

A new *Cryptocephalus* of the *C. curvilinea* – group (Coleoptera, Chrysomelidae) from the Atlantic coastal marshes of Southern Spain and Portugal

JOSÉ MIGUEL VELA¹ Y GLORIA BASTAZO²

1. Instituto Andaluz de Investigación y Formación Agraria y Pesquera (IFAPA), 29140 Churriana, Málaga, Spain. josem.vela@juntadeandalucia.es
2. IES Jacarandá, 29140 Churriana, Málaga, Spain. gloria.bastazo@gmail.com

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ABSTRACT

A new species, *Cryptocephalus baenai*, is described from the Atlantic coastal marshes in southern Spain and Portugal. It is closely related to *C. muellerianus*, known from eastern and south-eastern Spain, included in the *C. curvilinea* - group. Remarks on the host plant and distribution of the four species composing this group are made. Furthermore, a key for these species is provided.

Key words: leaf beetles, diversity, chrysomelid, Cryptocephalinae, Andalusia, new species.

RESUMEN

Un nuevo *Cryptocephalus* del grupo de *C. curvilinea* de las marismas atlánticas del sur de España y Portugal

Se describe *Cryptocephalus baenai*, perteneciente al grupo de *C. curvilinea*, de las marismas atlánticas del sur de España y Portugal. Es una especie estrechamente relacionada con *C. muellerianus*, adscrita al grupo de *C. curvilinea*. Se discute la afiliación trófica y la corología de las cuatro especies que conforman el grupo. Finalmente, se ofrece una clave para la separación de estas especies.

Palabras clave: crisomélidos, Cryptocephalinae, nueva especie, plantas hospedadoras, distribución, España, Portugal.

INTRODUCTION

The genus *Cryptocephalus* was well studied from the standpoints of faunistics and taxonomy in the Iberian Peninsula (i.e., Spain and Portugal) by PETITPIERRE (2000). From this date, some papers have increased our knowledge on new records or new species for this area (RECALDE & PETITPIERRE, 2001; BASELGA & NOVOA, 2003; LÓPEZ-COLÓN, 2004; DE LA ROSA, 2008; PETITPIERRE & LENCINA, 2011). In addition, various contributions were recently made to the knowledge of the distribution and/or taxonomy of these species in the Iberian area (BASELGA & NOVOA, 2000, 2004; RECALDE *et al.*, 2001; DE LA ROSA, 2003; AGOIZ & LÓPEZ-COLÓN, 2004; AGOIZ, 2012; LENCINA *et al.*, 2006, 2007; GÓMEZ-ZURITA & PETITPIERRE, 2010; PETITPIERRE *et al.*, 2011) and in the North-African nearest territories (RUIZ, 2002; PETITPIERRE, 2007). The number of Iberian species of the genus *Cryptocephalus*, amounting 85, contrasts with greater richness in nearby countries such as France, with 100 species recorded (COSTESSÉQUE, 2000) or Italy, where 106 species have been reported (BIONDI *et al.*, 1994). It is difficult to decide whether the data of a lower species richness in the Iberian Peninsula shows a reality or has resulted from an obvious lesser historic effort of sampling.

In this paper, a new species of *Cryptocephalus* is described, closely related to the endemism in Eastern and Southeastern Spain *C. muellerianus* Burlini, 1955, included in the *C. curvilinea* Olivier, 1808 – group. The new species lives in the Atlantic coastal marshes of the most Southwestern part of Spain and adjacent Southeastern part of Portugal.

Cryptocephalus (*s. str.*) *baenai* n. sp.

Diagnosis

A sister species of *C. muellerianus*, of the *C. curvilinea*-group. It can be separated from near species in having dark frontal spots in male rather isolated, but joining in its inferior part, the puncturation of the pronotum disk superficial, few hairs in the basal middle of the elytron, two longitudinal, well-marked, reddish dark elytral stripes, one discal, the other circa-sutural and the lateral elytral margin darkened to the apex.

