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Cheilosia balkana sp. nov., new species of "*proxima*" group (Diptera, Syrphidae)

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Abstract

Cheilosia balkana sp. nov., a species of "*proxima*" group, is described based on material from high Balkan mountains.

Zusammenfassung

Cheilosia balkana sp. nov., eine Art der "*proxima*"-Gruppe, wird nach Material aus den höheren Lagen verschiedener Balkangebirge beschrieben.

Introduction

The genus *Cheilosia* MEIGEN, 1822 is one of the largest of the family Syrphidae. The greatest number of species (nearly 300) occurring in the Palearctic region (PECK 1988). The only revision that has been carried out on the European *Cheilosia*-species is that of BECKER (1894). Unfortunately, this work is to a significant extent unreliable, with frequently misinterpreted species. In the last few years some additional species to the European fauna have been described (MARCOS-GARSIA & CLAUSSEN 1989) and some taxa were redefined after examination of the type material (CLAUSSEN 1987, 1988, 1989, CLAUSSEN & SPEIGHT 1988, SPEIGHT & CLAUSSEN 1987).

More than 80 species of the genus *Cheilisia* have been collected on the Balkan peninsula during investigations carried out since 1981. One undescribed species belongs to a group of species close to *Cheilisia proxima* (ZETTERSTEDT, 1843). This species is described below and separated from related species.

Cheilisia balkana sp. nov.

Type-material. Holotype ♂: Montenegro: Durmitor, Skakala (Sušica canyon-Luke) 1200-1600 m, CN-37, 1.7.1993, leg. A. VUJIĆ (PMB coll. 595773, Inv. No. 11).

Paratypes: Slovenia: 1 ♂, Julijske Alpe, Črno jezero, 1300 m, VM-02, 2.7.1989, leg. A. VUJIĆ (IBNS); - 1 ♂, Kamniške Alpe, Logarska dolina, 1000 m, VM-73, 17.6.1988, leg. D. RADNOVIĆ (IBNS); - Montenegro: 1 ♀, Durmitor, Crno jezero ♀ Mlinški potok, 1500 m, CN-47, 22.6.1985, leg. A. VUJIĆ (IBNS); - 1 ♀, Susiško jezero, 1100 m, CN-38, 27.6.1985, leg. A. VUJIĆ (IBNS); - 1 ♀, Škrčka jezera, 1700 m, CN-37, 30.6.1985, leg. A. VUJIĆ; - 21 ♂♂, 14 ♀♀, Skakala ♀ Sušica canyon-Luke, 1200-1600 m, CN-37, 8.-9.7.1991, leg. D. RADNOVIĆ, Sanja STOLIĆ & A. VUJIĆ (IBNS, CC); 22 ♂♂, 25 ♀♀, 8.7.1992, leg. Dragana RADOVIĆ & A. VUJIĆ (IBNS); 14 ♂♂, 5 ♀♀, 29.6.1993, leg. P. RADIŠIČ, D. RADNOVIĆ & Sanja RADNOVIĆ (IBNS); 21 ♂♂, 60 ♀♀, 1.7.1993, leg. Dragana RADOVIĆ, N. RADOVIĆ, Sanja RADNOVIĆ & A. VUJIĆ (IBNS, PMB, Allotype, Inv. No. 12); - 1 ♂, 2 ♀♀, Jablan jezero, 1800 m, CN-48, 7.7.1992, leg. A. VUJIĆ (IBNS); - 1 ♂, 2 ♀♀, Škrčko ždrijelo, 1900 m, CN-37, 30.6.1993, leg. Sanja RADNOVIĆ & A. VUJIĆ (IBNS); - 1 ♂, Samar, 2000 m, CN-37, 1.7.1993, leg. P. RADIŠIČ (IBNS); - Serbia: 1 ♀, Šar-planina, Durov potok, 2000 m, EM-06, 18.7.1986, leg. VUJIĆ (IBNS); 1 ♂, 27.6.1988, leg. VUJIĆ (IBNS).

Remarks: The holotype and allotype are deposited at the Natural History Museum in Belgrade, Yugoslavia (PMB). Most of paratypes are preserved in the collections of the Institute of biology, University of Novi Sad, Yugoslavia (IBNS) except 3 ♂♂ and 2 ♀♀ in the collection of Claus CLAUSSEN, Flensburg, Germany (CC). The localities, from which *C. balkana* was collected are mapped using the UTM system (Map 1).

