New and little-known Mediterranean and Central Asian species of the spider wasp genus *Cryptocheilus* Panzer, 1806 (Hymenoptera: Pompilidae)

**SERGEI ZONSTEIN**

*Department of Zoology, The George S. Wise Faculty of Life Sciences, Tel Aviv University, Tel Aviv 69978, Israel. E-mail: znn@post.tau.ac.il*

**ABSTRACT**

*C. ferghanensis* (Kyrgyzstan) and *C. sarbaz* (Kazakhstan, Uzbekistan), are described as new, and nine other species are redescribed from the types or conspecific specimens. The males of *C. moravitzi* (Radoszkowski, 1877) and *C. coeruleipennis* Priesner, 1955 are described for the first time.

New synonymies are established: *Priocnemis sarafschani* Radoszkowski, 1877 = *Salius nigritulus* Gussakovskij, 1952 = *Cryptocheilus minimus* Priesner, 1966.

**KEY WORDS:** Pompilidae, spider wasps, *Cryptocheilus*, Mediterranean, Central Asia.

**INTRODUCTION**

With over 60 described Palearctic species (Wolf, 1992), the spider wasp genus *Cryptocheilus* is one of the most species-rich pepsine genera. Within the Palearctic region the great majority of species of the genus are confined to the Mediterranean and the territories neighboring this region from the east (Tobias, 1978). Despite their abundance many local species are still poorly known and their phylogenetic relationships remain obscure.

The present paper contains taxonomic notes on eleven species of *Cryptocheilus*: seven of them are poorly known, one species is a new combination in this genus, and two species are newly described.

**MATERIAL AND METHODS**

Specimens from the following institutions were studied:

TAUI – Zoological Museum, Tel Aviv University, Tel Aviv, Israel
ZISP – Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
ZMMU – Zoological Museum of Moscow University, Moscow, Russia
The holotype of *C. ferghanensis* will be deposited in TAUI; the holotype of *C. sarbaz* will be returned to ZISP; paratypes will be shared between ZISP and TAUI.

All the indices are accurate to 0.05. Most figures were drawn using Adobe® Illustrator® 10.0 and arranged with Adobe® Photoshop® 7.0. Terminology follows Townes (1957) and Wahis (1997); a few terms are given here in a slightly modified form first used by S. Zonstein (2000).

Abbreviations, ratios and terms (see also Wolf, 1990, and S. Zonstein, 2001) are as follows:

**Head:** OOD – ocular-ocellar distance; POD – postocellar distance; antennal ratio – length of first four antennal segments (scapus – pedicellus – flagellomere I – flagellomere II) each divided by length of pedicellus.

**Forewing:** MR1 – ratio between lengths of posterior border and oblique proximal border of cell 1Rs; MR2 – ratio between lengths of posterior border and oblique proximal border of cell 2Rs; M2/M3 – ratio between length of vein M sectors of 2nd and 3rd radiomedian cells (1Rs and 2Rs); RH – ratio between the total length of radial cell (2R1) and its maximal width.

**Hindwing:** RQ – ratio between length of first section of vein Rs and length of vein 1rm.

---

**TAXONOMY**

*Cryptocheilus atripennis* (F. Morawitz, 1890)  
(Figs. 1, 12, 32, 52)

*Salius atripennis* F. Morawitz, 1890: 615.  
*Cryptocheilus atripennis*: Šustera, 1924: 85, 96 [catalog, key].

**Diagnosis**

This species is distinguished from all other congeners except *C. coeruleipennis* Priesner in the darker wings, long-spinose tarsi and weakly-serrate hind tibia. It differs from the latter species in the unmodified clypeus, narrow and weakly-developed temples, longer postnotal junction, more finely striated propodeum and the details of the fore wing venation.

**Redescription**

**Female.** Length 13–14 mm. Body predominantly black; clypeus and mandibles medially dark brown; antenna and legs dark olive-brown. Fore and hind wings uniformly dark brown with violet reflection, pterostigma and veins brownish-black. Body and legs covered by dense dark copper-brown pubescence, face ventrally with dark bronze pubescence; frons, fore coxa and distal part of metasoma with relatively few long thin setae. Temple weakly arched (Fig. 12), hairless. Eye in dorsal view 1.9 times as long as temple. Anterior ocellar angle 90°. POD/OOD ratio 0.85. Clypeus flattened, wide trapezoidal (Fig. 1). Apical clypeal margin nearly straight. Antennal ratio: 3.0 : 1.0 : 5.3
NEW AND LITTLE-KNOWN SPECIES OF CRYPTOCHILUS

Vol. 37, 2007 217

: 4.4. First flagellomere 5.3 times as long as broad apically (Fig. 32). Postnotal junction shining, 0.6–0.7 times as long as metanotum. Mesopleuron smooth, metapleuron weakly striated. Propodeum with about 30 irregular transverse rows of low flattened ridges, its anterior quarter with slightly recurved rows of smaller ridges; median groove long and shallow. Legs slender with weakly-serrate hind tibia and long ventral tarsal spines. Fore wing (Fig. 52): RH 3.43, MR1 1.38, MR2 1.43, M2M3 0.97. Apical angle of radial cell acute. Hind wing: RQ 2.8–2.9.

Male. Unknown.

Material examined

Holotype ♀, [TURKMENISTAN:] “Askhabad, 2.v.88 AL”, “Salis atripennis  F. Moraw.”, “k. F. Morawitza” (ZISP); Other specimens: TURKMENISTAN: Annau, 25.v.1928, V. Gussakovskij (1♀; ZISP), Ashgabat, 25.v.1927, Semenov (1♀; ZISP).

Distribution

Middle Asia: Turkmenistan. A record from Israel (Priesner, 1966: 93) should be attributed to C. coeruleipennis Priesner, as explained below.

Cryptocheilus bruneipes Haupt, 1962

(Figs. 2, 13, 33, 53)

Cryptocheilus bruneipes. Priesner, 1966: 93 [key].

Diagnosis

C. bruneipes is most similar to C. nigripennis (Gussakovskij, 1952) in the habitus, details of the body puncturation, broad prominent temples and darkened fore wings. It differs from this species in the more developed but hairless temples, narrower postnotal junction, more lightly colored legs and antennae as well as in details of the fore wing venation.