Description

Habitus cylindrical. Length: ♂♂: 4,6-5,0 (4,8) mm; ♀♀: 5,1-5,8 (5,6) mm. General colour yellow with reddish stripes and four black spots on each elytra.

Head: Labrum brown-reddish. The colouration of the front has sexual dimorphism: the males have two great black or dark brown spots in the inner part of the antennal insertions, which joins in their upper and lower parts, letting a small spot of the general colour; vertex with reddish spot. On the contrary, the females have two small black or dark brown spots in the inner part of the antennal insertions, which do not touch; these small spots are adjacent to a greater reddish spot of vertex. Puncturation is deeper and somewhat denser than that of pronotum.

Antennae reddish-yellow, somewhat darkened toward the apex. Antennomeres I to III nearly filiform, IV enlarged at apex, V and VI almost triangular, VII to X widened almost from the base, XI pointed and emarginated in its inner part, at 1/3 from apex.

Antennomeres IV to XI flattened, with a round pit in their ventro-apical portion. Relationship of the lengths of the antennomeres is: 15-5-7-8-10-10-10-11-10-10-13 (♂♂) y 15-6-7-8-9-9-10-10-9-8-12 (♀♀).

Pronotum pentagonal, reddish, with an anterior, two lateral, two longitudinal half-lateral that come from base and reach beyond the middle of the pronotum, and a discal small spot, of the yellow general colour. Base of pronotum with a thin yellow stripe, interrupted sometimes by the reddish colour. Anterior and posterior margins with a thin rim of black; lateral margins somewhat obscured, especially in the anterior half. The sides are not visible simultaneously from above. Its maximum width is from 1.39 to 1.45 (1.42) (♂♂), 1.40-1.51 (1.46) (♀♀) times its length in the midline. Puncturation well marked, the distance between points is smaller than the diameter of a point. The disc is less strong punctured and less dense, unlike to the corners, especially in their anterior ones.

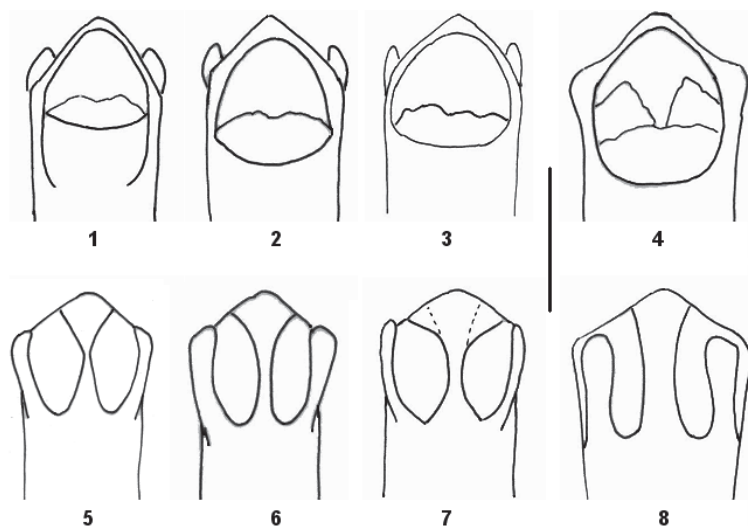
Elytra of the general colour with three indistinct stripes of reddish-brown: a) longitudinal between lines V and VII, which reaches 2/3 of elytra, b) longitudinal between lines I and III, which after 1/3 basal is narrowed and to the distal 2/3 widen again without reaching the elytra edge, c) in the postero-external margin. In addition, each elytra has four black spots, two anterior and two half posterior, as follows: a) humeral b) anterior, between the rows III-IV; c) somewhat smaller than humeral, and far in the line equivalent of two humeral spots thereof; d) between the rows III-V (sometimes IV-V), only slightly behind the c. Half-lying setae occur mainly along the suture and to the posterior half of elytra. Elytral length 1.69-1.79 (1.74) (♂♂), 1.79-1.94 (1.87) (♀♀) times the medial length of pronotum.

