta1:5          | n         | 25                   | 24                  |
|                       | $\bar{x}$ | 1.13                 | 0.92                |
|                       | SD        | 0.076                | 0.047               |
|                       | min - max | 1-1.32               | 0.83-1              |
| L/D of surstylus      | n         | 20                   | 11                  |
|                       | $\bar{x}$ | 1.49                 | 1.93                |
|                       | SD        | 0.054                | 0.085               |
|                       | min - max | 1.4-1.59             | 1.75-2              |

**Table 2: Differences between *C. albitarsis* and *C. ranunculi* in selected quantitative characters. For each character the p-value (t-test of Welch) is <<0.001.**

Key to distinguish the European species of the *C. albitarsis* group

- 1 ta1:5 angular at base (figs. 5, 6). Central knob of face with rough surface, dull ..... *C. albitarsis*-group 2
- ta1:5 not angular at base. Central knob of face with smooth surface, ± shining ... other *Cheilosia* spp.
- 2 ♂ ..... 3
- ♀ ..... (reliable separation not possible)
- 3 Surstylus about 1.5 times as long as deep (fig. 9), with a wide carina and dorsally with a patch of microtrichia (fig. 7). Posterior margin of T4 with erect hairs (may be mixed with some recumbent ones). T2 at the antero-lateral corner with some black hairs (in populations from N of the Alps rarely missing, but often without any black hairs in southern parts of its range). Usually thoracic dorsum without any pale hairs ..... *C. albitarsis*
- Surstylus about twice as long as deep (fig. 10), with a narrow carina and without a dorsal patch of microtrichia (fig. 8). Posterior margin of T4 in the median part with recumbent hairs only. T2 without any black hairs laterally. Mesonotum with a narrow band of light hairs anteriorly ..... *C. ranunculi*

← **Table 1: Morphological differences between ♂ adults of *Cheilosia albitarsis* Meigen and *C. ranunculi* spec. nov.** The characters are sorted in descending order of discriminatory power.

### Distribution

Although widespread in Europe, *C. ranunculi* seems to have a more restricted range than *C. albitarsis*. The new species is known from S England (M.C.D. Speight in litt. 1993; Gibbs 2000: "form A"), France (widespread, north to the Paris basin: départements Alpes-de-Haute-Provence, Dordogne, Haute-Savoie, Haut-Rhin, Isère, Pyrénées-Orientales [see above data], Creuse, Essonne, Maine-et-Loire, Nièvre, Seine-et-Marne, Var, Yvelines [coll. MNHN, M.C.D. Speight in litt. 1993]), N Spain, S and central Germany (Länder Baden-Württemberg, Bayern, Hessen, Rheinland-Pfalz, Thüringen), Switzerland, N Italy (South Tirol), Hungary, Romania, Bulgaria. According to Vujčić (1996; map) *C. ranunculi* (as *C. aff. albitarsis*) is known from Slovenia, Croatia, Serbia, Montenegro and Bosnia-Herzegovina, but absent from the South Dinaric mountains and further south. Extensive material from Scandinavia and the lowland plain of NW Germany consists of *C. albitarsis* only. Also M.C.D. Speight (in litt. 1993) knows only *C. albitarsis* from Ireland.

### Biology

The adults are to be found in similar situations to *C. albitarsis* and both species often occur together, at the same places and at the same time [at least in central Europe, but also reported by Vujčić (1996), for the Balkan Peninsula]. However, while *C. albitarsis* prefers humid grassland and sunny places in woodland, *C. ranunculi* occurs mainly in dry grassland.

The adults of both species have a very strong preference for visiting flowers of *Ranunculus* spp. The flowers of *Caltha palustris* L. may be used as well. Observations from other plants are scarce.

The observations of egg-laying behaviour on *Ranunculus acris* L. agg. and *R. repens* L. reported in Doczkal (1996) refer to specimens which almost certainly belong to *C. albitarsis*. The host plant of *C. ranunculi* is still unknown. From its preferred sites in SW Germany I presume it will be found in *R. bulbosus* L.

