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## A new bee of the genus *Cubitalia* from Israel

(Hymenoptera: Apidae)

With 13 figures

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### Summary

A new species of the bee genus *Cubitalia* is described and figured from both sexes collected in Israel from flowers of *Symphytum brachycalyx* (Boraginaceae). *Cubitalia (Cubitalia) baal* sp. n., is most readily distinguished by the combination of the structure of the male metabasitarsus and terminalia. The new combination *C. (C.) monstrosa* (RISCH) is established.

### Zusammenfassung

Eine neue *Cubitalia*-Art (Hymenoptera: Apidae), die in Israel von Blüten von *Symphytum brachycalyx* (Boraginaceae) gesammelt wurde, wird in beiden Geschlechtern beschrieben. *Cubitalia (Cubitalia) baal* sp. n., unterscheidet sich klar in der Struktur des männlichen Metabasitarsus und der Terminalia. Eine neue Kombination *C. (C.) monstrosa* (RISCH) **comb. n.** wird etabliert.

### Keywords

Apoidea, Anthophila, Apinae, Eucerini, Middle East, taxonomy

## Introduction

Species of the genus *Cubitalia* are robust eucerine bees distributed in Eastern Europe, Central Asia, and the Middle East. In its present sense the genus consists of three subgenera (MICHENER, 2000) – *Opacula*, confined to Kyrgyzstan; *Pseudeucera*, occurring from Hungary and Greece to the Ukraine; and *Cubitalia* proper previously known from Greece eastward to the Caucasus and South into Syria. Alternatively, RISCH (1999) considered *Opacula* and *Pseudeucera* to be synonyms of *Cubitalia* and downgraded the latter to a subgenus of *Eucera*, thereby considering all Old World Eucerini with two submarginal cells to constitute a single genus (contrary to PESENKO & SITDIKOV, 1988; MICHENER, 2000). TKALCŮ (1984) provided a revision of *Cubitalia* s. str., recognizing four species: *Cubitalia breviceps* (FRIESE) south-central Turkey and northernwestern Syria; *C. tristis* (MORAWITZ) from eastern Turkey and Georgia; *C. morio* (FRIESE) from northern Greece, the Balkans and across Turkey; and *C. boyadjiani* (VACHAL) from south-central Turkey and northernwestern Syria. RISCH (1999) described from mountains in southeastern Turkey a fifth species; *C. monstrosa* (RISCH), **comb. n.** While the phylogenetic placement of *Cubitalia* within *Eucera* still requires further investigation (hence its retention at the generic level

herein, following MICHENER, 2000), the recognition of *Opacula* and *Pseudeucera* within *Cubitalia* does indeed seem less than satisfactory, particularly given that *C. monstrosa* appears to vitiate some of the differences between these groups. Further cladistic work on *Cubitalia*, *Eucera*, and their affinities to other genera (i.e., groups with three submarginal cells) should be undertaken before further classificatory changes are proposed.

Herein I provide the description of a sixth species of *Cubitalia* s. str. (Figs. 1-2). The new species occurs in northern Israel, making this the most southerly record of the genus and suggesting the potential for further, undiscovered species in the mountainous regions of the Middle East (e.g., the mountains of Lebanon, Jordan, Syria, and further East in the mountains of Armenia, Azerbaijan, northeastern Iraq, and Iran). The morphological terminology follows that of ENGEL (2001). Given that the genital capsule is virtually identical across species of *Cubitalia*, I have followed the style of TKALCŮ (1984) and figured the apical aspect of the penis valves and gonostylus which exhibit the diagnostic features for the species. The remainder of the genitalic capsule is like that depicted by TKALCŮ (op. cit.) for *C. breviceps* (i.e., his figures 30 and 31).

## Systematics

### *Cubitalia (Cubitalia) baal*, sp. n. (Figs 1-13)

**Diagnosis:** The new species can be most readily identified by the bright, yellowish-orange vestiture of the mesosoma and anterior metasoma (Figs. 1, 2, 4, 6) which in combination with the structure of the male metabasitarsus (Figs. 7-9) and terminalia (Figs. 10-13) are immediately diagnostic. Overall, the species is most similar to *C. boyadjiani*, particularly in the female from which it can be separated by the absence of white setae laterally on the fifth metasomal tergum (such setae present in *C. boyadjiani*). The female of the new species also belongs to the class of those species with a straight vertex, not distinctly raised behind the ocelli. While there is some superficial similarity to *C. monstrosa*, the structure of the male sterna are quite different between the two (cf. Fig. 10-12 with those figures in RISCH, 1999; *vide etiam* Remarks, *infra*) and in the strong development of the double concavity along the margin of the male metabasitarsus (Fig. 7). The combination of all of these features serves to separate the new species from all others in the genus.