Scutellum triangular, scarcely punctuated, slightly impressed in the middle of its base; in the male longer than wide, in females approximately equilateral. Colour reddish margined of black.

Legs reddish-brown, with abundant, erect, yellow setae. Claws black. Sexual dimorphism affects protarsomere I, so that elytra length is 5.06-5.92 (5.35) (♂♂) and 6.61-8.18 (7.28) (♀♀) times the length of protarsomere I; also, the length/width relationship of protarsomere I is 1.25-1.45 (1.30) (♂♂) and 1.10-1.33 (1.22) (♀♀).

The ventral coloration is black with the exception of proepimere, mesepisternae, the portion of sternite III (first visible) between the metacoxae and a marginal band around the marginal and apical sides of abdomen. Pygidium yellow. In addition, in females are yellow also: prosternal apophysis, mesosternae, mid-anterior part of sternite III and sternite VII almost entirely, including ovigerous pit.

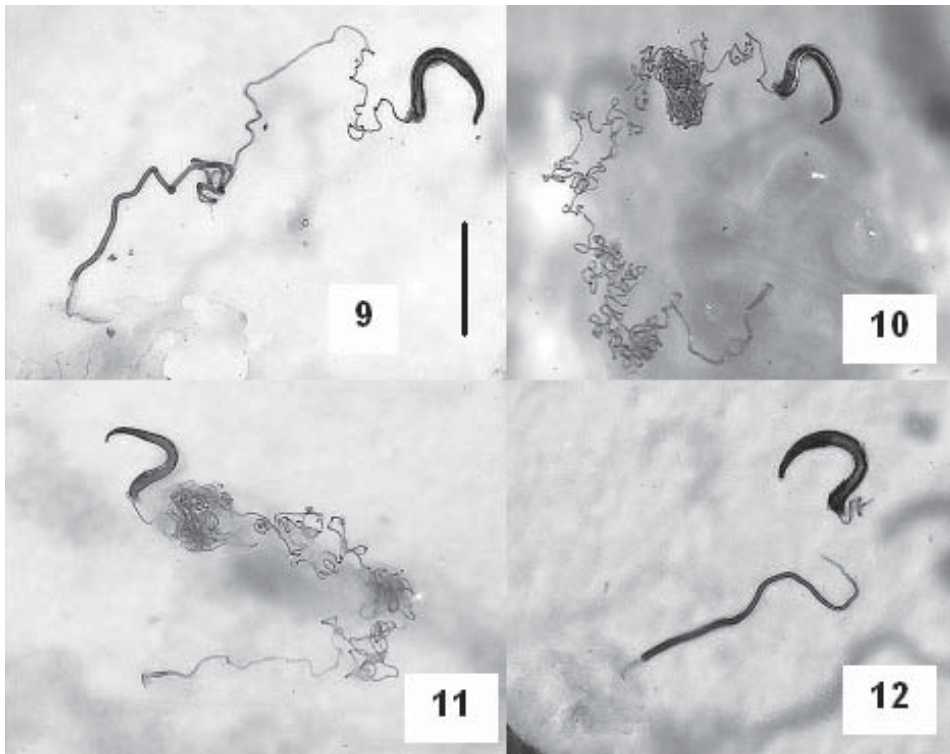
Aedeagus: In dorsal view (fig. 1) it is very similar to that of *C. muellerianus* (fig. 2) and *C. bahilloi* López-Colón, 2004 (fig. 3), and rather different to that of *C. curvilinea* (fig. 4). In ventral view (fig. 5) it can be separated from *C. muellerianus* (fig. 6) and *C. bahilloi* (fig. 7) in having the medial keel as a narrowed waist; in *C. curvilinea*, the medial keel is parallel sided (fig. 8).



