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First record of the genus *Cryptanusia* Girault (Hymenoptera: Encyrtidae) in the Middle East, with description of a new species from Israel

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ABSTRACT

Cryptanusia larssoni Yefremova & Michaeli sp. n. (Hymenoptera: Encyrtidae), is described from the southernmost part of Arava Valley, Israel, from a single female collected by beating *Vachellia tortilis* subsp. *tortilis* (Mimosaceae) during a survey of arthropods associated with *V. t.* subsp. *tortilis* and *V. t.* subsp. *raddiana* in natural habitats and those adjacent to agricultural fields. This is the first record of the genus *Cryptanusia* from the Middle East. While the host of the new species is not established, several species of *Cryptanusia* are known to be reared from mealybugs (Hemiptera: Pseudococcidae).

KEYWORDS: Chalcidoidea, Encyrtidae, Tetracneminae, new record, new species, taxonomy, parasitoid wasps, acacia, Mimosaceae, *Vachellia*, Arava Valley, Israel, Levant, Middle East.

תקציר

מין חדש של צרעה טפילית מהסוג קריפטנוזיה ממשפחת האנצירטיים מתואר מנקבה אחת שנאספה בישראל בדרום הערבה על עץ השיטה הסוככנית, במהלך סקר פרוקי רגליים על על שיטים סוככניות ועל שיטים סלילניות בבתי גידול טבעיים וסמוכים לאזורים החקלאיים. זוהי המציאה הראשונה של הסוג קריפטנוזיה במזרח התיכון. מינים אחדים בתוך סוג קריפטנוזיה ידועים כטפילים של כנימות קמחיות. הפונדקאי של המין החדש אינו ידוע.

מילות מפתח: טקסונומיה, ישראל, לבנט, מזרח התיכון, מגוון מינים, ערבה, צרעות טפיליות, שיטה.

INTRODUCTION

The Encyrtidae consitute a diverse family of Chalcidoidea comprising parasitoids of other arthropods, with scale insects (Hemiptera: Coccomorpha) among their most economically important hosts (Noyes 2000). *Cryptanusia* Girault, 1917 is a small genus of encyrtids currently assigned to the subfamily Tetracneminae Noyes & Hayat 1994. The genus was established by Girault (1917) with *Cryptanusia albiclava* Girault, 1917 as a type species. *Anusoidea* Girault, 1926 was subsequently synonymized with *Cryptanusia* by Gordh and Trjapitzin (1981). The known species of *Cryptanusia* are distributed principally in the Oriental and Australasian regions (Noyes & Hayat 1994), with *C. aureiscutellum* (Girault, 1926) recently discovered in Greece (Japoshvili *et al.* 2023).

The host associations remain poorly known for several species of *Cryptanusia*, although available records indicate an association with mealybugs (Hemiptera:

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Pseudococcidae). For example, *C. albiclava* has been recorded from *Pseudococcus citriculus* and an unidentified *Pseudococcus* sp. (Rameshkumar *et al.* 2016). *Cryptanusia ajmerensis* (Fatma & Shafee, 1988), originally described from India as *Mira ajmerensis* and subsequently transferred to *Cryptanusia* by Noyes and Hayat (1994), has been reared from the mealybug *Chorizococcus sorghi* Williams, 1970 (Hemiptera: Pseudococcidae) (Rameshkumar *et al*. 2015).

During a survey of arthropods associated with *Vachellia tortilis* subsp. *tortilis* (Forssk.) Galasso & Banfi and *V. tortilis* subsp. *raddiana* (Savi) Kyal. & Boatwr (Mimosaceae) in the southern part of Arava Valley, Israel, a single female encyrtid representing an undescribed species of *Cryptanusia* was collected from *V. tortilis* subsp. *tortilis*. Here, we describe and illustrate this species as *Cryptanusia larssoni* sp. n. and compare it with related species. This constitutes the first record of the genus from the Middle East.