Redescription

Female. Length 10.2–12.0 mm. Predominantly black; apical third of clypeus and mandible proximally dark reddish-brown; antenna, tegula and legs from femur to tarsus dark fulvous, fulvous brown or brownish-black. Wings intensively brown with slightly darker apical margin, pterostigma and veins dark brown to black. Body and legs covered by appressed brownish pubescence; frons and distal part of metasoma with moderately dense hairs. Temple convex (Fig. 13), hairless. Eye in dorsal view 1.2–1.5 times as long as temple. POD/OOD ratio 0.65–0.70. Anterior ocellar angle 90°. Antennal ratio (Fig. 33): 2.8 : 1.0 : 4.5 : 4.4. First flagellomere 3.9–4.3 times as long as broad apically. Apical clypeal margin weakly excavated, nearly straight (Fig. 2). Postnotal junction

wrinkled, narrow and excavated, 0.3 times as long as metanotum. Mesopleuron with ridges, metapleuron corrugated. Propodeum with about 40 dense and partially fused transverse ridges, median groove shallow. Fore wing (Fig. 53): RH 4.25–4.50, MR 1.15–1.25, MR1 1.55–1.65, MR2 1.80–2.05, M2M3 0.85. Apical angle of radial cell acute. Hind wing: RQ 3.6.

**Male.** Unknown.
NEW AND LITTLE-KNOWN SPECIES OF CRYPTOCHIELUS

Vol. 37, 2007 221

Material examined

Holotype ♀. [ISRAEL:] “Binyamina, 15.5.1940, Bytinski-Salz”, “Typus”, “Cryptochielus bruneipes Hpt. ♀ Haupt det. 1952” (TAUI). Paratypes: 2♀ with the same data as the holotype (but see remarks below). Other specimens: ISRAEL: Yarqon, 18.v.1953, H. Bytinski-Salz (1♀; TAUI); Dishon, 17.v.1973, J. Kugler” (1♀; TAUI).

Distribution

Israel: Coastal plain and Upper Galilee.

Remarks

In addition to the holotype, Haupt (1962) included in the type series three specimens collected by Bytinski-Salz. However, a careful examination of the type series showed that it consists of two species. The holotype and two other females represent C. bruneipes, whereas the remaining paratypes, including the male allotype, belong to C. fischeri (Spinola).

Cryptocheilus coeruleipennis Priesner, 1955

(Figs. 3, 14, 23, 34, 43, 54, 63)

Cryptocheilus coeruleipennis Priesner, 1955: 33.

Diagnosis

This species is similar to C. atripennis (Morawitz) in possessing intensively smoky wings and weakly serrate hind tibia. It can be distinguished from that species in the longer and more flattened clypeus, broader temples, narrower postnotal junction, more coarsely striated propodeum and in the details of the fore wing venation.

Redescription

Female. Length 12.5 mm (according to Priesner – 12.5–16.0 mm). Body predominantly brownish-black; clypeus, mandibles medially, antennae, tegulae, legs, transverse spots on tergites I–II slightly paler, dark brown. Wings dark brown with violet reflection, pterostigma and veins brownish-black. Body and legs covered by dense dark copper-brown pubescence, ventral part of face with mixed dark bronze and copper-brown pubescence; frons, fore coxa and distal part of metasoma with few long thin setae. Temple slightly arched (Fig. 16), hairless, Eye in dorsal view 1.9 times as long as temple. Anterior ocellar angle obtuse, about 100º. POD/OOD ratio 0.7. Clypeus long and flat, apical margin slightly rounded (Fig. 5). Antennal ratio (Fig. 36) 3.0 : 1.0 : 4.3 : 3.8. First flagellomere 5 times as long as broad apically. Postnotal junction fine-wrinkled medially, shining, 0.5–0.6 times as long as metanotum. Meso- and metapleuron weakly
222 S. ZONSTEIN Isr. J. Entomol.

striated. Propodeum with 20–25 transverse rows of moderately low but sharp ridges, anterior quarter with strictly proclinate rows of smaller ridges; median groove shallow. Legs slender with weakly serrate hind tibia and long ventral tarsal spines. Fore wing (Fig. 56): RH 3.45, MR1 1.35, MR2 1.75, M2M3 0.9. Apical angle of radial cell nearly right. Hind wing: RQ 2.7.

Male (newly described here). Length 11.2 mm. Color of body, antennae, legs, wings and pubescence as in female. Temple slightly arched, hairless. Eye in dorsal view 2.6 times as long as temple. Anterior ocellar angle as in female. POD/OOD ratio 0.5. Clypeus flat (Fig. 26), longer than that in female, almost quadrate, its apical margin rounded. Antenna without visible sensilla. Antennal ratio (Fig. 46) 3.0 : 1.0 : 4.3 : 3.8. First flagellomere 5.0 times as long as broad apically. Postnotal junction shining, 0.55 times as long as metanotum. Pleural sclerites and propodeum as in female. Legs slender with weakly serrate hind tibia and long ventral tarsal spines. Fore wing (Fig. 6): RH 3.4, MR1 1.35, MR2 1.75, M2M3 0.9. Apical angle of radial cell rather acute. Hind wing: RQ 2.6. Hypopygium (not extracted, only visible part described) broadly lanceolate with marginal setae.

Material examined

[ISRAEL:] Ma’alé Adummim, 12.v.1973, M. Tintpulver (2♀; TAUI); Arad, 12.x.1972, M. Tintpulver (1♂; TAUI); Bir Rehme (now Yeroham), 25.iii.1953, H. Bytinski-Salz (1♀; TAUI).

Distribution


Crypatocheilus ferghanensis S. Zonstein, n. sp.

(Figs. 4, 15, 24, 35, 44, 55, 64, 72, 78)

Diagnosis

This species belongs to the notatus species group, in which it is especially similar to C. rogenhoferi (Radoszkowski) in the propodeal sculpture and coloration (pale fore legs; lightly-colored metasomal spots in female, if present, developed only on tergite IV). It differs from that species in the smaller body size (female length of C. ferghanensis 8.3–11.8 mm, of C. rogenhoferi 11.2–15.3 mm) and shorter flagellomeres, as well as in the obtuse apical angle of the radial cell in the fore wing.

