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Cheilosia bracusi, a new hoverfly from the mountains of Central and Southern Europe (Diptera: Syrphidae)

Ante Vujić & Claus Claussen

Abstract. *Cheilosia bracusi* sp. n. is described and figured, based on material from the mountains of the Balkan and Apennine peninsulas, the Alps, and from the Pyrenees. The new species is closely related to *Cheilosia chloris* Meigen and *Cheilosia melanura* Becker. Keys to separate *C. bracusi* from similar Palaearctic species are given. Records of *C. bracusi* are presented for Greece, Bulgaria, former Yugoslavia, Italy, France and Spain. Available biological information on the new species is summarised.

Key words. Diptera, Syrphidae, *Cheilosia bracusi*, new species, Balkan peninsula, Apennine peninsula, Alps, Pyrenees.

Introduction

The genus *Cheilosia* Meigen, 1822 with over 400 species, is one of the largest genera of the family Syrphidae. It is predominantly Holarctic in its distribution (Hull & Fluke 1950), the greatest number of species (nearly 300) occurring in the Palaearctic region (Peck 1988).

Detailed faunistical research on the hoverflies of the Balkan peninsula has established the presence there of 81 species of *Cheilosia* (Vujić, doctoral dissertation 1992). One undescribed species has been recorded at many localities on the highest Balkan mountains and also from some localities of the Apennine peninsula, the Alps, and the Pyrenees. In the present text this new species is described.

Results

Cheilosia bracusi sp. n.

Type material: Holotype: Kopaonik: Samokovska river 1100 m (Serbia), DN-89 (UTM-Grid) 21. 6. 1991. 1 ♂ leg. Vujić (PMB: coll. 595773: Inv. No. 1). Paratypes: Slovenia: Julijske Alpe (Mežakla 600 m, VM-24, 18. 6. 1988. 1 ♂ leg. Vujić, IBNS; Pokljuka 1500 m, VM-24, 22. 5. 1989. 4 ♂ leg. Radnović, Vujić, IBNS; Vršič 1600 m, UM-94, 18. 6. 1988. 1 ♂ leg. Vujić, IBNS, 23. 5. 1989. 11 ♂ 2 ♀ leg. Vujić, IBNS CC; Vogar, Bonjih 14. 6. 1973. 1 ♀ leg. Sivec, SMNI); Menina 1200 m, VM-82, 24. 5. 1989. 1 ♂ 1 ♀ leg. Vujić, IBNS. — Croatia: Gorski Kotar (Risnjak 1200 m, VL-63, 1 ♀ leg. Vujić, Allotype, PMB: coll. 595773: Inv. No. 2). — Bosnia and Herzegovina: Jahorina 1500 m, CP-04, 14. 5. 1989. 2 ♂ leg. Vujić, IBNS; Javor (Sokolina 500 m, CP-29, 10. 4. 1989. 2 ♂ 2 ♀ leg. Vujić, IBNS/CC; 13. 5. 1989. 5 ♂ leg. Vujić, IBNS); Olovo 400 m, CP-08, 13. 5. 1989. 2 ♂ leg. Vujić IBNS; Pale (Stambulčić) "5. 16." 1 ♀ leg. Apfelbeck, ZMS; Ilijaš 1912. 1 ♂ leg. Winneguth, ZMS. — Montenegro: Durmitor (Crno lake 1500 m, CN-47, 24. 6. 1983. 1 ♀ Aleksić, CC; Donja Ališnica 1700 m, CN-48, 6. 7. 1991. 1 ♂ leg. Vujić, IBNS; Jablan lake 1600 m, CN-48, 7. 7. 1991. 2 ♂ 3 ♀ leg. Radnović, Vujić, IBNS/CC; 8. 7. 1992. 3 ♂ leg. Radnović, Vujić, IBNS). — Serbia: Vlašić (Zavlaka 300 m, CQ-82, 5. 4. 1989. 2 ♂ leg. Vujić, IBNS); Kopaonik (Brzećka river 700 m, DN-99, 24. 5. 1987. 1 ♂ leg. Vujić, IBNS; Srebrnac 1000 m, DN-99, 24. 5. 1987. 1 ♂ leg. Vujić, IBNS; Graševačka river 600 m, DN-99, 27. 5. 1987. 1 ♂ leg. Vujić, IBNS; Kadijevac 1300 m, DN-89, 21. 6. 1991. 1 ♂ leg. Vujić, IBNS; Karamanski brook 1700 m, DN-89, 24. 5. 1986. 2 ♂ leg. Radnović, Vujić, IBNS; Samokovska river 1100 m, DN-89, 2. 5. 1986. 1 ♂ leg. Vujić, IBNS; 22. 5. 1986. 1 ♂ leg. Vujić, IBNS; 22. 6. 1991. 7 ♂ 1 ♀ leg. Šimić, Vujić, IBNS/CC/ZFMK; 24. 5. 1992.

