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DESCRIPTION OF THE FEMALE OF *CORONONCODES SICULUS* BEZZI (DIPTERA: ACROCERIDAE)

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Abstract: The female of *Corononcodes siculus* Bezzi (Acroceridae) and the male genitalia are described for the first time.
Key words: Diptera, Acroceridae, *Corononcodes siculus*, Spain.

Descripción de la hembra de *Corononcodes siculus* Bezzi (Acroceridae).
Resumen: Se describe la hembra de *Corononcodes siculus* Bezzi (Acroceridae) y la genitalia del macho por primera vez.
Palabras clave: Diptera, Acroceridae, *Corononcodes siculus*, España.

Introduction

In 2005, the author received a lot of dipterological material for study. It had been collected in southern Spain, concretely in the Natural Park of Cabo de Gata-Níjar (Carles-Tolrá & Aguirre-Segura, 2007) in the province of Almería, an arid and dry habitat. Among hundreds of flies an only specimen of Acroceridae was found. Thanks to the keys by Bezzi (1923), Sack (1936) and Nartshuk (1997) it was identified as *Corononcodes* Speiser. Moreover, the wing venation was almost equal to that of *C. coronatus* Speiser (cf. Fig. C, Speiser, 1920) and *C. siculus* Bezzi (cf. Fig. 23, Taf. III, Sack, 1936). This genus was described in 1920 with an only species (*Corononcodes coronatus* Speiser) collected in South Africa and is easily distinguishable from other acrocerid genera by the following combination of characteristics: eyes bare; antennae placed on vertex; antennal flagellum much longer than scape and pedicel together, rounded and flattened and postpronotum normal, not joining in front of scutum (Nartshuk, 1997). *Corononcodes* belongs to the subfamily Panopinae which, according to Schlinger (1981) and Nartshuk (1997), can be separated from the subfamily Acrocerinae, among other characteristics, by having all tibiae produced on outer apical margin into an acute spur.

In 1923, Bezzi described the first and up to now only Palaearctic species of this genus, *Corononcodes siculus* Bezzi (1923) from Sicily (Italy), based on an only male specimen collected in 1895. Bezzi, in his description, wrote "le tibie mediane et posteriori terminano internamente all'apice con una robusta sporgenza, simile a corto sperone". Later, Sack in his work of 1936 wrote "Die t_2 und t_3 tragen an ihrer Innenseiten einen kräftigen spornartigen Vorsprung", I think he didn't study the holotype of *C. siculus* and simply translated the Italian description to German.

When studying the new specimen and comparing it to the descriptions by Bezzi (1923) and Sack (1936), it was observed that there were clear differences, for example, shorter antennae, wing brownish, legs totally brown and tibiae without apical spur, ending obliquely, but not ending in a spur. Was it a new species? One of the problems that came up, was to be able to determine its sex (we must point out that Speiser wasn't sure of the sex of his specimen). That was due to the fact that only one specimen was collected and the abdomen had the ventral part completely sunk (concave) in a way that it is found stuck to the dorsal part in a way that the genitalia is somewhat hidden and difficult to be studied. Under these conditions, I firstly came to the conclusion that it was the male of a new species. Among the differences found in the description, the strogest difference taken into account to consider this new specimen as a new species was the absence of tibial spurs. But, if it was a female, then could it be a case of sexual dimorphism?