Description

Female. Length 8.3–11.8 mm. Predominantly black; mandible medially dark reddish-brown; orbit anteriorly with 1–2 narrow ivory spots; legs and flagellomeres mostly dark brown to brownish-black; tegula, fore tibia and tarsus, and antenna ventrally dark brownish-orange to fulvous. In one lightly-colored specimen scutellum, postnotal junction and propodeum dark brown; tergite IV with paired yellowish-white median
spots, as in females of *C. rogenhoferi*. Wings pale brown with darker apical margin, pterostigma and veins brown. Body and legs covered by appressed brownish pubescence, mixed with pale grayish pubescence on face ventrally, clypeus and coxae; frons, occiput and temple with few short hairs. Eye in dorsal view 2.3 times as long as temple (Fig. 14). Anterior ocellar angle ca. 95–100°. POD/OOD ratio 0.70. Antennal ratio (Fig. 34): 3.7 : 1.0 : 5.4 : 5.0. First flagellomere 4.4–4.5 times as long as broad apically. Apical clypeal margin slightly excavated (Fig. 3). Postnotal junction fine-wrinkled, shining, 0.6–0.7 times as long as metanotum. Meso- and metapleuron wrinkled. Propodeum corrugated, with 20–25 irregular transverse ridges; median groove weak to distinct. Fore wing (Fig. 54): RH 2.65–2.85, MR1 1.0–1.1, MR2 1.50–1.55, M2M3 0.8–0.9. Apex of distal segment of radial vein recurved basally, and apical angle of radial cell obtuse.

**Male.** Length 6.2–8.8 mm. Predominantly black, coloration similar to that of female, but face with broader ivory spot alongside anterior part of orbit; antenna and legs darker than in female, tergites I–II often dark brown medially. Color of wings and pubescence as in female. Temple hairless. Eye in dorsal view 2.3 times as long as temple. Anterior ocellar angle about 100°. POD/OOD ratio 0.7. Antenna without hair-like sensilla. Antennal ratio (Fig. 43): 2.3 : 1.0 : 3.1 : 3.0. First flagellomere 3.6 times as long as broad apically. Apical clypeal margin with shallow median excavation (Fig. 23). Postnotal junction fine-wrinkled, shining, 0.6–0.7 times as long as metanotum. Meso- and metapleuron smooth, propodeum with ridges developed less than in female, median groove almost indistinct. Fore wing (Fig. 63): RH 2.4–2.8, MR1 0.93–1.15, MR2 1.10–1.35, M2M3 0.85–1.10. Configuration of radial cell as in female. Hind wing: RQ 2.3–2.7. Hypopygium (Fig. 72) broadly lanceolate, slightly domed along its axis, rounded apically, with short marginal setae. Penial valve relatively short (0.8 times as long as volsella) and slender. Paramere distally tapered with comb of dense erect hairs anteriorly and few short inclined setae posteriorly (Fig. 78).

**Material examined**

Holotype ♀, “Kirghizia, Ferghana Mts., foothills 2 km NE Suzak v., 40°56’N 72°54’E, 850 m, S. Zonstein, 22.06.1998”, “Holotype ♀ Cryptochaetus ferghanensis sp. n., Zonstein det. 2000” (TAUI). Paratypes: same data as the holotype (6♂, 3♀; TAUI, ZISP).

**Distribution**

Middle Asia: West Tien-Shan (Southern Kyrgyzstan).

**Etymology**

The specific epithet specifies the area inhabited by this species, the foothills of Ferghana Mt. Ridge.
NEW AND LITTLE-KNOWN SPECIES OF CRYPTOHEILUS

**Cryptocheilus fischeri** (Spinola, 1838)
(Figs. 25, 45, 65)

*Pompilus fischeri* Spinola, 1838: 460–461.

**Redescription**
This species has been briefly described and redescribed (see references in the synonymy). The male head (Fig. 24), antenna (Fig. 44) and fore wing ((Fig. 44) are illustrated here for the first time.

**Material examined**
ISRAEL: Deganya, 19.iv.1941, H. Bytinski-Salz (1 ♀; TAUI, paratype of *C. bruneipes*); Jerusalem, 6.v.1941, H. Bytinski-Salz (1 ♀; TAUI, paratype of *C. bruneipes*); Binyamina, 6.vi.1947, H. Bytinski-Salz (1 ♀; TAUI, allotype of *C. bruneipes*); Dishon, 15.v.1973, H. Bytinski-Salz (1 ♀; TAUI); Gesher, 25.iv.1978, D. Furth (1 ♀; TAUI); Nahal Oren, 1.v.2001, L. Friedman (1 ♀; TAUI).

**Distribution**
This Pan-Mediterranean species occurs from Morocco to the southern part of Switzerland, Caucasus and Lower Volga (Wahis, 1997). It was reported also from Kyrgyzstan (S. Zonstein, 1996, 2002), Israel (Wolf, 1998a), Kazakhstan, Uzbekistan and Tajikistan (Wolf, 1998c) under *C. confinis* Haupt.

**Cryptocheilus gazella** Haupt, 1962
(Figs. 5, 16, 26, 36, 46, 56, 66)

*Cryptocheilus gazella* Haupt, 1962: 12; Priesner, 1966: 96 [key].

**Diagnosis**
This species belongs to the *notatus* species group. It resembles *C. fischeri* and *C. sarafschani* in habitus but differs from them in the more developed temples and darker fore wings, it also differs from *C. fischeri* in the broader radiomedial cells, and from *C. sarafschani* in the conspicuously coarse propodeal ridges.
Redescription

**Female.** Length 8.7–10.3 mm. Head, mesosoma and coxae predominantly black; mandible proximally dark reddish-brown; antenna, tegula, legs and metasoma mostly brownish-black. Wing pale brown with darker preapical fascia, pterostigma and veins brown. Body and legs covered by appressed brownish pubescence. Temple hairless. Eye in dorsal view 1.6–1.7 times as long as temple (Fig. 15). Anterior ocellar angle 90°. POD/OOD ratio 0.70–0.75. Apical clypeal margin with very weak, almost indistinct median excavation (Fig. 4). Antennal ratio (Fig. 35) 2.4 : 1.0 : 3.4 : 3.3. First flagellomere 3.8–4.0 times as long as broad apically. Postnotal junction densely fine-wrinkled, shining, 0.5–0.6 times as long as metanotum. Meso- and metapleuron mostly finely striated. Propodeum with 30–35 irregular and partially fused transverse rows of low ridges. Fore wing (Fig. 55): RH 3.55–3.75, MR1 1.20–1.35, MR2 1.75–1.80, M2M3 0.80–0.85. Apical angle of radial cell nearly right. Hind wing: RQ 2.95–3.20.