6 ♂ leg. Radnović, Vujić, IBNS; Duboka river 1500 m, DN-89, 23. 5. 1986. 1 ♂ leg. Vujić, CC; 18. 6. 1986. 1 ♂ leg. Vujić, IBNS; Sunčana dolina 1600 m, DN-89, 23. 6. 1991. 2 ♀ leg. Šimić, IBNS/CC); Stara Planina (Dojkinačka river 800 m, FN-48, 29. 5. 1987. 2 ♂ leg. Vujić, IBNS/CC; 6. 5. 1988. 1 ♂ leg. Vujić, IBNS; 30. 5. 1988. 2 ♂ leg. Ercegovac, Vujić, IBNS; Pilj 1200 m, FP-40, 28. 5. 1987. 1 ♀ leg. Vujić, IBNS; Planinica 900 m, FN-38, 27. 5. 1987. 1 ♂ leg. Vujić, IBNS; Crni vrh 600 m, FP-20, 8. 5. 1988. 1 ♂ 1 ♀ leg. Vujić, CC/ZFMK); Rtanj 500 m, EP-74, 1. 5. 1991. 2 ♂ leg. Vujić, IBNS/CC; Čemernik 900 m, FN-02, 4. 5. 1988. 1 ♀ leg. Vujić, IBNS. — Macedonia: Baba 500 m, EL-14, 8. 5. 1990. 1 ♂ 4 ♀ leg. Vujić, IBNS. — Greece: Verno 1200 m, EL-21, 11. 5. 1990. 4 ♂ 1 ♀ leg. Vujić, IBNS; Pindos, Metsovo/Katara 1500 m, EK-10, 13. 5. 1990. 2 ♂ leg. Vujić, IBNS/CC. — Bulgaria: Rila (Borovec/Čam Kuria 26. 5. 1913. 1 ♀ leg. Buresch, det. Drenski: *Cheilosia schineri*, ZIS; 28. 7. 1933. 1 ♀ leg. Buresch, det. Drenski: *Cheilosia schineri*, ZIS; Parangalica 1. 7. 1939. 5 ♀ leg. Drenski, det. Drenski: 2 ♀ *Cheilosia schineri*, 3 ♀ *Cheilosia vulpina*, ZIS; 3. 7. 1939. 1 ♂ 1 ♀ leg. Drenski, det. Drenski: 1 ♂ *Cheilosia variabilis*, 1 ♀ *Cheilosia vulpina*, ZIS); Rodope, Szatovcsa 29. 5. 1982. 1 ♂ 1 ♀ leg. Tóth, CC. — Italia: Südtirol (W Tubre, Val. di Avigna 1300—1800m, 6. 7. 1988. 2 ♀ leg. Claussen, CC; Vinschgau bei Mals, Planeiltal 1750 m, 27. 6. 1992. 1 ♂ leg. Doczkal, DD); Abruzzi (Piano di Pezza, AQ, 17. 6. 1988. 2 ♂ leg. Daccordi, MD/CC; Gran Sasso, Prati di Tivo, 18. 7. 1988. 1 ♀ leg. Daccordi, MD); Basilicata (M. Pollino, Piano Ruggio 1600 m, PZ, 8. 6. 1989. 4 ♀ leg. Daccordi, MD/CC; M. Pollino, Piani Pollino, PZ, 1800 m, 9. 6. 1989. 2 ♂ leg. Daccordi, MD/CC). — France: Pyrénées atlantiques, Forêt d'Iraty, Lambert Grid 0380.4779 (old *Fagus* forest, by stream, 2500 ft), 11. 6. 1981. 1 ♂ leg. Speight, MS; Pyrénées Orientales, Forêt de Massane, 0074.4719 (ancient *Fagus* forest c. 750 m, glade by river), 15. 6. 1984. 1 ♂ leg. Speight, MS. — Spain: "E Spanien Pyrenäen Aragon, Provinz Huesca Mecizo de la Maladeta, Esera-Tal NE Benasque" 1600 m, 27. 6. 1992. 1 ♂ leg. Ziegler, DEIE.

Additional records: France: Haute-Savoie, Onnion, Plaines-Joux, 1250 m, 10. 5. 1992 (on flowers of *Trollius europaeus*), coll. J. Hamon, det. MS, Mus. Hist. Nat. Geneva (M. C. D. Speight pers. comm.). — Former Yugoslavia: Šimić (1987): Montenegro, Durmitor (Crno jezero 20. 6. 1983. 1 ♂ det. Šimić: *Cheilosia canicularis*; 24. 6. 1983 1 ♀ det. Šimić: *C. canicularis*; Sušcia canyon 28. 6. 1985. 4 ♂ det. Šimić: *C. chloris*; Luke 30. 6. 1985. 1 ♂ det. Šimić: *C. chloris*, IBNS); Glumac (1968): Macedonia, Maleševske mountains 7. 6. 1960. 2 ♀ det. Glumac: *C. chloris*, IBNS.