MATERIAL AND METHODS

The specimen examined and described in this study was collected as part of a survey of arthropods associated with *Vachellia* spp. in the southern Arava Valley, Israel. The survey covered trees occurring in natural habitats and in the habitats adjacent to agricultural areas. The specimen was collected from *V. tortilis* subsp. *tortilis* at a site immediately northeast of Elat, southern Arava Valley, near the Israel-Jordan border and adjacent to an agricultural area (29.601227°N 34.982620°E; 30 m a.s.l.) (Fig. 1). Arthropods were sampled by beating branches with a stick over a collecting bucket



Fig. 1. The habitat in the southern Arava Valley, with *Vachellia tortilis* subsp. *tortilis* where *Cryptanusia larssoni* sp. n. has been found, and the adjacent date palm plantation (photo by Eran Gisis).

and immediately collecting fallen arthropods from the bucket before they could disperse. Sampled branches were approximately 1.5–2.0 m above ground level.

The single female specimen was dry-mounted on a triangular card point, and the forewing was prepared on a temporary slide in glycerin. Morphological examination and measurements were conducted using a Leica M125 microscope. Photographs were taken using an Olympus SZX16 stereomicroscope equipped with a Canon EOS 80D camera and focus-stacked using Helicon Focus 7.6.2 Pro (Helicon Soft Ltd.; http://www.heliconsoft.com).

Morphological terminology in this article is adopted after Burks *et al.* (2025). The following abbreviations are used: fu_1, fu_2, fu_3, fu_4, fu_5 and fu_6 – antennal funiculars; Gt_1 – first gastral tergum; mv – marginal forewing vein; OOL – the minimum distance between the eye margin and the adjacent lateral ocellus; pmv – postmarginal forewing vein; POL – the minimum distance between the lateral ocelli; smv – submarginal forewing vein; stv – stigmal forewing vein.

The holotype is deposited in the entomological collection of the Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, Israel.

TAXONOMY

Family Encyrtidae Walker, 1837
Genus *Cryptanusia* Girault, 1917

Cryptanusia Girault, 1917: 14. Type species: *Cryptanusia albiclava* Girault, by original designation and monotype.

Anusoidea Girault, 1926: 128. Type species: *Anusoidea aureiscutellum* Girault, by original designation and monotypy; Gordh & Trjapitzin, 1981: 14.

Diagnosis: ***Female***. Head in dorsal view slightly wider than its median length; malar space short; antennal toruli located near mouth margin; antenna (Fig. 2D) with scape usually distinctly flattened; pedicel conical and short; flagellum strongly flattened and broadened. Mesoscutum and mesoscutellum with fine reticulate sculpture. Forewing with infuscate pattern, with apex hyaline; mv thick and dark; smv much longer than mv, pmv very short or absent, stv shorter than mv; calva narrow, basal cell covered with very sparse setae; gaster with cercal plates very near the base of gaster. ***Male***. Antennal toruli located high above mouth and about at level of lowest eye margin; scape only somewhat expanded; all funicular segments clearly longer than broad and with whorls of long sensilla; clava entire and with scale-like structure; forewing hyaline; genitalia slightly exerted.

Host: Pseudococcidae (Hemiptera).

Distribution: Australasia, China, Greece, India.

Cryptanusia larssoni Yefremova & Michaeli sp. n.

Fig. 2

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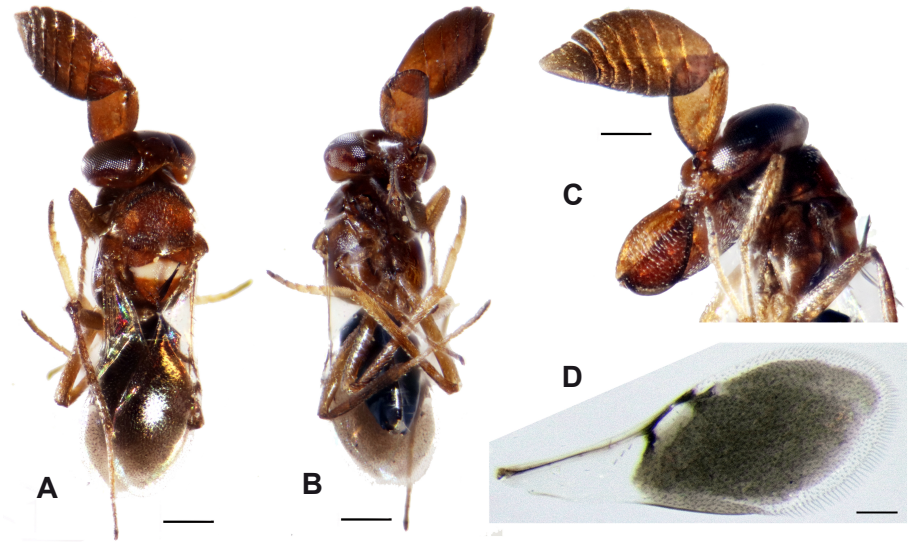