### Nomenclature

Considering the nomenclature of the taxa treated here gives rise to troublesome problems. The descriptions of all taxa regarded as synonyms of *C. albitarsis*, as well as of *C. albitarsis* itself, do not contain any character helpful to decide on which species they were based. Type specimens are either lost or are ♀s, which are at present impossible to identify with certainty. Moreover, the descriptions include some characters that do not properly fit with either of the taxa in question. The most important facts are discussed below for each of the names in question.

*Cheilosia albitarsis* (Meigen, 1822)

= *Syrphus albitarsis* Meigen, 1822: 290.

Becker (1902) reports on one couple in the Meigen collection in Paris. Contrary to Becker M.C.D. Speight (in litt. 1993) found two ♀ syntypes:

1. "1. red, round, with white ventral surface bearing number 1426 40, upper surface obscured by body of specimen, but apparently bearing the word 'Meigen'. 2. white, rectangular with '*albitarsis*' on upper surface, but bare ventrally ... 3. red, rectangular with 'LECTOTYPE' on it."

2. "teneral ♀ with white circular label saying 'Meigen' dorsally and with number 1426 40 ventrally."

Both specimens are deposited in the Meigen collection in MNHN in box 30 under the species No. 1235. As the lunule has a median channel, the postpedicellus is slightly longer than deep and  $ta1:5$  is slightly wider at the distal end than at base (M.C.D. Speight in litt. 1998) the specimens probably belong to *C. albitarsis* in the present sense. But identification of ♀ specimens of the *C. albitarsis* group is uncertain. The name *C. albitarsis* is in common use since its description. In order to avoid a possible subsequent name change the Commission will be asked to set aside the ♀ syntypes and to designate a ♂ neotype of the species characterised above under this name (according to article 75.5 of the Code).

*Cheilosia bardus* (Harris, [1780])

= *Musca bardus* Harris, [1780]: 106.

In Peck (1988) "*Musca*" *bardus* Harris, [1780] is listed under the "doubtful species of *Cheilosia*". The original description is: "*Bardus*. Fig. 39. Measures five lines. The head, thorax and abdomen are of a dull languid gloss. The wings and legs are brown." The coloured figure shows a ♀ of a syrphid with black body and completely black legs and with the wings infuscated anteriorly. The identity of this specimen is unclear.

Thompson & Pont (1993) have no opinion on the present identity of *C. bardus*. Verrall (1901) regarded *bardus* as synonymous with *Pipiza noctiluca* (Linnaeus, 1758). This interpretation has been adopted by Bezzi & Stein (1907) and Kertész (1910). Goffe (1946) has shown that this is not correct. Stephens (1829, cited from Goffe 1946) placed *bardus* as a synonym of *C. albitarsis* Meigen. This interpretation is not excluded by Goffe (1946) but in his cautious argumentation he concludes *C. variabilis* to be more likely. The latter is supported by the shape of the abdomen. Also it could be a species of "*Nigrocheilosia*" sensu Barkalov & Ståhls (1997), i.e. with bare eyes and black legs. Specimens of the *C. albitarsis* group with nearly black fore tarsi are rare. In my opinion it is not justified to refer the very poor description of *bardus* to an atypical specimen of *C. albitarsis* when more likely interpretations exist.