Figures 1—8. Aedeagi of *Cryptocephalus baenai* (1, 5), *C. muellerianus* (2, 6), *C. bahilloi* (3, 7) and *C. curvilinea* (4, 8) in dorsal (1, 2, 3, 4) and ventral (5, 6, 7, 8) views. Scale bar = 1.0 mm.

Figuras 1—8. Edeagos de *Cryptocephalus baenai* (1, 5), *C. muellerianus* (2, 6), *C. bahilloi* (3, 7) y *C. curvilinea* (4, 8) en vista dorsal (1, 2, 3, 4) y ventral (5, 6, 7, 8). Escala = 1.0 mm.

Spermatheca as in fig. 9. Body is C-shaped; *ductus* not very long, widened and sclerotized in the distal half. In the next *C. muellerianus* (fig. 10) the body is in more closed curve, the *ductus* is very long, thin and coiled, similar to that of *C. bahilloi* (fig. 11), which has a thinner body. In *C. curvilinea* (fig. 12), the body is regularly curved and the *ductus* is much shorter than that of the other species, widened and heavily sclerotized in most of its way. AGOIZ & LÓPEZ-COLÓN (2004) figured and made observations on the morphology of the spermatheca in *C. bahilloi* and *C. muellerianus*.



Figures 9—12. Spermathecae of *Cryptocephalus baenai* (9), *C. muellerianus* (10), *C. bahilloi* (11) and *C. curvilinea* (12). Scale bar = 0.5 mm.

Figuras 9—12. Espermatecas de *Cryptocephalus baenai* (9), *C. muellerianus* (10), *C. bahilloi* (11) y *C. curvilinea* (12). Escala = 0.5 mm.

Type material

Holotype (♂) and 23 paratypes (13 ♂♂, 10 ♀♀) labelled: “Hispania, Huelva, Lepe, Marismas del Terrón, 14.06.2003, Bastazo and Vela leg.”; 9 paratypes: (5 ♂♂, 4 ♀♀) labelled “Hispania, Huelva, Lepe, Marismas del Terrón, 2.08.2002, Bastazo and Vela leg.”; 10 paratypes (6 ♂♂, 4 ♀♀) labelled “Hispania, Huelva, Lepe, Marismas del Terrón, 4.08.2002, Bastazo and Vela leg.”; 1 paratype (♂) labelled “Hispania, Huelva, Lepe, Marismas del Terrón, 5.07.1999, M. Baena leg.”; 3 paratype (1 ♂, 2 ♀♀) labelled “Portugal, Algarve, Castro Marim, Cerro Seixo, 18.08.1982, Artur R. M. Serrano leg.”; 1 paratype (♀) labelled “Portugal, Algarve, Castro Marim, Cerro Seixo, 2.08.1983, Artur R. M. Serrano leg.”; 1 paratype (♀) labelled “Portugal, Algarve, Castro Marim, Esteveira, 16.06.1987, Artur R. M. Serrano leg.”. Holotype and 2 paratypes are deposited in the Museo Nacional de Ciencias Naturales (Madrid, Cat. Types MNCN N° 2230); 5 paratype in Collection A.R.M. Serrano (Facultade de Ciências da Universidade de Lisboa), with accession numbers 9412, 9413, 12505 and 12462), the rest in the collections of E. Petitpierre (Palma de Mallorca), A. Warchałowski (Wrocław) and authors’.

Ecological information: Specimens were collected on inflorescences of *Limonium angustifolium* (Tausch) Degen and *L. algarvense* Erben, in the summer months, in salt marshes. The territory of distribution of this species is under environmental protection figures, the Marismas del Terrón (Lepe, Huelva) are part of the “Paraje Natural de las Marismas del Río Piedras” and the marshes of Castro Marim (Eastern Algarve, Portugal) are located in the “Reserva Natural do Sapal de Castro Marim e Vila Real de Santo António”.