**Description:** ♂. Total body length 18.4 mm; forewing length 11.6 mm. Head broader than long (width 4.5 mm, length, as measured from vertex to clypeal apex, 3.5 mm), inner margins of compound eyes slightly divergent ventrally; face lateral to ocelli and above level of antennal toruli and ocellocular area depressed; clypeus obtusely angulate in profile; vertex immediately behind ocelli slightly raised in a small dome (Fig. 3). Intertegular distance 3.8 mm; median and parapsidal lines strongly impressed. Mesotibia not curved; mesotibial spur greatly thickened; mesobasitarsus with strong medial projection and depressed apically, as described and figured for *C. boyadjiani* (*vide* TKALCŮ, 1984); metabasitarsus strongly modified as depicted in figures 7-9, inner surface with dense brush of setae (Fig. 8). Pygidial plate apically truncate, apical margin relatively straight. Hidden metasomal sterna seven and eight as depicted in figures 10-12; apical aspect of genitalia as in figure 13 (remainder of genitalic capsule like that figured for the other species by TKALCŮ, 1984).



Figs 1-2: *Cubitalia (Cubitalia) baal* sp. n. – 1 lateral habitus of male holotype. – 2 lateral habitus of female paratype.

Integument of clypeus and labrum smooth; labrum with coarse punctures separated by a puncture width or less; clypeus with sparsely scattered, shallow, coarse punctures. Mandibular surfaces smooth. Integument of remainder of head strongly tessellate except faintly imbricate (nearly smooth) in small patches immediately anterior to and bordering median ocellus and along outer margins of lateral ocelli. Face with faint punctures



Figs 3-6: *Cubitalia (Cubitalia) baal* sp. n. – 3 facial aspect of male holotype. – 4 dorsal habitus of male holotype. – 5 facial aspect of female paratype. – 6 dorsal habitus of female paratype.

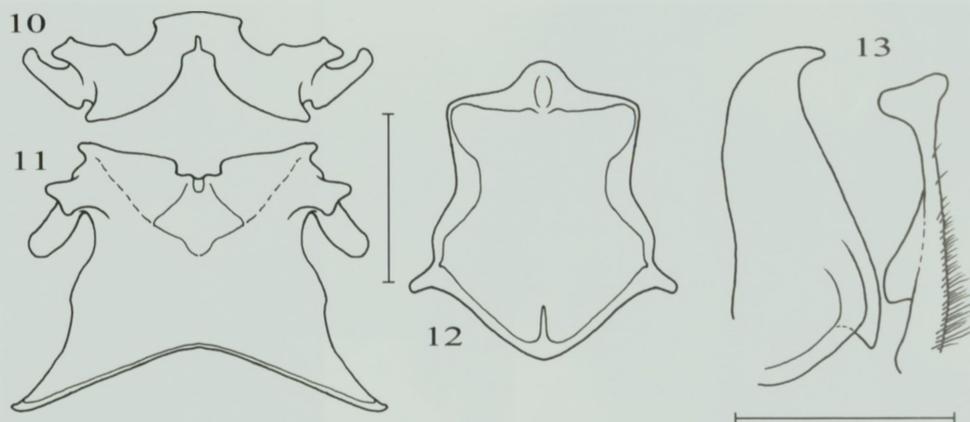
separated by 1–3 times a puncture width except on lower paracocular area punctures separated by a puncture width or less; punctures of vertex more distinct and contiguous; punctures on gena distinct and separated by a puncture width or less. Mesosoma strongly tessellate throughout except tegula faintly imbricate and impunctate; mesoscutum with distinct punctures separated by 2–3 times a puncture width centrally, along borders such punctures separated by 1–2 times a puncture width; mesoscutellum sculptured as on mesoscutum; metanotum strongly tessellate and impunctate (apparently slightly nodulate); propodeum strongly tessellate and impunctate on basal area, laterally with a few sparsely



Figs 7-9: *Cubitalia (Cubitalia) baal* sp. n., male hind leg. – 7 anterior surface of metabasitarsus. – 8 oblique, inner-posterior surface of metabasitarsus. – 9 outer dorsal surface of metabasitarsus.

scattered, shallow, faint punctures; pleura with faint punctures separated by 1–3 times a puncture width. Metasomal terga imbricate and punctate, punctures shallow, small, and separated by 1–2 times a puncture width; metasomal sterna imbricate except smooth between lateral tufts on fifth metasomal sternum.