**Male.** Length 7.8–9.0 mm. Predominantly black; antenna, metasoma and legs including coxae dark brown to brownish-black. Face and clypeus with moderately wide lateral ivory spots, posterior part of orbit sometimes also with narrow ivory stripes, clypeus and maxilla dark reddish distally. Sculpture of propodeum and pleural sclerites, and color of wings and pubescence as in female. Temple hairless. Eye in dorsal view 2.4–2.5 times as long as temple. POD/OOD ratio about 1. Anterior ocellar angle 90°. Antenna without hair-like sensilla. Antennal ratio (Fig. 45) 2.1 : 1.0 : 2.6 : 2.8. First flagellomere 3.3–3.8 times as long as broad apically. Apical clypeal margin (Fig. 25) as in female. Postnotal junction shining, 0.45–0.50 times as long as metanotum. Propodeum, meso- and metapleuron with weakly developed ridges. Fore wing (Fig. 65): RH 3.0–3.5, MR1 1.10–1.15, MR2 1.35–1.50, M2M3 0.85–0.90. Apical angle of radial cell as in female. Hind wing: RQ 2.90–3.10.

**Material examined**


**Distribution**

Israel (Haupt, 1962; Priesner, 1966; Wolf, 1998a); Jordan and Syria (Wolf, 1998b); Middle Asia: Turkmenistan (first record), Tajikistan and Kazakhstan (Wolf, 1998c).
**Cryptocheilus moravitzi** (Radoszkowski, 1877)  
(Figs. 6, 17, 27, 37, 47, 57, 67, 73, 79)

**Prioenemis moravitzi** Radoszkowski, 1877: 22.  
**Cryptocheilus moravitzi** Šustera, 1924: 95 [catalog, key]; Haupt, 1926: 51 [catalog], 1934: 282; S. Zonstein, 2002: 123 [synonymy].

**Diagnosis**

This species belongs to the *versicolor* species group, in which it resembles *C. popovi* Gussakovskij in details of the coloration. It differs from that species in the definitely longer body (11.8–13.3 mm in females of *C. moravitzi*, 10.0–10.5 mm in females of *C. popovi*), the more densely and finely corrugated propodeum, as well as in the narrower dark apical fascia in the fore wing.

**Redescription**

**Female.** Length 11.8–13.3 mm. Predominantly black; mandible dark reddish medially; orbit anteriorly sometimes with small fulvous spot; propodeum fulvous or black, with more or less developed subcentral fulvous spot; fore tibia and tarsus pale brown. Antenna, middle and hind legs varied among specimens from pale brown to brownish-black. Fore wing pale yellowish-brown with brown apical spot, not including cell 2Rs; cell 2R1 with dark anterior margin; hind wing pale yellowish; pterostigma and veins brown. Tergites I–II fulvous proximally with broad blackened apical margin. Body and legs covered by appressed gray and bronze pubescence, face ventrally, clypeus and coxae also with pale grayish pubescence; temple, coxae and femora with few pale hairs. Clypeus as in Fig. 6. Eye in dorsal view twice as long as temple (Fig. 17). POD/OOD ratio 0.75–0.80. Antennal ratio (Fig. 37) 2.8 : 1.0 : 5.0 : 4.1. First flagellomere 4.8–5.0 times as long as broad apically. Postnotal junction fine-wrinkled, shining, 0.6–0.7 times as long as metanotum. Mesopleuron mostly smooth, metapleuron entirely wrinkled. Propodeum corrugated, with 20–25 distinct transverse ridges; median groove weak. Fore wing (Fig. 57): RH 3.3–3.5, MR1 1.30–1.45, MR2 1.50–1.65, M2M3 1.0–1.1. Apical angle of radial cell nearly right. Hind wing: RQ 2.9–3.0.

**Male** (newly described here). Length 10.2–13.0 mm. Predominantly black; clypeus with white lateral margins; orbit anteriorly with white spot alongside eye margin occupying its ventral half; fore femur with lightly-colored subapical part, fore tibia anteriorly and fore tarsus entirely fulvous. Color of wings and pubescence as in female. Clypeus as in Fig. 27. Eye in dorsal view 2.5–2.6 times as long as temple. POD/OOD ratio 0.86–0.89. Antennal ratio (Fig. 47) 2.7 : 1.0 : 4.0 : 4.1. First flagellomere 3.7–4.0 times as long as broad apically. Postnotal junction fine-wrinkled, shining, 0.6–0.8 times as long as metanotum. Sculpture of pleural sclerites and propodeum as in female. Fore wing (Fig. 67): RH 3.25–3.80 (mostly 3.45–3.50), MR1 1.25–1.40, MR2 1.5–1.6, M2M3 0.95–1.10. Apical angle of radial cell nearly right. Hind wing: RQ about 3.15. Hypopygium
broadly lanceolate, rounded apically, hirsute, with dense marginal thorn-like setae (Fig. 73). Penial valve relatively short (about 0.8 times as long as volsella), dilated apically. Paramere wide, broadly tipped, with both lateral margins covered by dense erect hairs (Fig. 79).

Material examined


Distribution

Middle Asia: Uzbekistan (first record), Tajikistan.

Biology

Specimens from Aman-Kutan were captured while visiting flowers of Ferula sp. (Apiaceae).

Remarks

I prefer to use the original specific epithet (moravitzi) instead of its accepted variant (morawitzi) because of the priority of the first name over the latter. The holotype ♀ is from Pendzhikent, now northwestern Tajikistan, and is supposedly deposited in ZMMU. Although I have not examined it (I did not find it during my recent visit to ZMMU), the concept of this species is clear.

Cryptocheilus nigripennis (Gussakovskij, 1952)
(Figs. 7, 18, 28, 38, 48, 58, 68, 74, 80)

Salius nigripennis Gussakovskij, 1952: 201.
Cryptocheilus nigripennis. Wolf, 1995: 889 [list].

Diagnosis

This species belongs to the notatus species group in which it resembles C. bruneipes. Haupt in the habitus and darkened fore wing. It differs from that species in the less developed and hirsute temples (hairless in C. bruneipes), broader postnotal junction, darker legs and antenna, and in the narrower first radiomedial cell in the fore wing.