Etymology: Species dedicated as a tribute to our dear friend and colleague, Manuel Baena (Córdoba), a well known Hemiptera specialist, who collected a specimen and called our attention to this interesting species.

Taxonomic and chorological remarks: The colouration, morphology of the aedeagus and the particular hole at the apex of antennomeres of *C. baenai* n. sp. pointed out its inclusion in the group of species of *C. curvilinea*, which also includes *C. muellerianus* and *C. bahilloi*. The particular antennal structure, with antennomeres IV to XI flattened into a triangle and a hole in their ventro-apical region is not usual in this genus, but can be found in several species with no cylindrical antennae, as *C. (Cerodens) emiliae* Burlini 1954, *C. (Heterichnus) informis* Suffrian 1847, *C. (s.str.) laetus* Fabricius 1792, *C. (s.str.) rugicollis* Olivier 1791 and, to some extent, in *C. (s.str.) numidicus* Bourdonné 1994 and *C.*

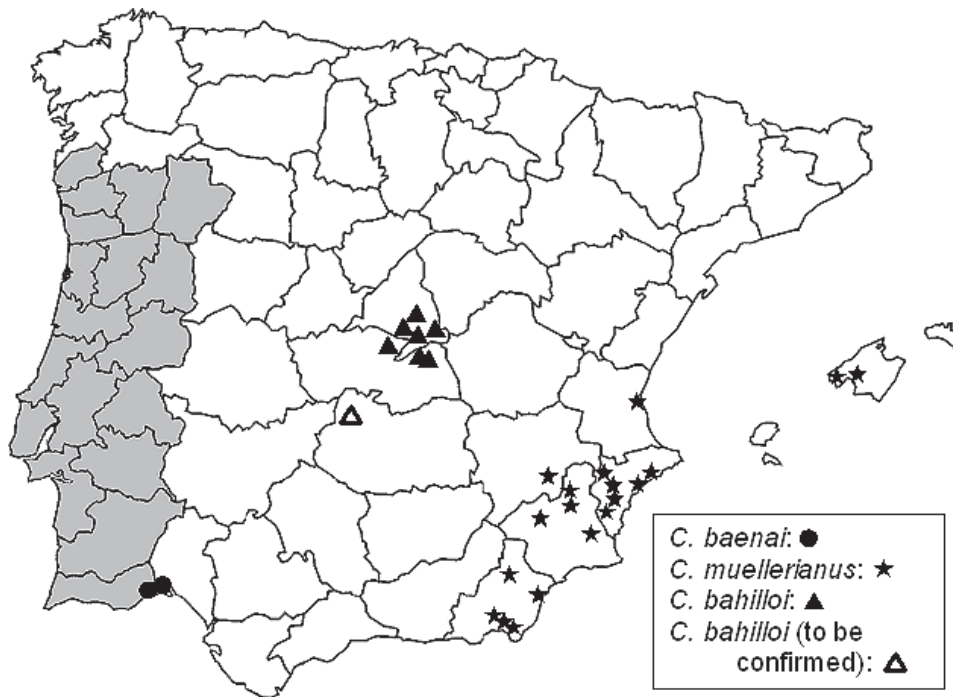


Figure 13. Distribution map of the Iberian endemic species *Cryptocephalus baenai*, *C. muellerianus* and *C. bahilloi* (each mark represents one or more nearby locations).

Figura 13. Mapa de distribución de los endemismos ibéricos *Cryptocephalus baenai*, *C. muellerianus* y *C. bahilloi* (cada marca representa una o varias localidades cercanas).

(*s.str.*) *creticus* Suffrian, 1847, among others (WARCHAŁOWSKI, *pers. com.*, 17/06/2008). The adaptative, phylogenetic or structural significance of this structure remains unknown.