Remarks: The holotype and allotype are deposited at the Natural History Museum in Belgrade, Yugoslavia (PMB). Most of the paratypes are preserved in the collections of Institute of biology, University of Novi Sad, Yugoslavia (IBNS) and the private collection of Claus Claussen (CC), except for one male and one female in the collections of the 'Zoologisches Forschungsinstitut und Museum Alexander Koenig', Bonn (ZFMK), several specimens in collections of the Zoological Institute and Museum, Sofia (ZIS), Slovene Museum of Natural History, Ljubljana (SMNI), Bosnia and Herzegovina Museum, Sarajevo (ZMS), Deutsches Entomologisches Institut Eberswalde (DEIE), and the private collections of Dr. Mauro Daccordi, Verona (MD), Dieter Doczkal, Malsch (DD), and Dr. Martin C. D. Speight, Dublin (MS).

Etymology: The specific epithet is derived from the male name Bracus. A noun in the genitive case.

Diagnosis and description

Cheilosia bracusi is closely related to *Cheilosia chloris* Meigen, 1822, but separable by a complex of characters which in the same combination are not found in populations of *C. chloris*. The following description stresses the differences between these two species. *C. bracusi* could be consigned to "group C" of Sack (1928—1932), but not reliably so, because the posterior margin of the scutellum sometimes carries stronger black hairs in the male.

Diagnosis: In general appearance more blackish and in the female with more elongated abdomen than in *C. chloris*. Base of arista dark. Male: hind tibia with a group of sticking out black hairs on the anterior surface (fig. 2b). Hypopygium:

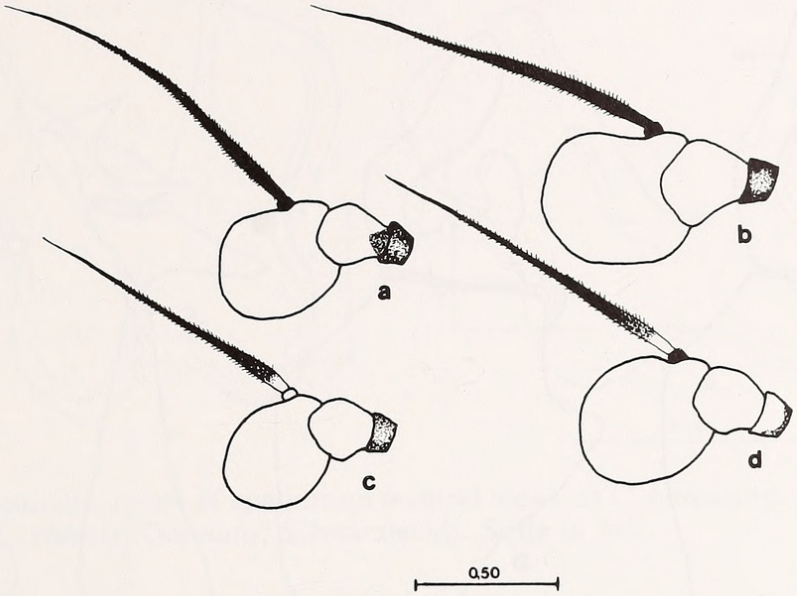


Fig. 1: Antennae (internal view). *C. bracusi* sp. n.: a) male (paratype: Serbia, Kopaonik); b) female (paratype: Slovenia, Vogar). — *C. chloris*: c) male (Germany, Schleswig-Holstein); d) female (Germany, Schleswig-Holstein). Scale in mm.

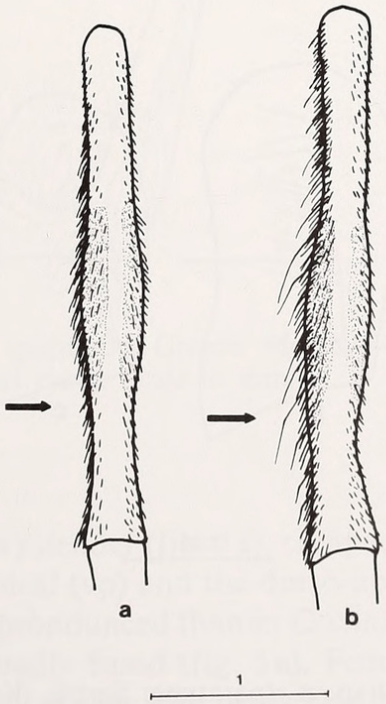


Fig. 2: Hind tibia, male (dorsal view): a) *C. chloris*; b) *C. bracusi* sp. n. (anterior surface marked). Scale in mm.