Redescription

Female. Length 9.5–12.5 mm. Predominantly black; median parts of mandibles reddish-black; antenna and legs dark brown to brownish-black; tergites I–II sometimes
brownish-black laterally. Wings intensively brown with diffuse darker apical spot and T-
shape spot occupying partially cells 1Rs and 2Rs, pterostigma and veins moderately to
dark brown. Head and metasoma weakly shining, mesosoma matte; postnotal junction
weakly wrinkled transversely and shiny; propodeum with mixed striate and cellular
sculpture, median groove absent or weak; tergites with sparsely spaced tiny pits. Body
and legs covered by appressed brownish pubescence; vertex, frons and temples covered
by thin dark setae; scapus with few extremely short dark hairs anteriorly. Temple hirsute
(Fig. 18). Eye in dorsal view 1.5–1.6 times as long as temple. Anterior ocellar angle
85°–90°. POD/OOD ratio 0.60 –0.68. Clypeus slightly excavated apically (Fig. 7).
Antennal ratio (Fig. 38) 2.9 : 1.0 : 4.5 : 4.0. First flagellomere 4.1–4.3 times as long as
broad apically. Postnotal junction 0.6–0.7 times as long as metanotum. Pleural sclerites
weakly striated to almost smooth. Propodeum finely striated, transverse ridges low and
dense; shallow median groove distinct only in anterior half of propodeum. Fore wing
(Fig. 58): RH 3.42–4.10, MR1 1.3–1.4, MR2 1.65–1.75, M2M3 0.87 –0.94. Apical angle
of radial cell acute to nearly right. Hind wing: RQ 3.15–3.60.

Male. Length 8.7–10.0 mm. Color, pubescence and hairs in general as in female, but
clypeus and ventral part of face with denser brown-fulvous pubescence. Temple hirsute.
Eye in dorsal view 1.35–1.55 times as long as temple. Anterior ocellar angle ca. 85°.
POD/OOD ratio 0.53–0.67. Anterior clypeal margin excavated (Fig. 28). Antennal ratio
(Fig. 48) 2.3 : 1.0 : 3.0 : 3.0. First flagellomere 3.3–3.7 times as long as broad
apically. Flagellomeres II–VI with numerous sensilla, maximal length of sensilla
exceeds 0.5 width of flagellomeres. Postnotal junction as in female, 0.7–0.8 times as
long as metanotum. Meso- and metapleuron with almost indistinct transverse ridge.
Propodeum finely striated, transverse ridges and median groove less developed than in
female. Fore wing (Fig. 68) RH 3.45–4.25, MR1 1.15–1.40 (mostly 1.25±0.05), MR2
1.60–1.75, M2M3 0.80 –0.95. Apical angle of radial cell acute to nearly right. Hind
wing: RQ 2.7–3.3. Hypopygium broad oval, flattened, glabrous, hairless, with apical
dge truncated or slightly excavated medially (Fig. 74). Penial valve rather short (0.8
times as long as volsella), tapered. Paramere distally acute, with few short setae apically,
dense and thin pale hairs anteriorly, and few inclined setae on posterior edge (Fig. 80).

Material examined
Holotype ♂, [TAJIKISTAN:] “Stalinabad, 8.vi.1934, V. Gussakovskij”, “Salius nigripennis n. sp.
det. V. Gussakovskij” (ZISP). Other specimens: TURKMENISTAN: Kopetdaghs Mts., Kara-Kala,
8.v.1991, V. Kazenas (1♀, 2♂; TAUI); Zulfagar Mts., Nadvenaly, 700–900 m, 35°45’N 61°20’E,
17.iv.1993, S. Zonstein (4♀; TAUI). UZBEKISTAN: 7 km SE Dzhar-Kurgan, 400 m, 37°28’N
67°30’E, 12.vi.1990, S. Zonstein (1♀; TAUI); Kughitang Mts., Shalkan riv. nr. Zarabag, 37°51’N
66°39’E, 1500 m, 3 vi 1995, S. Zonstein (2♀; TAUI); Babatag Mts, Ak-Metchet, 38°02’N 68°15’
E, 650 m, 1.v.1995, S. Zonstein (3♀; TAUI), 24.iv.1994, S. Ovtchinnikov (1♂; TAUI); Hissar
Mts., Kokbuluk, 1400 m, 38°36’N 66°55’E, 7.vi.1997, S. Zonstein (1♀; TAUI). TAJIKISTAN:
Vakhsh valley, Palvan-Tugai, 17.iv.1989, S. Zonstein (2♂, 1♀; TAUI); Aruktau Mts., Gandzhina,
750 m, 37°58’N 68°33’E, 18.iv.1992, S. Zonstein (1♂; TAUI); Karatau Mts., Novabad, 650
m, 38°00’N 68°55’E, 23.iv.1990, S. Zonstein (2♂, 1♀; TAUI); 7 km NNE Dushanbe. 1050 m,
NEW AND LITTLE-KNOWN SPECIES OF CRYPTOCEILUS

Vol. 37, 2007 233

38°40’N 68°47’E, 29.iv.1990, S. Zonstein (1♀; TAUI); Hissar Mts., Romit, 1550 m, 38°44’N 69°19’E, 7.v.1987, S. Zonstein (1♀; TAUI); Peter I Mts., Tchildara, 2000 m, 38°51’N 70°20’E, 10.vii.1988, S. Zonstein (1♀; TAUI).

Distribution
Middle Asia: Tajikistan (Gussakovskij, 1952), Turkmenistan (Wolf, 1995) and Uzbekistan (first record) – foothills and low mountains south of 39°N.

Cryptocheilus popovi Gussakovskij, 1935
(Figs. 8, 19, 39, 59)


Diagnosis
This species belongs to the versicolor species group, in which it clearly resembles C. moravitzi in the coloration. It differs from that species in the more broadly spaced and more elevated propodeal ridges, which are well developed also on the anterior part of the propodeum.