The known distribution of four species of *C. curvilinea* - group is disjunct. *Cryptocephalus curvilinea* was described from Egypt, and is also known from Morocco, Algeria, Tunisia, Libya, Sicily, Corsica and Sardinia (BURLINI, 1955, COMPTE, 1971; RUIZ, 2002). *C. muellerianus* is spread (fig. 13) by Eastern and Southeastern Spain, with records in provinces of Almeria, Murcia, Alicante, Valencia, Baleares in Mallorca (BURLINI, 1955, COMPTE, 1971; PETITPIERRE 2000; RUIZ, 2002; VELA & BASTAZO, 2008) and Albacete (LENCINA, *pers. com.*, 16/12/2008). *C. baenai* lives in the Atlantic coast of Southwestern Spain and Southeastern Portugal (present data). Finally, *C. bahilloi* is known in central Spain from Madrid province: Rivas-Vaciamadrid (LÓPEZ-COLÓN, 2004), Aranjuez (DE LA ROSA, 2003), Valdemoro (MARTÍN DE EUGENIO, 2009), Chinchón, Villamanrique de

Tajo, Fuentidueña de Tajo, Valdaracete and Villarejo de Salvanés (DE LA ROSA, *pers. com.*, 16/01/2012) and Toledo province: La Guardia (AGOIZ, 2012), Seseña, Ocaña, Villacañas and Lillo (DE LA ROSA, *pers. com.*, 16/01/2012). Besides, the record from Ciudad Real (Horcajo de los Montes) by COMPTE (1971) for *C. muellerianus* is supposed to be referred to as *C. bahilloi* (see figure 13), though we have been unable to find the specimens in the Museo Nacional de Ciencias Naturales (Madrid). It is expected that this species will be also found in the next areas of the province of Cuenca, where its host-plant, is present (LÓPEZ-COLÓN, 2004).

The species of this group are monophagous on Plumbaginaceae of genus *Limonium* (= *Statice*) (BURLINI, 1955, PETITPIERRE, 2000). *C. curvilinea* was recorded on *Limonium emarginatum* (Will.) O. Kuntze in Ceuta (RUIZ, 2002) and as probable on *L. leptostachys* Pomel in Algery (PEYERIMHOFF, 1919, *sub Statice*). By the other hand, *C. muellerianus* was mentioned on *Limonium caesum* (Girard) Kuntze in Murcia (LENCINA *et al.*, 2006) and as possible on *L. duriusculum* in Mallorca (COMPTE, 1971); moreover, adults have been collected on *L. supinum* (Girard) and *L. thiniensis* Erben also in Murcia (LENCINA, *pers. com.*, 12/06/2008). In the provinces of Madrid and Toledo, *C. bahilloi* lives on *L. dichotomum* (Cav.) Kuntze (LÓPEZ-COLÓN, 2004; AGOIZ, 2012).

Key for the separation of the species of *C. curvilinea* - group.

The species of *C. curvilinea*-group can be separated according the following characters:

1. Elytra hairless.....*C. curvilinea*
- 1'. Elytra with yellow, semi-erect hairs.....2
2. Elytra lacking net longitudinal reddish stripes, at most, slightly insinuated. The distance between humeral and post-humeral dark spots is at most 1.5 times the diameter of the humeral spot..... *C. bahilloi*
- 2'. Elytra with discal and circa-sutural reddish longitudinal stripes clearly visible. Distance between humeral and post-humeral dark spots greater than 1.5 times the diameter of the humeral spot.....3
3. Elytra very hairy all over its surface. Pronotal puncturation deep. Outer edge of elytra to apex slightly darkened. Dark spots in front of the male jointed in a great one.....*C. muellerianus*

- 3'. Hairs very rare in the basal half of elytra, more frequent to the apical portion. Pronotal puncturation shallower. Outer edge of elytra to the apex very dark. Dark spots of the male front individualized but united in their lower portion.....*C. baenai* n. sp.

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