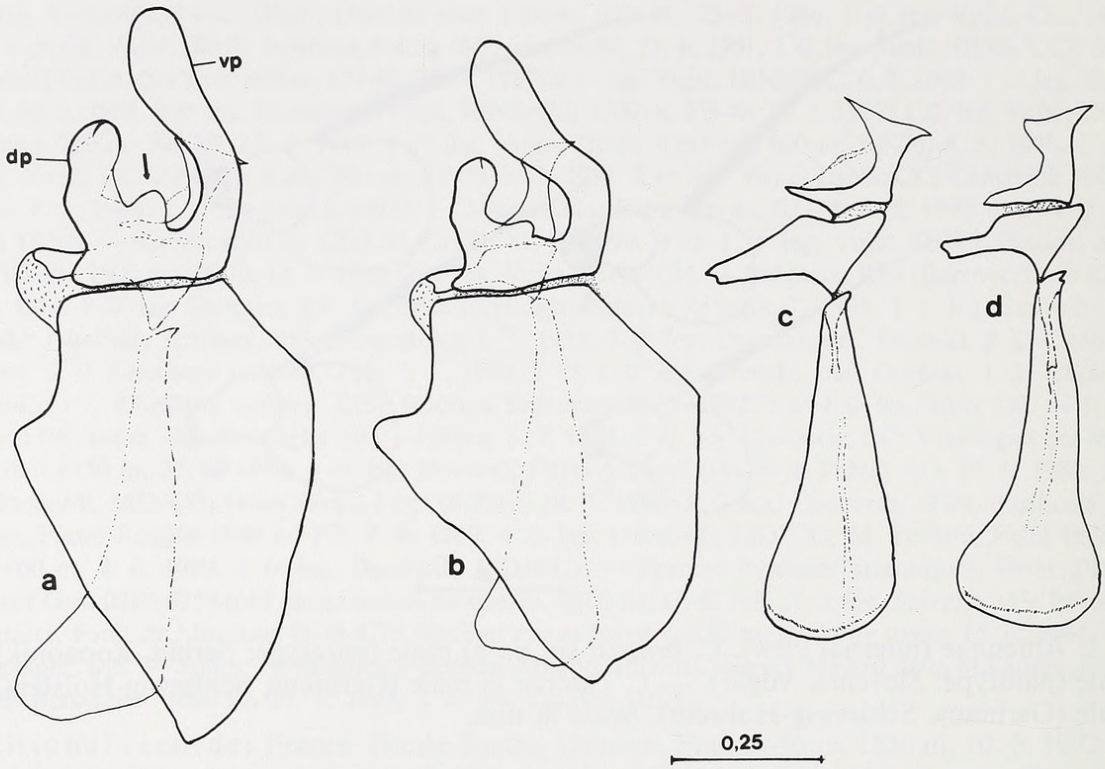


Fig. 3: Male genitalia: Hypandrium (right lateral view). a) *C. bracusi* sp. n. (paratype: Serbia, Kopaonik — vp = ventro-apical prong, dp = dorso-apical prong of superior lobe); b) *C. chloris* (Germany, Schleswig-Holstein). — Aedeagus (right lateral view). c) *C. bracusi* sp. n.; d) *C. chloris*. Scale in mm.