To try to find out for sure the sex, the specimen was compared with the acrocerid *Astomella hispaniae* Lamarck (1816), since it belongs to the same subfamily. Consequently, 42 males and 25 females of this species were studied. The genitalia of both sexes is obviously different (internally), but externally they have similar parts. The female genitalia shows lateral projections that reminds that of the male genitalia. So, if you saw an only specimen of *A. hispaniae* for the first time, you would probably find it hard to know to which sex it belongs to. Or rather, the male genitalia is almost unmistakable, whereas the female genitalia may be easily mistaken with that of the male. A distinct difference between both sexes is that the male genitalia is located in the apical part of the abdomen, whereas on the female it is clearly situated in the ventral part, in the middle of the abdomen. Obviously after seeing so many specimens of both sexes, it is very easy to distinguish both sexes. When studying the new specimen of *Corononcodes* again, it was observed that the genitalia was situated ventrally, but not in the middle but preapically which made you think that it could actually be a female. That is why other possible differences between both sexes were looked for. The only characteristic found was in the antennae, as the flagellum is higher and blunt in the male and lower and pointed in the female. No significant differences were found in the legs, nor the wings nor the body. The apical spur of the three tibiae, but specially that of mid and hind ones, is well developed and distinctly visible in both sexes. Conclusion, *Astomella hispaniae* shows a slight sexual dimorphism.

On the other hand, in the species *Acrocera sanguinea* Meigen, 1804 (= *trigramma* Loew, 1845) a very acute sexual dimorphism can be observed. So, for many years, *A. sanguinea* and *A. trigramma* were considered two different species until De Jong (2001) found them mating.

These two exemples reinforce a possible sexual dimorphism in *C. siculus*. A re-examination of the new specimen confirmed it was a female, not a male. Consequently, I came to the conclusion that it belonged to the female of *C. siculus* and not to a new species. Said in another way, *C. siculus* shows a very big sexual dimorphism.

As said before, Speiser wasn't sure of the sex of his specimen. So, another doubt arose. Was the specimen of Bezzi really a male? To be able to answer this question, the next step was to study the holotype of *C. siculus*, deposited in the Museo Civico di Storia Naturale (Milano, Italy) and other specimens. When I wrote to the curator, Dr. Rigato, asking him for the loan of the holotype, he wrote the following to me: "It is the only specimen we have. I wonder, if colour photographs (taken through a stereomicroscope) could be enough for your purposes? So, we can avoid mailing such an important specimen". Obviously, I accepted his petition and I asked him for 13 photographs of it from differnt angles and parts, and a photograph of the original label. On the other hand, fortunately, Dr. Báez had two more specimens of *Corononcodes* from the Canaries that were also studied.

On the other hand, in 1936, Frey on the basis of another specimen (male after him) recorded it from the Canaries, although he wrote ("Ich glaube, dass ich mich nicht irre....."), that he thought he was not mistaken in the identification of this specimen. It was included in the Catalogue of Diptera of Spain (Carles-Tolrá y Báez, 2002). However, Nartshuk (2004) in Fauna Europaea records this species from the Canaries as doubtful, possibly because of the comment made by Frey (personal opinion from M. Báez and me). So, the specimen identified by Frey (deposited in the Finnish Museum of Natural History) was also revised to confirm its identification and its record or not from the Canaries. Consequently, altogether, three other specimens of *Corononcodes* were studied.

Firstly, these three specimens were compared with the holotype (from photographs) of *C. siculus* and it was proved they belonged to this species. Moreover, the four were males and it could be confirmed that the new specimen was actually a female. The surprise came when it was proved in the four specimens (and more important, in the holotype) that the tibiae end obliquely, lacking spurs, didn't end in the spur that Bezzi and Sack mentioned in their descriptions.

Moreover, regarding the wing, after having compared the four specimens with the descriptions and figure (Sack, 1936: Taf. III, Fig. 23), some mistakes were found: veins R_1 and R_{2+3} are not fused; the vein almost reaching the wing apex is R_{2+3}, not costal vein; the vein R_5 is very slightly S-shaped, not straight; and the veins M_{3+4} and Cu_2 don't reach the wing margin, but almost.

So, I arrived to the conclusion that the descriptions by Bezzi and Sack were in part wrong and are open to misinterpretations. *Corononcodes* clearly belongs to the subfamily Panopinae by the combination of characteristics mentioned above. Nevertheless, it is clear that the presence or abscence of tibial spurs is not a good feature to separate both subfamilies.

Description of the female

DESCRIPTION (Figs 1, 4, 10, 12, 14):
Body (Fig. 1) completely brown and dark brown, with short hairs only, setae absent.