Description. The new species belongs to a group of species close to *Cheilisia proxima*, but is separable by the complex of following characteristics.

Diagnosis: Species with dark-olive shine; eyes completely covered with pale hairs; face bare, facial tubercle rounded (Figs 1a, 1c); antennae black, arista almost bare (Figs 1h, 1i); mesonotum with mostly pale hairs in two lengths (Figs 1a, 1c); posterior scutellar margin with very long, black bristles; sternopleuron continuously pilose; legs black (sometimes knees brownish); wing: upper marginal cross-vein meeting radial-vein r_{4+5} with acute angle (Fig. 1f ♀ x); abdomen with pale hairs; tergites shining except dull areas on tergites I, II and on anterior margin of tergite III (Fig. 2a); male genitalia in general appearance similar to that of *C. zetterstedti* (BECKER, 1894), but separable by shape of surstyle: more elongated in lateral view (Fig. 4b) and pointed in dorsal view (Fig. 4d); *C. zetterstedti* with short and broad surstyle (Fig. 4c), not pointed in dorsal view (Fig. 4e).

Size: male, body length 6,9 - 9,8 mm; wing length 7 - 8,2 mm. - Female, body length 6,1 - 9,5 mm; wing length 6,2 - 7,9 mm.

Male (Figs 1a, 1f, 1h, 2a, 3a, 3b, 4b, 4d). Head: Face bare, grey dusted, especially below antennal insertion and on ocular margin; facial tubercle rounded, in profile the most

pronounced part of face (Fig. 1a); ocular margin with short, pale hairs. Frons small, grey dusted, covered with long black hairs; longitudinal furrow developed; eye-suture longer than frontal triangle. Eyes completely covered with pale hairs (Fig. 1a). Occiput entirely white-grey dusted. Antennae black, greyish dusted; arista short pubescent (Fig. 1h).

Thorax: Mesoscutum with dark-olive shine, undusted, covered with pale, white-yellow to yellow-red hairs (sides of mesoscutum near wing bases post-alar calli and posterior fourth of mesoscutal disk with some black hairs and bristles); posterior half of mesoscutum with composition of long and very short hairs (this short hairs may be black) (Fig. 1a); scutellum shiny, the same colour as the mesoscutum, covered with pale hairs and numerous (more than 8) strong, black bristles on posterior margin. Pleurae slightly grey dusted, with pale hairs; sternopleuron continuously pilose. Wing slightly brownish, with dark-brown veins, except yellowish subcostal vein and yellow stigma; upper marginal cross-vein meeting radial vein r_{4+5} with acute angle (Fig. 1f ♀ x); calypterae white-yellow; haltere yellow-red. Legs black (sometimes knees brownish), with mixed pale and black hairs.

Abdomen completely covered with pale (grey-yellow to white) hairs; tergites shiny, except dull areas on tergites I, II and anterior margin of tergite III (Fig. 2a); sternites grey dusted, covered with long, erect hairs and short, adpressed hairs on sternites II and IV. Male genitalia similar to *C. zetterstedti*, but separable by shape of surstyle: more elongated in lateral view (Fig. 4b) and pointed in dorsal view (Fig. 4d); *C. zetterstedti* with short and broad surstyle (Fig. 4c), not pointed in dorsal view (Fig. 4e); dorso-apical prong (dp) of superior lobe in lateral view straight dorsally (Fig. 3a).

Female (Figs 1c, 1d, 1e, 1i). Female metallic-green, similar to the male except the following characteristics: Frons densely punctured, with longitudinal lateral and shallow transversal furrow, laterally with grey dusted spots (Fig. 1d); hairs on frons long, erect, mostly pale (black hairs in vicinity of ocellar triangle); mesoscutum with dense and fine puncturation, covered with longer and shorter, predominantly pale hairs (Fig. 1c); veins in basal third of wing yellowish; tergites shiny, dusted on tergites I and II, with erect hairs, except triangular patches of adpressed hairs on posterior margin of tergites II and III.