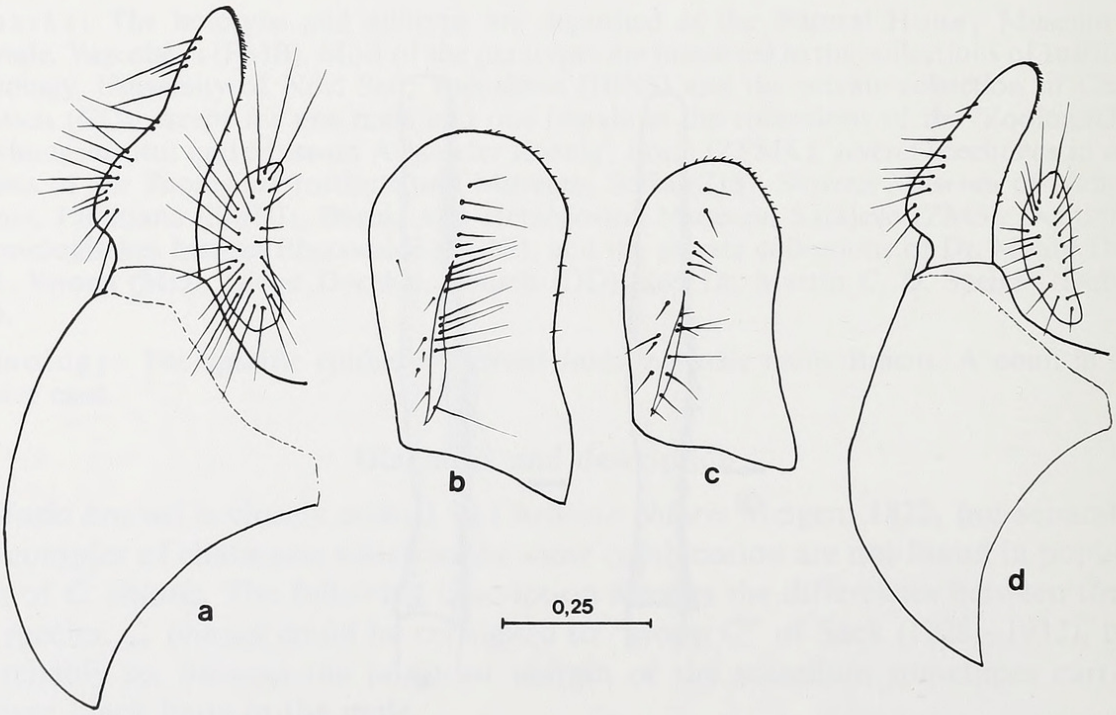


Fig. 4: Male genitalia: *C. bracusi* sp. n. (paratype: Serbia, Kopaonik); a) epandrium (9th tergum) and associated structures (dorsal view); b) surstylus (right lateral view). — *C. chloris* (Germany, Schleswig-Holstein); c) surstylus (right lateral view); d) epandrium and associated structures (dorsal view). Scale in mm.

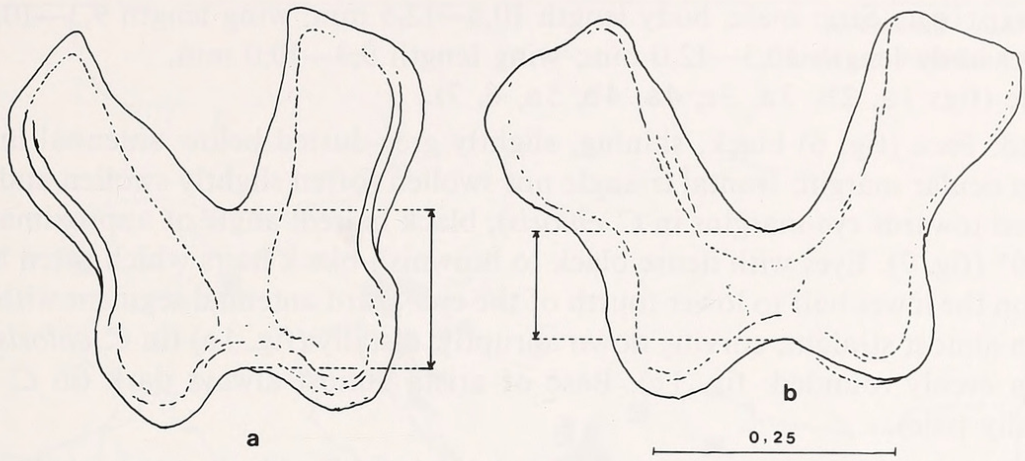
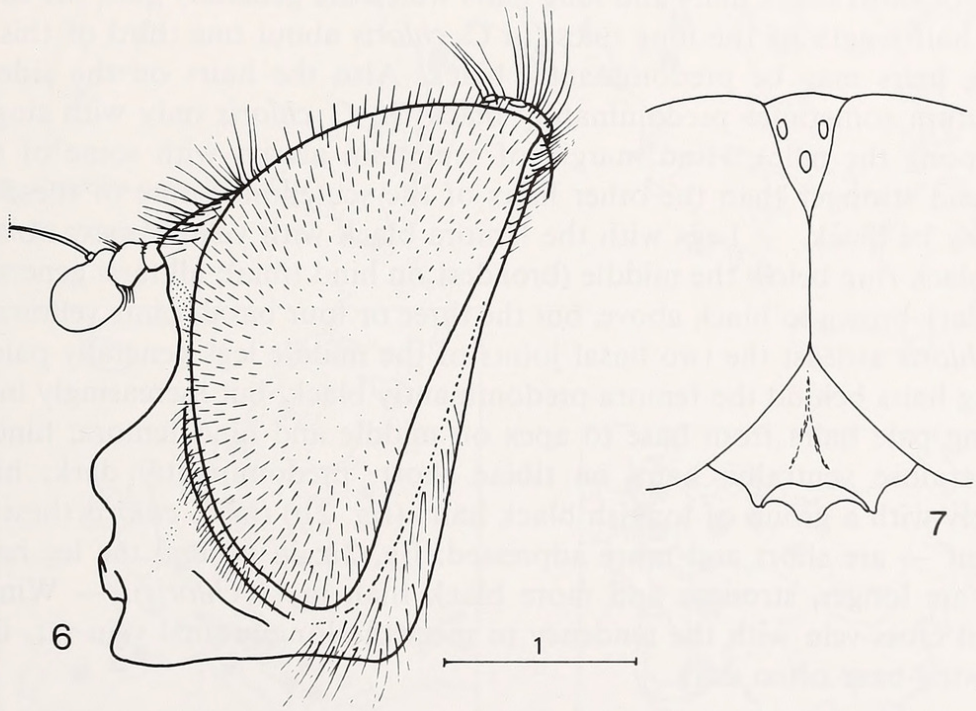


Fig. 5: Male genitalia, minis of epandrium (ventral view). a) *C. bracusi* sp. n. (paratype: Italy, Abruzzi); b) *C. chloris* (Germany, Schwarzwald). Scale in mm.