Integument dark brown except with faint greenish tinge on mesosoma, clypeus and labrum yellow (Fig. 3), tarsomeres beyond basitarsi light brown. Wing veins dark brown, membrane hyaline. Setae of head and legs yellow (Figs. 1, 3, 4), those of mesosoma and



Figs 10-13: *Cubitalia (Cubitalia) baal* sp. n., male terminalia [orientations duplicate those of ТКАЛЦЎ (1984) for ease of comparison with his work]. – 10 apical aspect of seventh metasomal sternum. – 11 ventral surface of seventh metasomal sternum. – 12 ventral surface of eighth metasomal sternum. – 13 apical aspect of penis valve and gonostylus. Figures 10-12 share the left scale bar (= 1 mm), while the right scale bar (= 1 mm) is for figure 13.

first and second metasomal terga bright yellowish-orange (Figs. 1, 4), remainder of setae black. Setae on mesosoma and metasoma largely obscuring integumental surface.

♀. Generally as described for the male except in usual sex differences and in the following details: Total body length 19.7 mm; forewing length 11.3 mm. Head broader than long (width 4.5 mm, length, as measured from vertex to clypeal apex, 3.7 mm), vertex straight in frontal aspect, not raised immediately behind ocelli. Intertegular distance 4.1 mm. Legs unmodified. Pygidial plate broadly and weakly curved at apex, surface strongly and transversely striate. Integument of head black (Fig. 5). Setae of head black (Figs. 2, 5, 6), those of mesosoma and first and second metasomal terga orange (Figs. 2, 6), remaining setae black (without lateral patches of white on fifth metasomal tergum: Fig. 2) except outer and inner surfaces of legs with infuscate setae (i.e., appearing dark brown or smoky in color rather than truly black), some with slight dirty orange tinge.

**Type material:** Holotype: ♂ “Palästina: Montfort” [an older specimen, without more precise date, collector, or locality data]. Paratype: ♀ “N. Israel, Mt. Hermon, 1500 m, 26.iv.1992, R. Kasher // at *Symphytum brachycalyx* [BORAGINACEAE]”. Both specimens are located in the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas.

**Etymology:** The specific epithet is a noun in apposition and is the name of one of the idol gods of the Phoenicians discussed in the Old Testament. Baal, the son of the pagan god Dagon, was typically worshipped as a house god or one governing the local lands such as vineyards, thereby also representing a god of nature and fertility. Indeed, the name itself means “lord” and was sometimes been used for landlords or other property holders in Biblical times. Baal was also believed to be a warrior god who, holding a thunderbolt in hand, would descend from the clouds (also bringing with him the winter rains) and impose divine order over chaos. In the Bible, Baal is also known as Baalzebub, or Beelzebub, and becomes one of the fallen angels who followed Satan, himself cast from Heaven as the lead angel in the rebellion against God.

**Remarks:** There are considerable differences in the shape of the terminalia of the new species and that of *C. monstrosa* which may be superficially confused with the new species. Readers should carefully compare the structure of the sclerites as depicted herein and in RISCH (1999). For example, the eighth metasomal sternum in *C. baal* is considerably broader apically relative to its width at the level of the apodemes (Fig. 12), and the apicolateral angles are not as prominently produced, thereby lacking a small apical, marginal depression between them. Medially, the sternum has a broad and strongly protuberant convexity. In *C. monstrosa* this same sclerite is apically narrowed relative to the width of the disc at the level of the apodemes, the apicolateral angles are prominent and taper inward to form a small apical, marginal depression before the medial convexity, and the medial convexity is acutely-triangular and short, scarcely surpassing the apical tangent of the lateral angles. Considerable differences also exist in the complex shape of the seventh metasomal sternum (cf. Figs. 10-11 with those in RISCH, 1999) as well as the apical aspect and position of setae for the penis valves and gonostyli. The male metabasitarsus of *C. baal* has a distinct double concavity bearing setae (Fig. 7) while other species have a single concavity bearing setae.

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