Distribution and biological data. *C. balkana* was found only in the mountainous parts of the Balkan peninsula and the Slovenian Alps (Map 1). The range of this species covers altitudes between 1000 and 2000 m. In a biogeographical sense the habitats of *C. balkana* belong to the Biome of "Alpine and High Nordic rock-grounds, pastures and snow patches" (the term of landscape-type after MATVEJEV & PUNCER 1989).

The adults of *C. balkana* were found at the blossoms of *Alyssum* sp. The period of maximum flight activity is at the end of spring and the beginning of summer (June 17th to July 18th).

Discussion

Cheilosia balkana can be considered to "group D" of SACK (1928-1932): males of *C. balkana* key to *C. pascuorum* (BECKER, 1894) in SACK (1928-1932: 49). This part of the key can be supplemented as follows:

- 3 Arista bare or almost bare 4
- 4 Abdomen (including pregenital segments) with pale hairs; hairs on mesoscutum predominantly pale; third antennal segment black to black-brown 4a
- Pregenital segments and posterior margin of tergites with black hairs; mesoscutum with mostly black hairs; third antennal segment red-brown (*planifacies* BECK.)
- 4a Tergit III shiny (sometimes dull on anterior margin) (Fig. 2a). Upper marginal cross-vein meeting radial vein r_{4+5} with an acute angle (Fig. 1f ♀ x). Facial tubercle rounded. Arista with short pubescence. Superior lobe with elongated dorso-apical prong (dp) (Fig. 3a) *C. balkana* sp. nov.
- Tergite III dull in middle (Fig. 2c). Upper marginal cross-vein meeting radial vein r_{4+5} with an right angle (Fig. 1g ♀ y). Facial tubercle nose-like (Fig. 1b). Arista bare. Dorso-apical prong of superior lobe basally very broad (Fig. 3e) *C. pascuorum*

The females of *C. balkana* key to a group of species with adpressed hairs on mesoscutum (*C. albitarsis* MEIG., *C. impressa* LOEW, *C. umbrisquamma* BECK.) in SACK (1928-1932: 53). *C. balkana* is separable from these species by the following couplets:

- 3 Third antennal segment red-brown to black 3a
- 3a Mesoscutum with short, adpressed, black and pale hairs (*albitarsis*, *impressa*, *umbrisquamma*)
- Mesoscutum with erect, longer and shorter, predominantly pale hairs (Fig. 1c); metallic-green species; tergites with long, pale, erect hairs, except triangular patches of adpressed hairs on posterior margin of tergites II and III *C. balkana* sp. nov.

In its general morphology: eyes white haired, sternopleuron continuously pilose, venter grey dusted (MARCOS-GARSA & CLAUSSEN 1988), *C. balkana* belongs to the "*proxima*" group. Single specimens of *C. balkana* might be difficult to separate from *C. proxima*, *C. gigantea* Zett. and *C. zetterstedti* BECK. In these cases they can be distinguished by the diagnosis and the following differences:

- *proxima*: Tibiae mostly pale at both ends. Male: frons undusted; tergites and pregenital segments with black hairs; tergite III dull, except laterally; dorso-apical prong of superior lobe with two protuberances (Fig. 3c).
- *gigantea*: Male: tergites and pregenital segments with black hairs; tergite III dull, except laterally; dorso-apical prong of superior lobe with rounded protuberances basally (Fig. 3d). Female: mesoscutum with numerous black hairs mixed with pale ones.
- *zetterstedti*: Mesoscutum with dense and rough puncturation; tibiae pale at both ends. Male: frons undusted; tergite III with dull area in anterior half. Female: hairs on mesoscutum very short.