Figs 6—7: *C. bracusi* sp. n. (paratype: Greece, Metsovo-Katara). 6) Head of male (lateral view); 7) head of male (dorsal view). Scale in mm.

hypandrium (in lateral view) slender (fig. 3a), compact in *C. chloris* (fig. 3b); projection between the ventro-apical (vp) and the dorso-apical prong (dp) of the superior lobe of hypandrium more pronounced than in *C. chloris* (figs 3a, 3b); minis (sternite 10) with basal portion broadly fused (fig. 5a). Female: sides of mesoscutum near wing-base and post-alar calli always with black bristles. Tibiae without obvious dark rings. Punctures of tergites III and IV rough and dense. Sternite III about two times as broad as long.

Description: Size: male, body length 10,8—12,5 mm; wing length 9,3—10,9 mm. Female: body length 10,3—12,0 mm; wing length 9,3—10,0 mm.

Male (figs 1a, 2b, 3a, 3c, 4a, 4b, 5a, 6, 7).

Head: Face (fig. 6) black, shining, slightly grey-dusted below antennal insertion and on ocular margin; frontal triangle not swollen (often slightly swollen and evenly rounded towards eye-margins in *C. chloris*), black haired; angle of approximation of eyes 90° (fig. 7). Eyes with dense black to brownish-black hairs which often become paler on the lower half to lower fourth of the eye. Third antennal segment with dorsal margin almost straight, curving down abruptly, distally (fig. 1a) (in *C. chloris* dorsal margin evenly rounded: fig. 1c). Base of arista almost always dark (in *C. chloris* generally pale).

Thorax: Colour of mesoscutum shiny, blackish (in *C. chloris* anterior half generally with a metallic green shine). Sides of mesoscutum near wing-base and post-alar calli with numerous black bristles (less numerous or completely missing on post-alar calli in *C. chloris*). Posterior half of mesoscutum — as in *C. chloris* — with a composition of short black hairs and long hairs which are generally pale, the short hairs at least half length of the long ones (in *C. chloris* about one third of this length); the long hairs may be predominantly black. Also the hairs on the sides of the mesoscutum sometimes predominantly black (in *C. chloris* only with single black hairs among the pale). Hind margin of scutellum always with some of the hairs longer and stronger than the other hairs of the scutellum, some of these stronger hairs may be black. — Legs with the femora black with yellow apex, tibiae yellow with a black ring below the middle (broadest on hind tibia); all tarsi generally more or less dark-brown to black above, but the three or four basal joints yellowish below (in *C. chloris* at least the two basal joints of the middle legs generally pale above). The long hairs behind the femora predominantly black, but increasingly intermixed with long pale hairs from base to apex on middle and hind femora; hind femora black setulose ventrally; hairs on tibiae short, predominantly dark; hind tibia anteriorly with a group of longish black hairs (fig. 2b) (in *C. chloris* these hairs — if present — are short and more adpressed: fig. 2a; in general the leg hairs in *C. bracusi* are longer, stronger and more black than in *C. chloris*). — Wing: upper marginal cross-vein with the tendency to meet the longitudinal vein r_{4+5} in a right angle; wing-base often dark.

Abdomen: Tergites — including pregenital segments — without black hairs, as in *C. chloris* (difference to *Cheilosia melanura* Becker, 1894). Sternites shining; sternite IV generally with a field of short, adpressed, black bristles.

Hypopygium: Surstyli (figs 4a, 4b) slightly broadened distally; minis (sternite 10) with the basal portion broadly fused (fig. 5a) (less fused in *C. chloris*: fig. 5b); hypandrium (in lateral view) slender (fig. 3a), compact in *C. chloris* (fig. 3b); superior lobe of hypandrium with projection between the ventro-apical (vp) and the dorso-apical (dp) prong more pronounced than in *C. chloris* (figs 3a, 3b); aedeagus (fig. 3c) with basiphallus slightly elongate dorsoventrally, with sclerites of distiphallus with long dorso-apical hook (this hook shorter and more blunt in *C. chloris*: fig. 3d); aedeagal apodeme as in fig. 3c, not reliably different from the same structure in *C. chloris* (fig. 3d).