Redescription
Female. Length 10.0–10.5 mm. Head, mesosomal segments mostly, antenna, tegula, fore tibia and fore tarsus dark fulvous. Ocellar area, distal part of mandible, pleural sclerites partially, and M-shaped spot on scutum black; metasoma mostly brownish-black with dark fulvous proximal parts of tergites I–II. Fore wing pale yellowish-brown with brown apical spot, including apical part of cell 2Rs; radial cell partially darkened; hind wing pale yellowish; pterostigma and veins brown. Body and legs covered by appressed fine pale gray pubescence; temple, coxae and femora with few pale hairs. Temple hairless. Clypeus as in Fig. 8. Eye in dorsal view 1.5–1.7 times as long as temple (Fig. 19). POD/OOD ratio 0.70–0.77. Anterior ocellar angle 90°. Antennal ratio (Fig. 39) 2.3 : 1.0 : 3.8 : 3.4. First flagellomere 5.1 times as long as broad apically. Postnotal junction about 0.4 times as long as metanotum. Meso- and metapleuron distinctly striated. Propodeum with moderately developed parallel transverse ridges and distinct longitudinal groove. Fore wing (Fig. 59): RH 3.4, MR1 1.2, MR2 1.40–1.45, M2M3 1.00–1.05. Apical angle of radial cell right. Hind wing: RQ 2.9.

Male. Unknown.

Material examined
Distribution
Middle Asia: Southern Tajikistan.

*Cryptocheilus rogenhoferi* (Radoszkowski, 1887)  
(Figs. 9, 20, 29, 40, 49, 60, 69, 75, 81)

*Pompilus Rogenhoferi* Radoszkowski, 1887: 93.


Diagnosis
This species belongs to the *notatus* species group. Based on the propodeal sculpture and the coloration (paler fore leg, pale metasomal spots developed only on tergite IV in the female), it is similar to *C. ferganensis* n. sp. described above. It differs from that species in the longer body (female length: 11.2–15.3 mm in *C. rogenhoferi*, 8.3–11.8 mm in *C. ferganensis*) and longer antennal segments, as well as in the obtuse apical part of the radiomedial cell in the fore wing.

Redescription
**Female.** Length 11.2–15.3 mm. Black; mandible medially brownish-black; antenna dorsally and femora dark brown; ventral antennal surface, tibiae and tarsi fulvous to dark brownish-fulvous; in most specimens tergite IV with small proximal transverse spot composed of paired ivory-white spots completely or partially fused. Wings brown; darker apical fascia and T-shaped spot slightly diffuse; pterostigma and veins reddish-brown to dark brown. Appressed pubescence dark brown on head and mesosoma, grayish-brown on clypeus, and brownish-fulvous on metasoma. Frons and metasoma distally with long erect setae. Temple hairless. Clypeus as in Fig. 9. Eye in dorsal view 1.8–2.0 times as long as temple (Fig. 20). POD/OOD ratio 0.80–0.95. Antennal ratio (Fig. 40) 2.5–2.7: 1.0: 4.1–4.4: 3.8–4.1. First flagellomere 4.7–5.2 times as long as broad apically. Postnotal junction corrugated and matte, 0.45–0.50 times as long as metanotum. Meso- and metapleuron striated. Propodeum with 20–25 sharp and well-developed transverse ridges, longitudinal propodeal groove weak but evident. Fore wing (Fig. 60): RH 3.40–3.65, MR1 1.2–1.5, MR2 1.70–1.95, M2M3 0.80–0.95 (mostly 0.85). Apical angle of radial cell more or less right. Hind wing: RQ 2.85–3.00.

**Male.** Length 9.5–13.2 mm. Color and pubescence as in female, but anteroventral part of orbit with narrow ivory-white spots; fore tibia and fore tarsus paler, reddish-
brown or fulvous; metasoma uniformly black. Temple smooth. Clypeus as in Fig. 29. Eye in dorsal view 2.3–2.5 times as long as temple. POD/OOD ratio 0.8–0.9. Antenna without hair-like sensilla. Antennal ratio (Fig. 49) 1.8 : 1.0 : 3.5 : 3.7. First flagellomere 3.8–4.1 times as long as broad apically. Postnotal junction 0.50–0.55 times as long as metanotum. Pleural sclerites and propodeum as in female. Fore wing (Fig. 69): RH 3.30–3.55, MR1 1.2–1.4, MR2 1.50–1.75, M2M3 0.80–0.9. Apical angle of radial cell as in female. Hind wing: RQ 2.75–2.90. Hypopygium hirsute, broadly lanceolate and slightly keeled medially, rounded apically, with dense marginal thorn-like setae (Fig. 75). Penial valve rather short (0.8 times as long as volsella), slightly dilated apically. Paramere tapered distally, with comb of dense and thin pale hairs anteriorly, and with few short inclined setae on posterior edge (Fig. 81).

Material examined

TURKMENISTAN: Morgunovka 5 km N Kushka, 20.v.1991, V. Kazenas (1♀; TAUI). KAZAKHSTAN: 10 km N Kamyslybash, Aral Region, 4.vii.1990. V. Kazenas (1♂; TAUI); Bostandyk, 16.vii.1988, E. Shalepo (2♀; TAUI); Aktogai, Tcharyn r., 5.vii.1994, S. Zonstein (1♀; TAUI); 11 km N Bairkum, 18.v.1992, V. Kazenas, (1♀; TAUI). UZBEKISTAN: Tashkent, 3.vi.1930, V. Gussakovskij (1♂, 1♀; ZISP); Kammashi, 10.ix.1931, 22.v.1932, V. Gussakovskij (1♂, 1♀; ZISP); Kagan, 28.vi.1930, Zhelokhovtsev (1♀; ZISP); Tchangir, 30.v.1930, L. Zimin (1♀; ZISP). TAJIKISTAN: Lutchob N Dushanbe, 12.vi.1934, V. Gussakovskij (1♂; ZISP); Hissar Mts., Kondara, 1.vii.1937, 3–13.vii.1939, V. Gussakovskij (1♂, 2♀; ZISP). KYRGYZSTAN: Belovodskoe, 30.vi.1930, L. Zimin (1♀; ZISP); Toskaul, 1200 m, 4.viii.1964, K. Romanenko (1♀; TAUI); 11 km N Tashkumyr, 41°26´N 72°13´E, 650 m, 23.vi.1992, S. Zonstein (1♀; TAUI); Nitchke, 1600 m, 41°42’N 73°29’E, 8.vii.1990, S. Zonstein (1♀; TAUI); Tehon–Aryk, 42°47´N 74°34´E, 1100 m, 9–23.vii.1992, S. Zonstein (4♂, 7♀; TAUI; ZISP).