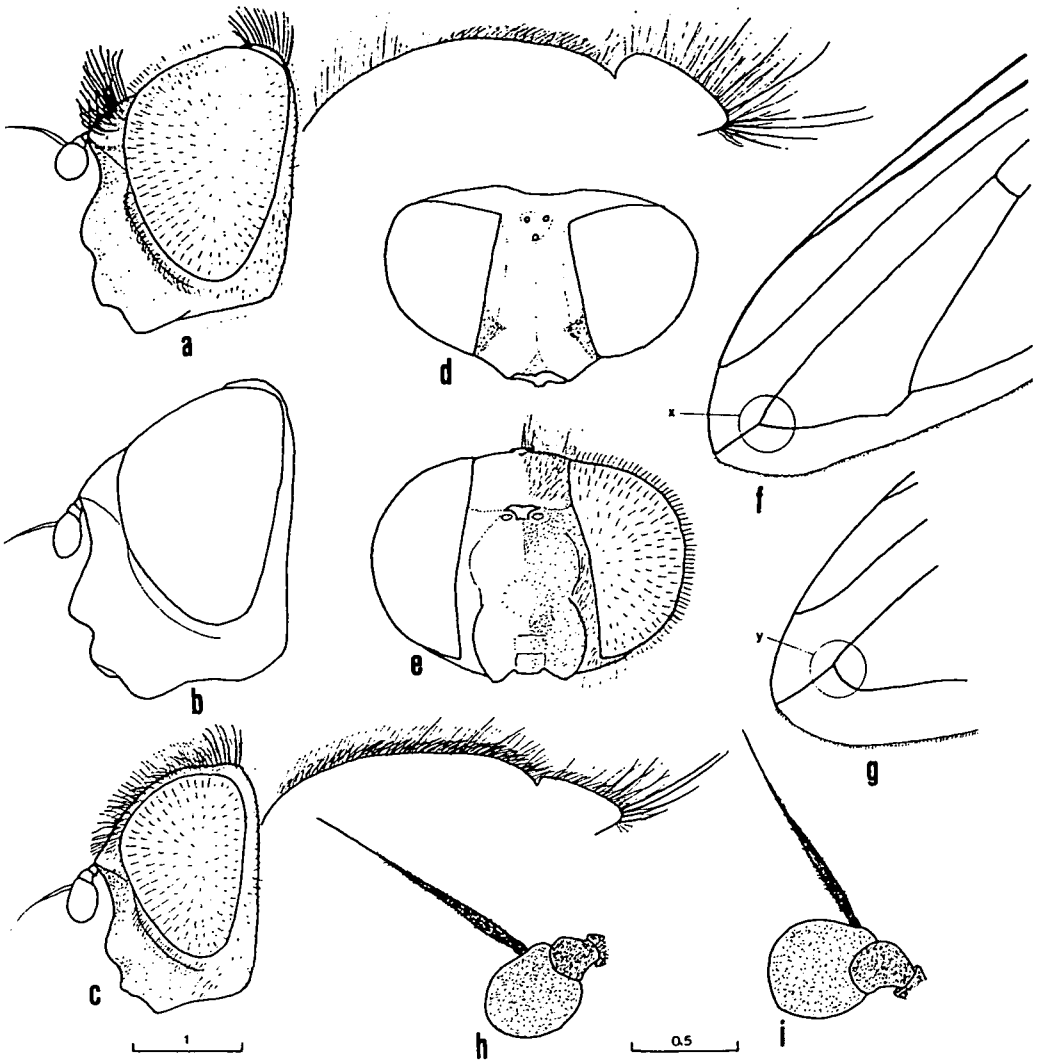


Fig. 1: *Cheilosia balkana* sp. nov. (paratypes: Montenegro, Durmitor): - Head and mesoscutum, lateral view: a) male; c) female. - Head of female: d) dorsal view; e) frontal view. - Wing: f) male (x = meeting of marginal cross-vein and radial vein r_{4+5}). - Antennae, internal view: h) male; i) female. - *C. pascuorum* (Serbia, Čemernik): b) head of male, lateral view (eye hairs not figured); g) wing of male (y = meeting of marginal cross-vein and radial vein r_{4+5}). - Scale in mm.