*Cheilosia flavimana* Meigen, 1838

According to M.C.D. Speight (in litt. 1993) there are no type specimens in the MNHN. This agrees with a note in Becker (1902). According to the characters given in the original description *C. flavimana* certainly belongs to the *C. albitarsis* group. But it is not possible to judge with reasonable certainty from the description which species Meigen described:

1. The description is too imprecise. Although Meigen knew both sexes his description fails to distinguish between them for those characters in which the ♂ and the ♀ are different. The eyes are described as white haired and the thoracic scutum as with long black hairs. The latter is the condition most often found in *C. albitarsis* ♂ whereas all ♂ specimens I have seen of *C. ranunculi* have at least a narrow band of light hairs at the anterior margin of the mesonotum. The abdomen is described as being yellow-haired. This is characteristic for *C. ranunculi* (♂). Most ♂ specimens of *C. albitarsis* have at least a few black hairs at the antero-lateral corner of T2 but exceptions occur (frequently in warmer climate). Meigen describes the wing as at the base and anterior margin brown. Strong infuscation of these parts of the wing can be observed in many ♂ of *C. albitarsis*. The ♂ of *C. ranunculi* has the wing at most slightly infuscated and then more yellowish than brown. Altogether the description would better fit to *C. albitarsis* than to *C. ranunculi*. However, all of these differences are so subtle that we cannot assume Meigen would have noticed them.

2. Meigen mentions *C. flavimana* as very common in northern France. Today, *C. albitarsis* is one of the most common *Cheilosia* in NW Europe, whereas *C. ranunculi* is a rather rare and more local species, with the northern edge of its known range in the Eifel region in W Germany (and in south England). Therefore it is more likely the description of *C. flavimana* refers to the much more common *C. albitarsis*.

As the unclear identity could threaten nomenclatural stability a neotype has been designated for which a specimen of *C. albitarsis* in the present sense has been chosen. A further reason to refer the description of *C. flavimana* to *C. albitarsis* is the fact that the name *C. flavimana* has been used in the 19<sup>th</sup> century for specimens which are either certainly *C. albitarsis* in the present sense (e.g. Zetterstedt 1843 [*C. ranunculi* is unknown from Scandinavia]) or which were separated from *C. albitarsis* by characters that do not work properly (e.g. Loew 1840; Verrall 1901). Therefore all records under the name *C. flavimana* have to be discarded. Unlike the name *C. albitarsis*, the name *C. flavimana* was never widely accepted and to my knowledge Verrall (1901) was the most recent author referring to that taxon. In my opinion it is unwise to use an old name in such a situation.

The neotype bears the following labels: (1) D, Baden-Württemberg, Malsch-Waldprechtsw.[eier], Walpertstal, wwwst [= private code of the collector for the collecting site], 230-250m, 18.5.1999, leg. Doczkal, 7116W [= number of the topographical map published by the Landesvermessungsamt (= state surveying department) of Baden-Württemberg and quadrants in which the collecting site is located (on the border

between the NW and the SW quadrant)]; (2) *Cheilosia albitarsis* Mg. det. Doczkal 2000; (3, red) Neotypus *Cheilosia flavimana* (Mg.) des. Doczkal 2000. Deposited in the collection of the SMNS.

*Cheilosia innupta* (Zetterstedt, 1843)

= *Eristalis innupta* Zetterstedt, 1843: 802.

The description of *innupta* is based on the ♀ only. It has hairy eyes and black legs. Therefore it cannot belong to either species of the *albitarsis* group (C. Claußen, pers. comm.). Its true identity will be published separately by C. Claußen.

*Cheilosia lapponica* Becker, 1894

= *Chilosia lapponica* Becker, 1894: 440.

This taxon has been described from one ♂ and one ♀ specimen from Lapland. During a visit to the ZMHB in 1993 I have seen the ♂ syntype which is a specimen of *C. albitarsis* in the present sense (**syn. nov.**), but in 1999 only the headless ♀ was there which had been labelled as the lectotype. However, I do not formally designate a lectotype here, because it is unnecessary and it would be unwise to choose a specimen that cannot be identified with certainty. The specimen is in rather poor condition. Its thoracic dorsum is entirely black haired and ta1:5 has very slightly divergent sides. It agrees well with typical specimens of Central European *C. albitarsis*, but in the present state identification of ♀s of the *C. albitarsis* group is not sufficiently reliable. This synonymy has already been proposed by Hellén (1929: 109: "*albitarsis* Meig. (? *lapponica* Beck.)") but was not accepted or overlooked by subsequent authors (Sack 1935; Peck 1988).