Distribution

Middle Asia: Kazakhstan, Turkmenistan, Uzbekistan (first record for all these countries), Tajikistan (Radoszkowski, 1887; Gussakovskij, 1952: as Salius sarafschani); Kyrgyzstan (S. Zonstein, 1989; 1996; 2002).

Biology

Some of the specimens were collected while they were visiting flowers of Prangos pabularia Lindl. (Apiaceae), Euphorbia lamprocarpa Prokh. (Euphorbiaceae) and Xantium spinosum L. (Asteraceae).

Remarks

The validity of C. rogenhoferi has been twice considered doubtful. As Gussakovskij (1952) accepted Šustera’s (1924) wrong diagnosis of this species, he synonymized it with C. sarafschani (Radoszkowski, 1877). Wolf (1990) placed C. rogenhoferi in synonymy with the south-European melanistic form of C. notatus – C. n. melanius (Lepeletier, 1845). C. rogenhoferi differs from C. sarafschani both in the longer body.
Figs. 72–77. Cryptocheilus spp., male hypopygium, ventral view. 72. C. ferghanensis. 73. C. moravitzi. 74. C. nigripennis. 75. C. rogenhoferi. 76. C. sarafshani. 77. C. sarbaz.
Figs. 78–83. Cryptocheilus spp., male genitalia, ventral view. 78. C. ferghanensis. 79. C. moraviti. 80. C. nigripennis. 81. C. rogenhoferi. 82. C. sarafschani. 83. C. sarbaz.
and in the strongly corrugated propodeum (that is finely striated in the latter species), and also in details of the wing venation. On the other hand, *C. rogenhoferi* resembles the darkest specimens of *C. notatus* in its body size and general coloration but can easily distinguished from them in having a tapered male hypopygium covered by small marginal spines (hypopygium broadly rounded, carrying long apical setae in *C. notatus*) and in the characteristic dumbbell-shaped pale spot on the female tergite IV that is always uniformly black in the latter species.

*Cryptocheilus sarafschani* (Radoszkowski, 1877)
(Figs. 10, 21, 30, 41, 50, 61, 70, 76, 82)

*Priocnemis Sarafschani* Radoszkowski, 1877: 22.
*Cryptocheilus Rogenhoferi*. Šustera, 1924: 85, 96 [catalog, key], not *Pompilus Rogenhoferi* Radoszkowski, 1877.
*Cryptocheilus rogenhoferi*. Gussakovskij, 1935: 446 [synonymy].
*Salius nigritulus* Gussakovskij, 1952: 201, **n. syn**.
*Cryptocheilus minimus* Priesner, 1966: 94, **n. syn**.
*Cryptocheilus nigritulus*. Wolf, 1998c: 339 [list].
*Cryptocheilus sarafschani*. S. Zonstein, 2002: 122 [synonymy].

**Diagnosis**

This species belongs to the *notatus* species group (to which Gussakovskij referred *Salius nigritulus* Gussakovskij). It differs from other small-sized species of the group in the unusually delicate propodeal sculpture consisting of dense, low and fine transverse ridges, thus resembling members of the genus *Priocnemis* Schiodte.

**Redescription**

**Female**. Length 6.8–7.5 mm. Black; mandible medially dark red; fore leg segments yellowish-brown anteriorly; metasoma uniformly black or tergites I–II sometimes with dark red to dark brown median spot. Wings pale brown with darker brown apical fascia, pterostigma and veins brown. Body and legs covered by appressed brownish pubescence; apical metasomal segments with numerous short brown setae. Temple hairless. Clypeus as in Fig. 10. Eye in dorsal view 1.6 times as long as temple (Fig. 21). POD/OOD ratio 0.6–0.7. Anterior ocellar angle 85°. Antennal ratio (Fig. 41) 1.6 : 1.0 : 3.2 : 3.0. First flagellomere 4.8 times as long as broad apically. Postnotal junction with fine transverse ridges, shining, 0.6–0.7 times as long as metanotum. Meso- and metapleuron smooth. Propodeum with fine cellular sculpture, longitudinal groove absent. Fore wing (Fig. 61): HR 3.45–3.50, MR1 1.35–1.40, MR2 1.45–1.75, M2M3 1.15–1.25. Apical angle of radial cell nearly right. Hind wing: RQ 2.80–2.85.

**Male**. Length 6.6–7.2 mm. Predominantly black; mandibles dark red medially; orbit anteriorly with short and narrow ivory-white spot; fore tibia and fore tarsus pale brown.
Other leg segments and sometimes tergit I dark brown to brownish-black. Wings subhyaline with pale brown apical fascia. Pubescence as in female, ventral part of face with pale gray toment. Temple hairless. Clypeus as in Fig. 30. Eye in dorsal view 1.8–2.1 times as long as temple. POD/OOD ratio 0.6–0.7. Anterior ocellar angle 80°. Antennal ratio (Fig. 50) 2.1 : 1.0 : 3.0–3.1 : 3.0–3.2. First flagellomeres 3.6–4.3 times as long as broad apically. Flagellomeres II–VI with numerous sensilla, length of sensilla exceeds 0.5 width of flagellomeres. Postnotal junction shining, without medial depression, 0.7 times as long as metanotum. Sculpture of pleural sclerites and propodeum as in female. Fore wing (Fig. 70): HR 3.05–3.25, MR1 1.20–1.35, MR2 1.30–1.55, M2M3 0.90–1.15. Apical angle of radial cell as in female. Hind wing: RQ 2.3–2.4. Hypopygium broad and flattened, truncated apically, with short marginal hair-like setae (Fig. 76). Penial valve long (noticeably longer than volsella) and slender. Paramere tapered distally and covered by short inclined hairs (Fig. 82).

Material examined

Holotype ♀, [TAJIKISTAN: ] „Priocnemis Sarafschani Rad.“ „13“ „Zeravsch. Dol.“ (ZMMU). Other specimens: ISRAEL: Be’er Sheva, 10.iv.1947, Bytinski-Salz (1♀; TAUI, holotype of C. minimus); Nahariyya (3♀, 1♂; TAUI, paratypes of C. minimus); Tel Aviv, vi–vii.1966, H. Bytinski-Salz (1♀, 1♂; TAUI); Tel Aviv, vi–vii.1969, H. Bytinski-Salz (1♀, 3♀; TAUI). UZBEKISTAN: Kammashi, 4.v.1932, V. Gussakovskij (1♂; ZISP); Babatag Mts., foothills, Ak-Metchet, 38°02’N 68°15’E, 650 m, 1.v.1995, S. Zonstein (2♂; TAUI); Hissar Mts., Kokbulok, 1400 m, 38°36’N 66°55’E, 7.vi.1997, S. Zonstein (1♂; TAUI). TAJIKISTAN: Stalinabad (Dushanbe), 8.vi.1934, V. Gussakovskij (1♂; ZISP, lectotype of Salius nigritulus); Hissar Mts., Kondara, 1.vii.1937, V. Gussakovskij (1♂; ZISP); Kondara, 3.vii.1939, V. Gussakovskij (1♂; ZISP); Hissar Mts., Romit, 1550 m, 40°23’N 72°45’E, S. Zonstein, 24.vii.1996 (3♂, 1♀; TAUI).