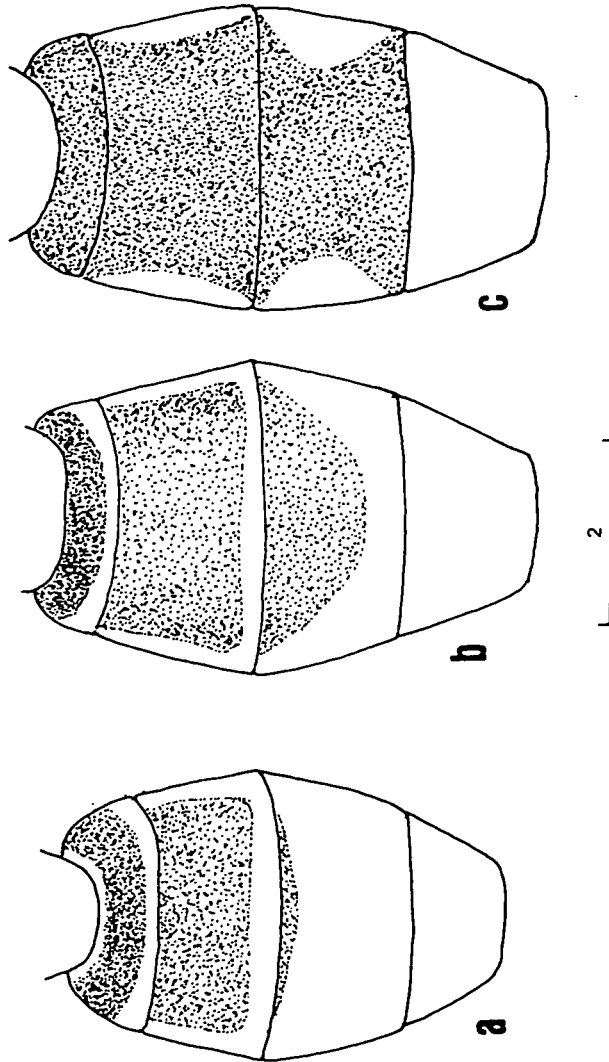


Fig. 2: Male abdomen, dorsal view (stippling showing dull, black area): a) *C. balkana* (paratype: Montenegro, Durmitor); b) *C. zetterstedti* (Montenegro, Morača canyon); c) *C. pascuorum* (Macedonia, Mavrovo). - Scale in mm.