Fig. 2. *Cryptanusia larssoni* n. sp., female holotype: (A) habitus, dorsal view; (B) habitus, ventral view; (C) head and antenna, lateral view; (D) forewing. Scale bars: A–C = 0.2 mm; D = 0.1 mm.

Etymology: The species is named in honor of the American entomologist Jerri Larsson, a specialist in Phasmatodea, and a friend, colleague and mentor of the second author.

Diagnosis: Antenna: scape 1.8× as long as wide, deeply emarginated dorsally; pedicel 1.6×, fu_1 1.3× as long as broad, fu_2–fu_6 transverse, clava 1.2× as long as broad. Body brown, antennal clava brown; mesocutellum below axillae with transverse slightly widened medially white band (Fig. 2A).

The new species is most similar to *C. albiclava* from the Australasian and Oriental regions, which is characterized by the following set of characters: body mostly yellow, head and mesosoma yellowish orange, antennal clava white; mesocutellum with heart-shaped white patch (Rameshkumar *et al.* 2015: 11, fig. 6d). Antenna: scape 1.6×, pedicel 1.2×, flagellum 2.2×, fu_1 1.1×, clava 1.4× as long as broad.

Description: ***Female***. Length 1.5 mm.

Color: Dark brown, brighter dorsally and shiny with gold tint, mesoscutum and axillae bright brown, mesoscutellum yellow-orange, with transverse medially widened white band and tuft of long black setae before apex (Fig. 2A). Forewing with infuscate areas, venation dark brown. Gaster black with violet metallic reflections. Legs brown, except yellow tarsi (Fig. 2B). Antenna with scape brown-orange, greatly expanded, pedicel brown, flagellum brown, clava brownish (Fig. 2D).

Head: (Fig. 2C) In frontal view about 2.2× as broad as long; deeply excavated near occiput; POL 2.3× as long as OOL; eyes without setae. Face smooth. Malar

sulcus present. Toruli at lower level of eyes. Antenna scape 1.8× as long as wide, deeply emarginated dorsally; pedicel very short, 1.6× as long as broad; flagellum 1.8× as long as wide, fu_1 1.3× as long as broad, other funiculars transverse fu_2 4.3×, fu_3 4.3×, fu_4 6.2×, fu_5 5.3× and fu_6 5.5× as broad as long and clava 1.2× as long as broad.

Mesosoma: Pronotum transverse 6.6× as broad as long. Hind margin of pronotum deeply emarginated. Mesoscutum 1.25× as broad as long with strong alveolation. Scutellum 1.3× as long as broad, axillae connected. Axillae and mesoscutellum shiny and finely reticulate. Tuft of hairs on posterior margin of mesoscutellum, angled in different directions (Fig. 2A). Propodeum 4.0× as broad as long in middle, callus with several thin setae. Forewing 2.85× as long as wide; densely setose and infuscate (Fig. 2D); relative measurements: smv:mv:pmv:stv = 100:37:25:18; mv 2.7× shorter than smv, pmv 1.4× as long as stv.

Legs: First tarsomere of mid leg slightly shorter than tibial spur.

Metasoma: Petiole very short. Gaster 1.75× as long as wide; shiny with scattered thin setae. Gt_1 about 3.0× as broad as long. Ovipositor not extending beyond end of gaster.

Male. Unknown.

Holotype: ♀ **Israel:** Southern Arava Valley, N of Elot, near the Israel-Jordan border, 29.601227°N 34.982620°E, 30 m a.s.l., 15.iv.2026, N. Michaeli & A. Ramot, on *Vachellia tortilis* subsp. *tortilis*, beating.

Distribution: Israel.

Host: Unknown.

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Authors' contributions: NM, AR and GBZ conceived and designed the research and collected the material; ZY and NM analyzed the data and wrote the first draft of the manuscript; ZY responded to reviewers' critique; all authors approved the final version of the manuscript.

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