Distribution

Israel (Priesner, 1966: under C. minimus) to Middle Asia: Turkmenistan (Wolf, 1998c), Uzbekistan, Tajikistan (Gussakovskij, 1952), Kyrgyzstan (first record). It is assumed that C. pulawskii, described by Priesner (1960) from Upper Egypt, may also belong to this species.

Biology

A male collected in Kokbulok was observed visiting flowers of Prangos sp. (Apiaceae).

Remarks

C. sarafschani is similar to C. nigritulus and C. minimus in many features, including the most characteristic long and dense sensilla on the male flagellomeres II–VI, a character shared only by members of these three species. The latter specific epithets are therefore considered here synonyms of sarafschani.
**Cryptocheilus sarbaz** S. Zonstein, n. sp.  
(Figs. 11, 22, 31, 42, 51, 61, 71, 77, 83)

**Diagnosis**

This species belongs to the *versicolor* species group, in which it can be placed in a sub-group of species including the widespread Palearctic *C. fabricii* (V.D. Linden, 1827), Mediterranean *C. elegans* (Spinola, 1806), Central Asian *C. coloratus* Sustera, 1924, and the East Asian *C. manchurianus* Yasumatsu, 1935. All these species share a bicolorous mesosoma with a black anterior half and a reddish posterior half. *C. sarbaz* differs from all these species in the clearly striated meso- and metapleuron, uniformly black metasomal tergites (these tergites with a reddish pattern and/or paired pale spots in the other species), and in the more developed propodeal sculpture.

**Description**

**Female.** Length 8.2–11.4 mm. Predominantly black; mandible dark red medially; orbit anteriorly generally black, but sometimes with narrow white spot; antenna reddish-brown, sometimes dark brown but paler ventrally. Legs reddish-brown to dark brown in some specimens; fore tibia and fore tarsus paler. Tegula, propodeum entirely or partially, scutellum laterally, and postnotal junction entirely, brick-red; these structures sometimes dark reddish-brown. In some specimens cervical ledge with small white spot and mesonotum with paired narrow dark red spots extending alongside parapsidal sulci; these parts black in most specimens. Wings pale brownish-gray with darker blurred apical spot, pterostigma and veins yellowish-brown to brown. Body and legs covered by appressed dark copper and brownish pubescence, face ventrally and coxae also with grayish pubescence. Temple hairless. Clypeus as in Fig. 11. Eye in dorsal view 1.8–1.9 times as long as temple (Fig. 22). Anterior ocellar angle 90°. POD/OOD ratio 0.80–0.88. Antennal ratio (Fig. 42) 2.8 : 1.0 : 3.7 : 3.3. First flagellomere 4.0–4.2 times as long as broad apically. Postnotal junction transversely wrinkled, matte, 0.5–0.6 times as long as metanotum. Meso- and metapleuron with well-developed transverse ridges. Propodeum corrugated with 25–35 rows of sharp transverse ridges; median groove distinct. Fore wing (Fig. 61): RH 2.85–3.20, MR1 1.15–1.30, MR2 1.35–1.65, M2M3 1.00–1.05. Apical angle of radial cell 90° to slightly obtuse. Hind wing: RQ 2.65–2.75.

**Male.** Length 7 mm. General coloration as in female, but orbit anteriorly with better-developed white pattern; clypeus, antenna entirely and legs including fore coxa reddish-brown. Color of wings and pubescence similar to those of female. Temple hairless. Clypeus as in Fig. 31. Eye in dorsal view twice as long as temple. POD/OOD ratio 0.88. Antennal ratio (Fig. 51) 2.0: 1.0 : 2.7 : 2.7. First flagellomere 3.4 times as long as broad apically. Postnotal junction striated and matte, 0.50–0.55 times as long as metanotum. Sculpture of propodeum and pleural sclerites less developed than in female. Fore wing (Fig. 71): RH 2.85, MR1 1.10, MR2 1.15, M2M3 1.05. Apical angle of radial cell as in female. Hind wing: RQ 2.7. Hypopygium broadly lanceolate, rounded at apex, hirsute, with dense marginal thorn-like setae (Fig. 77). Penial valve rather short (0.7–0.8 times
as long as volsella), slightly dilated subapically. Paramere rounded distally and densely covered by erect hairs and short setae (Fig. 83).

**Material examined**


**Etymology**

Sarbáz (in Uzbek) corresponds to the lowest military rank in the Ancient Bukhara emirate; dressed in bright-colored uniforms those soldiers were rather brave but very undisciplined warriors.

**Distribution**

Middle Asia: West Tien-Shan (North-East Uzbekistan, South Kazakhstan).

**Biology**

Both females collected in Dzhabagly were observed visiting flowers of *Daucus carota* L. (Apiaceae).

**ACKNOWLEDGEMENTS**

I am deeply thankful to Prof. Dr. Vladimir Tobias (ZISP) and to Dr. Alexander Antropov (ZMMU) for the possibility to examine type specimens from the collections of V. Gussakovskij, F. Morawitz, and O. Radoszkovski. I would also like to express my gratitude to Dr. Amnon Freidberg (TAUI) for his help in the preparation of the manuscript, to Dr. Christian Schmidt-Egger (Herrsching, Germany) for his valuable comments, and to Dr. Olga Orlova (TAUI) for the photographs. This study was supported by a generous financial help provided by the Ministry of Absorption, Israel.

**REFERENCES**

Gussakovskij, V.V. 1935. To the wasp fauna (Hymenoptera, Sphecoidea et Vespoidea) of Western Tajikistan. Trudy Tadjikskoi bazy AN SSSR 3: 409–467. [in Russian]