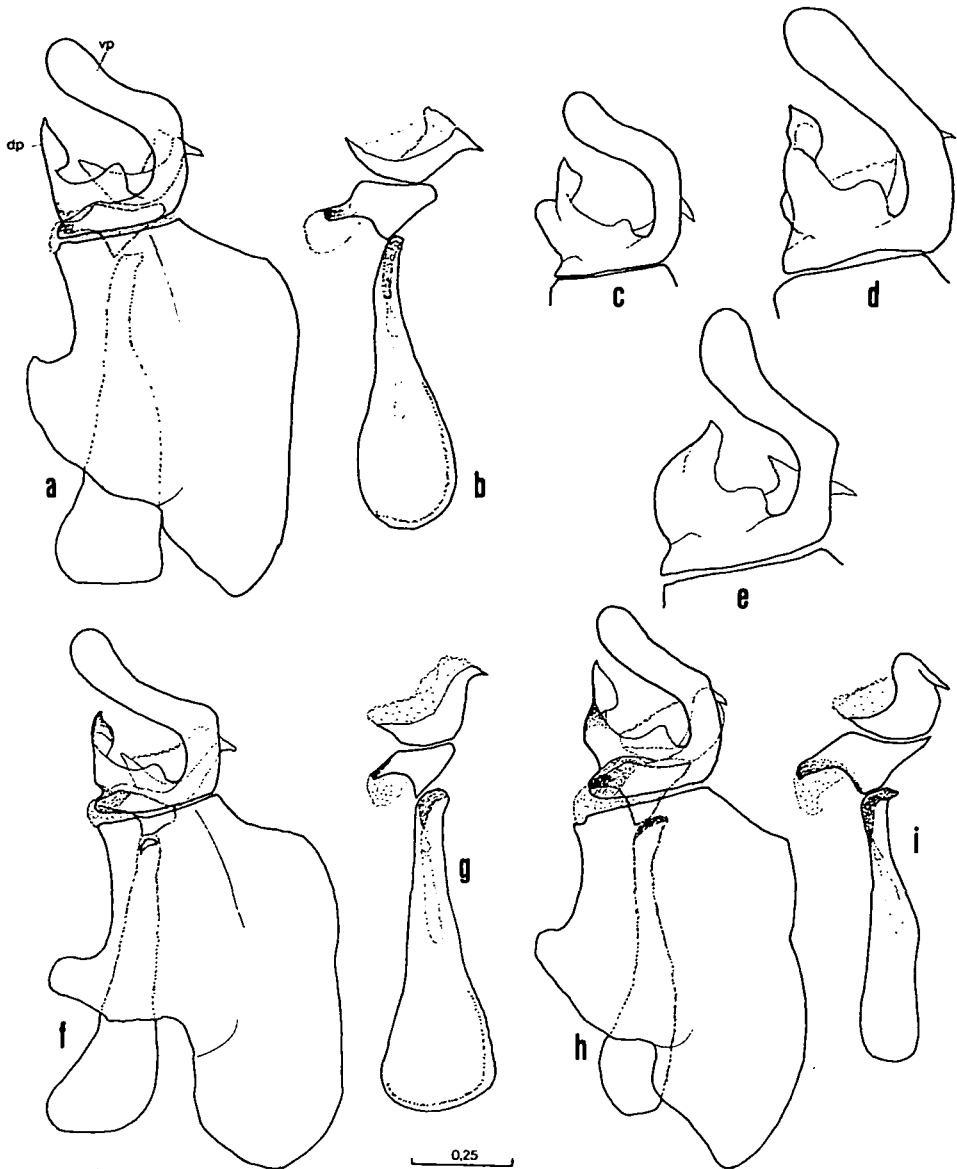


Fig. 3: Male genitalia, right lateral view. - *C. balkana* (paratype: Montenegro, Durmitor): a) hypandrium, vp = ventro-apical prong, dp = dorso-apical prong of superior lobe; b) aedeagus and associated structures. - Superior lobe: c) *C. proxima* (Macedonia, Baba); d) *C. gigantea* (Serbia, Kopaonik); e) *C. pascuorum* (Serbia, Stara Planina). - *C. zetterstedti* (Greece, Olympos): f) hypandrium; g) aedeagus and associated structures. - *C. velutina* (Germany, Schleswig-Holstein): h) hypandrium; i) aedeagus and associated structures. - Scale in mm.