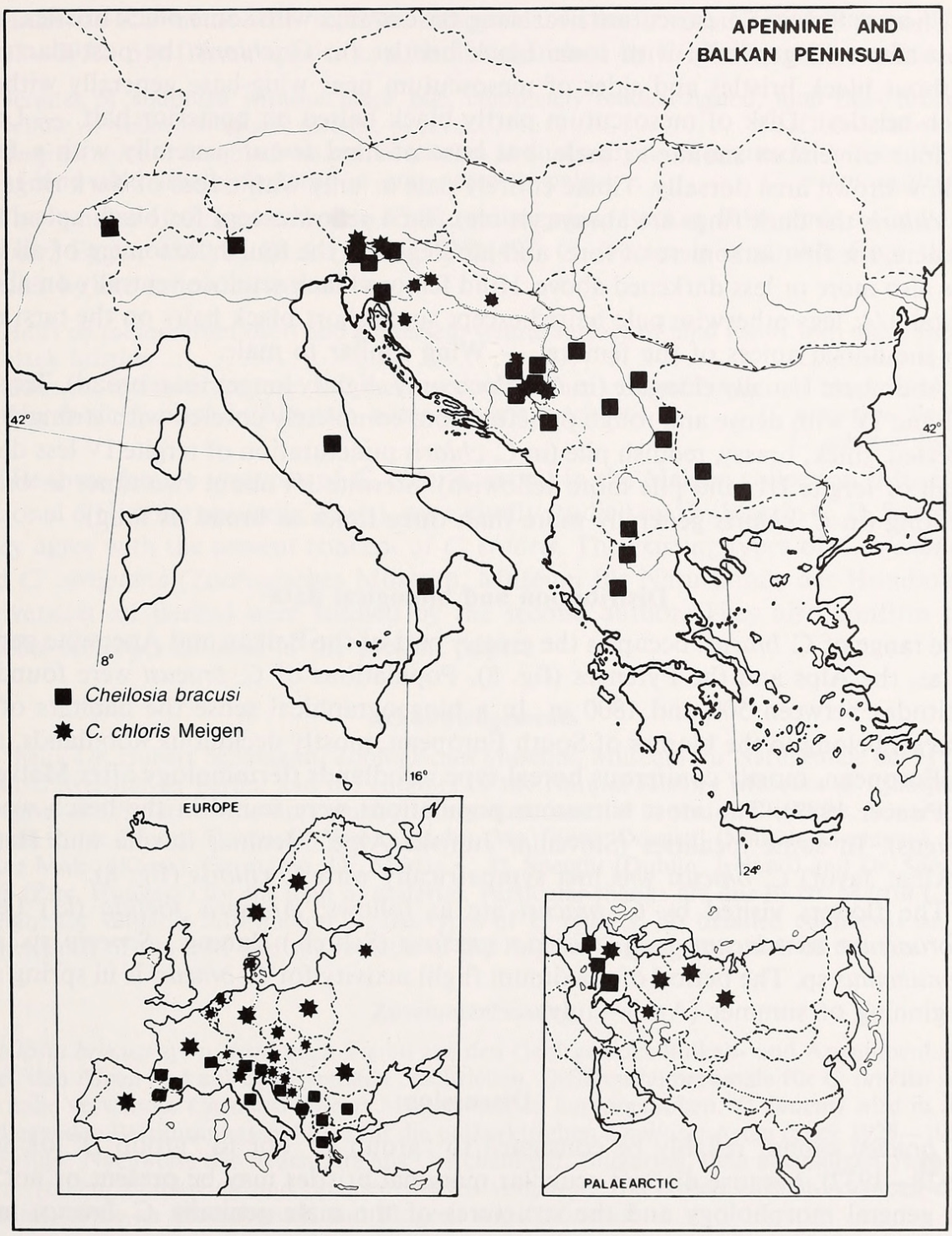


Fig. 8: Distribution of *C. bracusi* sp. n. and *C. chloris*.

Female (fig. 1b). Similar to male except for normal sexual dimorphism; pile shorter and more extensively pale, and legs less darkened.

Head: Frons at antennal base 3.2—3.5 times as wide as 3rd antennal segment, only with shallow lateral channels, with pile pale, but a few black hairs intermixed around ocellar triangle. Eye hairs shorter than in the male and all pale. Shape of 3rd antennal segment (fig. 1b) and base of arista as in the male. First antennal segment generally darker than second segment (in *C. chloris* generally of the same pale colour).

Thorax: Sides of mesoscutum near wing-base always with some black bristles, and post-alar calli generally with some black bristles (in *C. chloris* the post-alar calli without black bristles and sides of mesoscutum near wing-base generally without such bristles). Disk of mesoscutum partly black haired on posterior half. — Legs: Colour of femora similar to male, but base of hind femur generally with a faint yellow-brown area dorsally. Tibiae entirely pale or only with traces of dark rings (in *C. chloris* the dark rings are always visible). Tarsi yellow except for black apical tarsomere, the first tarsomere of fore- and hindlegs and the fourth tarsomere of all legs are also more or less darkened above. Hind femora black setulose ventrally on about distal 3/4; legs otherwise pale haired except some short black hairs on the tarsi and on the dorsal apices of the femora. — Wing similar to male.

Abdomen: Usually elongate (in *C. chloris* only slightly longer than broad). Tergites III and IV with dense and rough puncturation, completely covered with strongly adpressed, thick, brassy, reddish pile (in *C. chloris* puncturation of tergite IV less dense than of tergite III, and pile more yellowish). Sternite III about two times as broad as long (in *C. chloris* generally more than three times as broad as long).