*Cheilosia vidua* (Meigen, 1822)

= *Syrphus viduus* Meigen, 1822: 282.

According to Becker (1902) there are seven specimens in the Meigen collection in Paris which are conspecific with *C. viduata* Fbr. sensu Becker (1894), i.e. a synonym of *C. albitarsis*. M.C.D. Speight (in litt. 1993) found only three specimens in coll. Meigen in MNHN which are alleged to be syntypes:

1. "Specimen 1, male: the head of one species glued to the body of a different species. The head lacks antennae, but from its general appearance it probably belongs to *albitarsis* s.l. The rest of the specimen appears to be a male of *C. scutellata* (Fall.). It is certainly not *albitarsis* s.l. labels: 1 round, white with: Meigen (on dorsal surface) 1495 40 (on ventral surface) 1 square, white with: *Cheilosia vidua* male (symbol) 1 rectangular, red with: LECTOTYPE."

2. "Specimens 2 and 3: females of *albitarsis* s.l."

To my knowledge a formal lectotype designation has not been published so far. The presentation of the data of this alleged syntype specimen is not intended to be a

| <i>viduus</i>   | <i>albitarsis</i> / <i>ranunculi</i>   |
|---|--|
| "Untergesicht glänzend schwarz"<br>(= lower face glossy black)              | face dull by rough integumental surface and thin dusting   |
| "Fühler ... drittes Glied rötlichgelb"<br>(= postpedicellus reddish yellow) | postpedicellus most often dark brown, occasionally reddish brown (not reddish yellow)  |
| "mit haariger Borste" (= arista hairy)                                      | arista with (at low magnification) hardly visible adpressed hairs  |
| "Beine schwarz" (= legs black)  | at least the ta1:2-4 pale (pale yellow to red)   |
| "Schienen und Füße gelbfilzig"<br>(= tibiae and tarsi with yellow pile)     | t2 completely black-haired, t1 dorsally and posteriorly and t3 dorsally and anteriorly with black hairs; tarsi dorsally black haired |

**Table 3: Inconsistencies between the original description of *Syrphus viduus* Meigen and the European taxa of the *C. albitarsis* group.**

lectotype designation! The first specimen is certainly not a syntype, because Meigen wrote: "Nur das Weibchen mehrmalen in hiesiger Gegend gefangen" (= only the ♀ caught several times in this locality [= surroundings of Aachen]).

The situation is even more complicated as the original description contains characters that are unusual in the *C. albitarsis* group (table 3). Especially the colour of the hairs on the legs is consistently other than as described by Meigen. As the specimens in the Meigen collection do belong to the *C. albitarsis* group it seems possible that Meigen described some characters other than as they are. However, it is also possible that the description of *viduus* was not based on the specimens alleged to be syntypes. But among the *Cheilosia* species known from NW Europe there is no other which fits the description of *C. vidua* better than *C. albitarsis* auctt.

This uncertain situation could threaten nomenclatural stability. Therefore the Commission will be asked to set aside the alleged syntypes and to designate a ♂ specimen of *C. albitarsis* as the neotype (according to article 75.5 of the Code).

As Aachen is just outside the present known range of *C. ranunculi*, and *C. ranunculi* is (at least in Germany) everywhere much rarer than *C. albitarsis*, it is more likely the description of *viduus* is based on atypical specimens of *C. albitarsis*. The name *C. vidua* Meigen has not been used in the literature for more than 100 years. In the 19<sup>th</sup> century it was used by several authors (e.g. Loew 1840) for a species of this group, but without giving any useful character to distinguish it from *C. albitarsis*. These records have to be discarded and it is desirable to suppress the name *C. vidua* by making it a synonym of *C. albitarsis*.

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