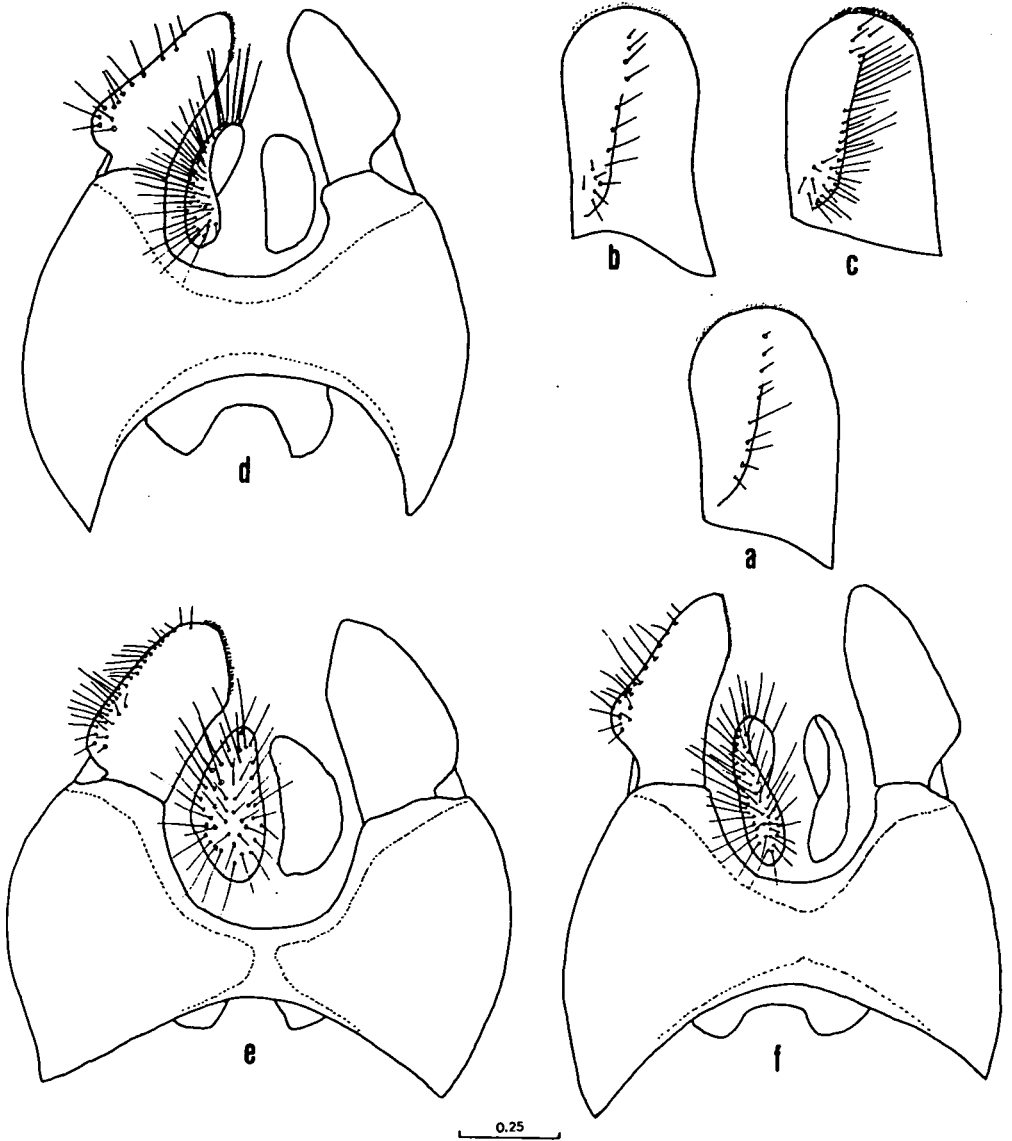
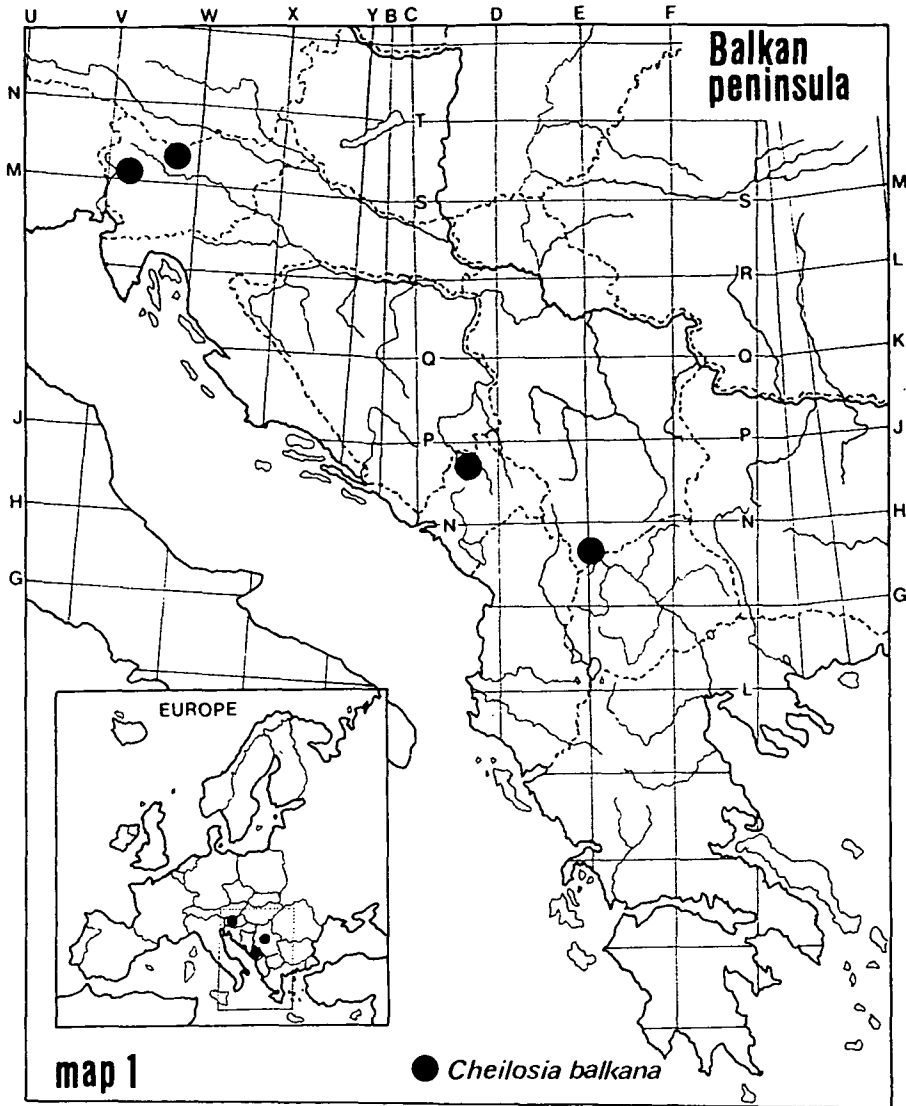