Head dark brown. Ocellar triangle and occiput with short white hairs. Eyes almost dichoptic, frons very narrow, linear. Antenna (Figs 10, 12) brown: scape and pedicel very short; pedicel dark brown basally; flagellum very long, banana-like, with clear points, apical third tapering, a sensorial pit at the inner basal side is present.

Thorax (Fig. 1) dark brown. Mesonotum, very convex, and scutellum both covered with short white hairs. Scutellum very large. Anepisternum and metapleuron covered with short white hairs. Anepimeron, katepisternum and metanotum bare.

Wing (Fig. 4) somewhat dark, brownish, specially in the base and anterior part. Vein R_1 very wide and touching, fused with vein Sc. Both veins fused with costal vein. Vein R_{2+3} narrower, almost touching vein R_1, extending beyond the fusion of costal, subcostal and R_1 veins, and running parallel to the wing margin leaving a very narrow membranous stripe, not reaching wing apex. Vein R_5 thin, very slightly S-shaped. Transverse vein at base of vein R_5 distinct. Veins R_5, M_{1+2}, M_{3+4} and Cu_2 not reaching the wing margin, but almost. Vein M_{1+2} surrounded by a Y-shaped fold. Anal vein short, fold-like. Calypters whitish, transparents. Haltere brown.

Legs (Fig. 1) brown, with short hairs. Hind coxa, femur and tibia darker. Tibiae: apex oblique, apical spurs absent, apical margin serrate, with minute denticles. Hind tibia (Fig. 14) slightly lower below middle.

Abdomen (Fig. 1) brown, wide, rounded, covered with short brownish hairs, with 8 (9?) pregenital segments. Tergite 8: lateral apexes lengthened, resembling the protuberances of male sternite 8, but more pointed. Sternite 8 with a posterior and an anterior clear area.

Genitalia (not dissected): cercus small, whitish, with short hairs. After sternite 8 there are two small dark sclerites (sternite 9?). Between the cerci there is a laminar, membranous, clear structure (hypoproct?), with brownish apex.

Total body length: 3.7 mm.

MATERIAL EXAMINED: Spain: Almería, Parque Natural Cabo de Gata-Níjar, Observatorio de Aves de las Salinas, 24.9.2004 1 female, yellow Moericke trap among stabilized dunar vegetation of very scarce development near to marine salt explotations, A.Aguirre leg. Specimen preserved in alcohol (70º) and deposited in the author's private collection.

PARTIAL DESCRIPTION OF THE MALE (Figs 2, 3, 5-9, 11, 13):
Antenna (Fig. 11): flagellum jockey stick-shaped, much longer than that of the female. Wing (Fig. 5) as the female, but transparent, hyaline; transverse vein at base of vein R_5 fold-like. Tibiae (Fig. 13): apex distinctly oblique, apical spur absent. Abdomen with 6 visible pregenital tergites. Sternite 8 with a rounded lateroposterior protuberance bearing long hairs.

Genitalia (Fig. 6-9) (not dissected): aedeagus sheath-like, ventrally well sclerotized, apex upcurved, dorsally membranous with a black longitudinal (evaginable?) structure in the middle. Gonostyles db-shaped: base rectangular, with a