Distribution and biological data

The range of *C. bracusi* occupies the greater part of the Balkan and Apennine peninsulas, the Alps and the Pyrenees (fig. 8). Populations of *C. bracusi* were found at altitudes between 500 and 1800 m. In a biogeographical sense the habitats of *C. bracusi* belong to the biomes of South European, mostly deciduous woodlands, and of European, mostly coniferous boreal-type woodlands (terminology after Matvejev & Puncer 1989). The most numerous populations were found in the beech woods (*Fagus*). In some localities (Slovenia: Julijske Alpe, Menina; Bosnia and Herzegovina: Javor) *C. bracusi* was met sympatrically with *C. chloris* (fig. 8).

The flowers visited by *C. bracusi* are as follows: *Aposeris foetida* (L.) Less., *Doronicum austriacum* Jacq., *Telekia speciosa* (Schreb.) Baumg., *Senecio* sp. and *Ranunculus* sp. The period of maximum flight activity for *C. bracusi* is in spring and beginning of summer (April—July).

Discussion

C. bracusi cannot reliably be consigned to "group C" nor to "group D" of Sack (1928—1932), because distinct scutellar marginal bristles may be present or not. In its general morphology and the structures of the male genitalia *C. bracusi* most resembles the European species *C. chloris* and *C. melanura*.

Males of *C. bracusi* without distinct scutellar marginal bristles key to *C. chloris* in Sack (1928—1932: 47). These species can be separated as follows:

1. Base of arista dark; the short black hairs on posterior part of mesoscutum half the length or more of the longer ones; the anterior surface of hind tibia with some sticking out, long, black hairs (fig. 2b); minis of epandrium broadly fused basally (fig. 5a). .... *C. bracusi* sp. n.

— Base of arista pale; the short black hairs on posterior part of mesoscutum less than half the length of the longer ones; anterior surface of hind tibia without so long black hairs (fig. 2a); minis fused basally for a short distance (fig. 5b). ..... *C. chloris* Meigen

Males of *C. bracusi* with scutellar marginal bristles key to *C. melanura* in Sack (1928—1932: 51). These species can be distinguished by the following couplets:

1. Tergites of abdomen without black pile, completely reddish haired; hind tibia broadly yellow or yellowish-brown distally. ..... *C. bracusi* sp. n.
— Tergites more or less black haired, at least so at hind margins of tergites III and/or IV; tip of hind tibia usually darkened or only narrowly pale. ..... *C. melanura* Becker

The females of *C. bracusi* key to *Cheilosia sareptana* Becker, 1894, and to *Cheilosia schineri* Egger, 1860 in Sack (1928—1932: 49). *C. bracusi* is separable from these species by the following couplets:

1. Hairs on mesoscutum short and adpressed; ventral surface of hind femur with many short, black bristles. ..... *C. bracusi* sp. n.
— Hairs on mesoscutum long and erect; ventral surface of hind femur not black setulose, though single black bristles may occur in some specimens. ..... *C. sareptana* Becker
C. schineri Egger

The three female syntypes of *C. chloris*, extant in the Meigen collection (Muséum national d'Histoire naturelle, Paris), were kindly studied by Dr. Martin C. D. Speight. They agree with the present concept of *C. chloris*. The existing types of *C. melanura* and *C. sareptana* (Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität zu Berlin) were studied by the second author. They also confirm the species concepts as used in the present paper.

Acknowledgements

We thank Dr. Hubert Schumann, Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität zu Berlin, and the curators of the Natural History Museum in Ljubljana, Sarajevo and Sofia for the opportunity to examine material in their collections. We are indebted to Dr. Mauro Daccordi (Verona, Italy), Mr. Dieter Doczkal (Malsch, Germany), Dr. Franz Malec (Kassel, Germany), Dr. Martin C. D. Speight (Dublin, Ireland) and Dr. Sándor Tóth (Zirc, Hungary) for the loan of material. Particular thanks are due to Dr. Martin C. D. Speight for valuable information on the types of *C. chloris*, his detailed comments on an earlier draft of the text, and the revision of the English language of parts of the text.

Zusammenfassung

Cheilosia bracusi sp. n. wird nach Tieren aus den Gebirgen der Balkan- und Apenninenhalbinsel, den Alpen und aus den Pyrenäen beschrieben. Differentialmerkmale für *C. bracusi* und die nahe verwandte *Cheilosia chloris* Meigen werden hervorgehoben. *C. bracusi* wird in den vorliegenden Bestimmungsschlüssel für die paläarktischen *Cheilosia*-Arten (Sack 1928—1932) eingefügt. Nachweise der neuen Art aus Griechenland, Bulgarien, dem ehemaligen Jugoslawien, Italien, Frankreich und Spanien werden vorgelegt. Die Arbeit enthält Angaben zum Habitat, sowie zu Blütenbesuch und Flugzeit von *C. bracusi*.

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