Fig. 4: Male genitalia. - Surstylus, right lateral view: a) *C. velutina* (Germany, Schleswig-Holstein); b) *C. balkana* (paratype: Montenegro, Durmitor); c) *C. zetterstedti* (Montenegro, Morača canyon). - Epandrium, 9th tergum and associated structures, dorsal view: d) *C. balkana* (paratype: Montenegro, Durmitor); e) *C. zetterstedti* (Montenegro, Morača canyon); f) *C. velutina* (Germany, Schleswig-Holstein). - Scale in mm.



Map 1: Distribution of *C. balkana*. Map of Balkan peninsula with UTM system.

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Literaturbesprechung

W.J. KAUFMANN, L.L. SMARR (1994): Simulierte Welten, Moleküle und Gewitter aus dem Computer. Spektrum Verlag, 261 S., zahlr. Farbfotos und Graphiken.

Was bis vor wenigen Jahren noch als utopisch galt, ist durch die atemberaubende Entwicklung der Computertechnologie Wirklichkeit geworden: Die Simulation komplexer Vorgänge in der Natur. Egal, ob es sich um die Darstellung eines Wettersystemes, biochemischer Reaktionen, Autounfällen zur Unfallforschung oder sogar um die (hypothetische) Entstehung des Mondes durch Kollision eines Himmelskörpers mit der Erde handelt, die dafür benötigte Rechenzeit steht inzwischen zur Verfügung. Die Autoren schildern Entwicklung, Methodik, Anwendung und Ergebnisse des supercomputing nahezu ausschließlich aus US-amerikanischer Sicht. Der europäische Leser hätte sich über ein paar Sätze zur Situation dieser Wissenschaftsdisziplin in Europa gefreut. Außerdem fehlt ein deutlicher Hinweis der Autoren, daß der beste Computer nichts nützt, wenn die Datenbasis unzureichend oder falsch ist - ein Phänomen, mit dem zum Beispiel die Klimafor-schung auch heute noch Probleme hat.

Fazit: Dieses informative und gut lesbar geschriebene Buch zur Computersimulation ist zu einem hervorragenden Werbeprospekt für die Hersteller US-amerikanischer Supercomputer geraten.

M. CARL

Farbatlas Meeresfauna: Rotes Meer, Indischer Ozean (Malediven): BAUMEISTER, W.: Niedere Tiere. 1993, 320 S. GÖTHEL, H.: Fische. 1994, 336 S. - Eugen Ulmer, Stuttgart.

Mit diesen beiden kompakten Taschenbüchern legt der Verlag zwei fantastische Bestimmungsbücher über die Fauna des Roten Meeres und des Indischen Ozeans vor, die ihresgleichen zu suchen haben. In jedem Band werden jeweils über 390 Arten in Wort und Bild vorgestellt, wobei nur bei sehr wenigen Aufnahmen (meist Fische) die Qualität (Ausschnitt, Brillanz, Schärfe) bemängelt werden kann - rundum ist die Bildauswahl sehr gelungen. Die Beschreibungen liefern z.T. sehr ausführliche Informationen über Erkennungsmerkmale, Verwechslungsmöglichkeiten, Lebensraum, Besonderheiten und Aquarienhaltung und erlauben somit eine relativ sichere Bestimmung der einzelnen Arten. Für Taucher, Schnorchler und Aquarianer sind diese beiden Bände Pflichtlektüre, den naturinteressierten Reisenden in den Ländern am Roten Meer und am Indischen Ozean sollten sie im Reisegepäck nicht fehlen.

R. GERSTMEIER

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