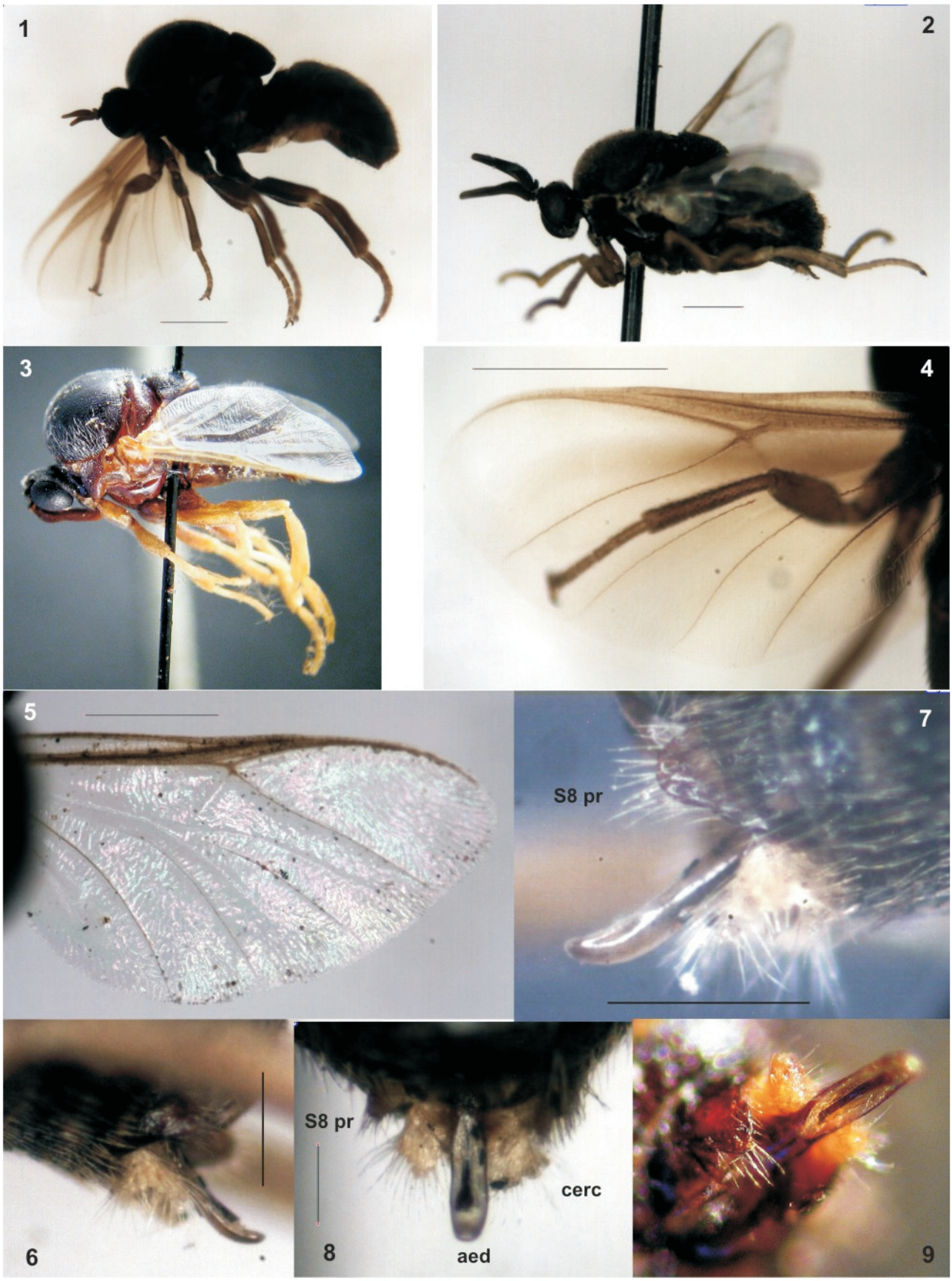

Fig. 1-9. *Corononcodes siculus* Bezzi: **1.** female habitus; **2.** male habitus; **3.** male habitus (holotype); **4.** female wing; **5.** male wing; **6.** apex abdomen, lateral view; **7.** genitalia, lateral view; **8.** genitalia, dorsal view; **9.** genitalia, dorsal view (holotype). Abbreviations: aed = aedeagus, cerc = cercus, pr = protuberance, S = sternite. Scale bars: Figs 1, 2, 4, 5 = 1 mm; Figs 6-8 = 0.5 mm.

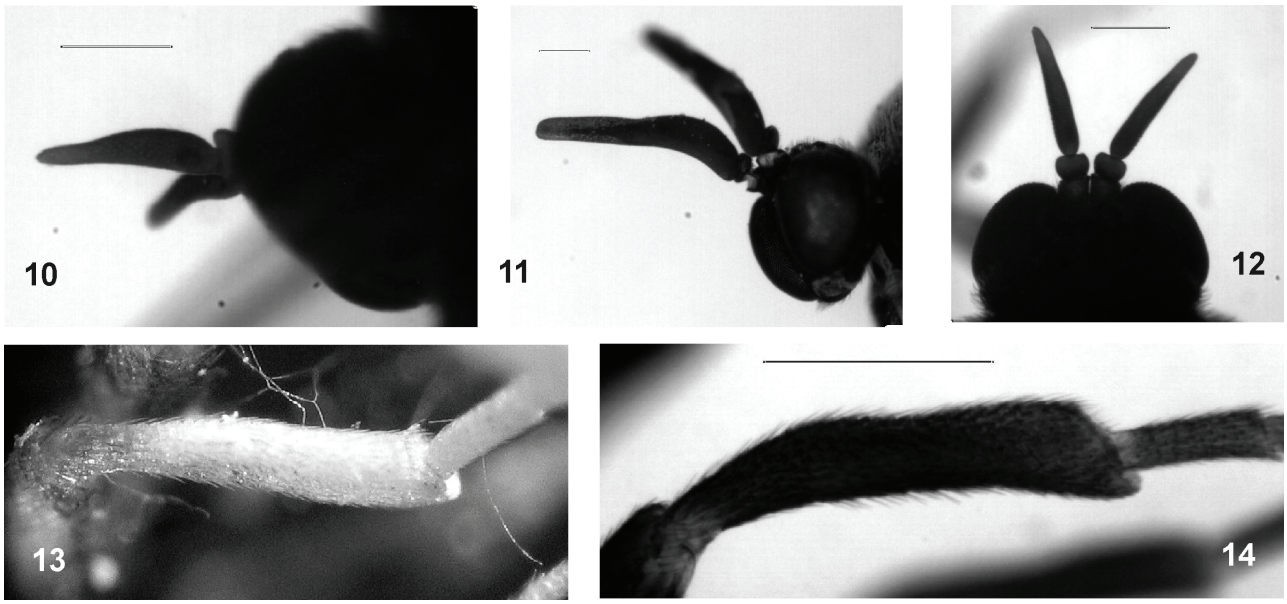

Fig. 10-14. *Corononcodes siculus* Bezzi: **10.** female antennal flagellum, broadest view; **11.** male antennal flagellum, broadest view; **12.** female antennae, dorsal view; **13.** male mid tibia, anterodorsal view (holotype); **14.** female hind tibia, lateral view. Figs 6-8, 10-12, 14 = 0.5 mm.

narrow, pointed, inner posterior prolongation. Cercus yellow, long haired.

Total body length: 4.0-4.4 mm.

MATERIAL EXAMINED: Holotype male: original label: Licata X-[18]95 (hand writing). Tenerife: Medano, 18.IV.1930 1 male, R.Frey det. Tenerife: Las Cañadas, 26.vi.1973 1 male (sweeping on vegetation, high mountain), M.Báez leg. and coll. Tenerife: Las Cañadas, 4.vi.1995 1 male ($3B_8$/ DI 427, flight interceptor, high mountain), A.Camacho leg. and M.Báez coll.

BIOLOGY: the female specimen was collected in an arid and dry habitat by a yellow Moericke trap placed among stabilized dunar vegetation of very scarce development near marine salt explotations. Two of the male specimens (Báez and Camacho) were collected in high mountain in a characteristic area, with endemic vegetation and extreme climate. Nothing is known about the biology and immature stages of these flies. Nevertheless, it seems they are related with arid and dry habitats.

DISTRIBUTION: hitherto only known from Italy (Sicily) and Spain (mainland and Canaries). The female specimen represents the first capture and record of this genus to mainland Europe in the Iberian Peninsula. The specimens from Canaries confirm its presence in these islands. This genus is extremely rare in collections, as only very few specimens are known. It must be pointed out that this new specimen is the second European one collected after 109 years!

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