



***Kyklioacalles igualeja* sp.n. from Spain (Málaga)**
(Coleoptera: Curculionidae: Cryptorhynchinae)*

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with 10 figures

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Abstract

A new species of the western Palearctic weevil genus *Kyklioacalles* Stüben 1999 is described from Málaga province, southern Spain. This species is distinguished from the related species *Kyklioacalles alcornocalensis* Stüben 2011 from Spain (Cádiz) and *K. teter* (Boheman 1844) from Italy (Sicily). The new species is included in a molecular phylogeny of *Kyklioacalles* using the mitochondrial COI- and 16S-gene in a Bayesian analysis, and the genetic p-distances of the COI-gene to the closely related species are given in a map.

Key words. Curculionidae, Cryptorhynchinae, *Kyklioacalles*, new species, taxonomy, molecular phylogeny, morphology, Spain, Málaga

Introduction

Nine *Kyklioacalles* species have been described from Spain in the last 10 years. The cryptic life at the root collar of different Euphorbiaceae, Fabaceae, and Apiaceae suggests, that many new species from the south of the Iberian Peninsula and North Africa are expected within the next decade. This comparatively large Cryptorhynchinae (up to 8 mm) can only be sieved during the day or discovered - running on their host plants - at night. Flightless species, such as most *Echinodera* species, often have a very small distribution areas, which can consist of only a single mountain range.

***Kyklioacalles igualeja* sp.n.**

Type material

Holotype. 1♂, "Spain, Prov. Málaga, S Ronda: Serrania de Ronda, Igualeja, *Ficus carica* (sieving dead roots), N36°37'33" W05°07'27", 647 m, 21.8.2010"; coll. Curculio-Institute, D-Mönchengladbach. / **Paratype.** 1♀, data as for holotype, coll. Stüben; / **DNAtype.** 1♀, data as for holotype, coll. ZFMK: ZFMK-TIS-cES1058, ZFMK-DNA-JJ1058; GenBank Acc. no CO1: JN121403

Further Material

1sp., "Spain, Prov. Málaga, 11 km NW Estepona, Sierra Crestellina, Casares, N36°27'06" W05°16'39", 359 m, stream: *Pistacia*, *Olea*, *Smilax*, 12.4.2007", coll. ZFMK: JJ0271, E-0210-ks1; GenBank Acc. no 16S: GU981527, CO1: GU981479



Fig. 1 *Kyklioacalles igualeja* – HT, habitus, ♂ (dor./lat.)

Fig. 2 *Kyklioacalles alcornocalensis* – HT, habitus, ♂ (dor./lat.)

Description (Fig. 1, 3, 4A, 6, 8)

Length. 4.5 – 5.5 mm (without rostrum).

Head & Rostrum. Eyes big, rounded towards front and acuminate towards underside of rostrum. Rostrum of males dark brown, reaching 4/5 length of pronotum, short: 3.0x as long as wide between the insertion of the antennae (fig. 4A); closely covered with dark and beige scales in front of the base and finely punctuated towards apex; rostrum of

females clearly longer, shiny and even more finely punctuated. The last two antennal segments are slightly wider than long, trapezoidal and not clearly separated from the club (like *Kyklioacalles alcornocalensis* with ovals rounded last antennal segments which are separated from the club).

Pronotum. 1.23x as wide as long (holotypus); widest at the end of the first third of the pronotum; regularly rounded laterally towards the fore-margin and the base; with a flat channel-like depression at the sides directly behind the fore-margin. In lateral view contour-line of pronotum and contour-line of the elytra do not form a uniform bend, they are clearly separated; disc of pronotum flattened, without a channel on the disc or with humps at the sides. The integument consists of white scales, which disguise the underground. Black brown spots of scales are always visible in front of the base and behind the fore-margin; pronotum with fine punctures and with a single tiny, raised and very short bristle inside the dimple; the space between these dimples always covered with small and overlapping white scales.

Elytra. Cylindrical, 1.27x as long as wide (holotypus); widest at the end of the first third; sides of elytra more or less parallel in the anterior part, without "shoulders" behind the base, more acuminate-ovally rounded towards the apex. Contour-line of elytra flat behind the base in lateral view, the contour-line of the elytral slope forming an arc towards the apex. The predominantly black brown integument with its small beige spots consists of tiny, overlapping scales so that the underground is not visible. Always with a white spot directly behind the base on the 5th and 6th interval (excluding the suture stripe), here with a small hump; the most extensive white spots are between the apex and the middle of the elytra forming a conspicuous and broad fascia. Striae on the disc narrower than the intervals, with more elongated punctures; striae at the sides of elytra behind the base as wide as the intervals; here their punctures are rounded and deep.

Legs. Short; the marginal front femora reach fore-margin of the eyes, the hind femora clearly ending in front of the elytral apex. They are completely covered with predominantly white, oblong and overlapping scales and a dark brown spot of scales on the tibia.

Venter. 2nd sternite clearly shorter than 1st sternite and a little bit longer than sternite 3 and 4 together (Fig.3).

Female genital. Spermatheca, ovipositor, spiculum ventrale, see fig. 8.

Aedeagus. See fig. 6 (vs. *K. alcornocalensis*, fig. 7).



Fig. 3 *K. igualeja* – HT, (ven.)

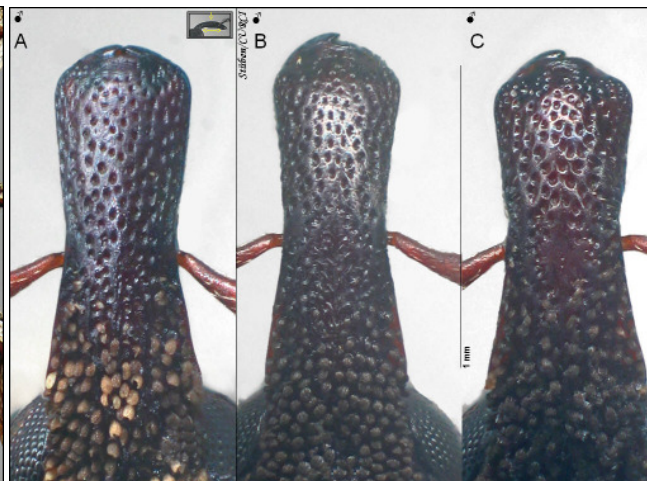


Fig. 4 Rostrum, ♂: *K. igualeja* (A) vs. *K. alcornoc.* (B) / *K. teter* (C)



Fig. 5 Habitat of *K. igualeja*: *Ficus*



Fig. 6 *K. igualeja* sp.n. – HT, aedeagus/endophallus (ven./lat.)



Fig. 7 *K. alcornocalensis* – HT, aedeagus/endophallus (ven./lat.)

Differential diagnosis (Fig. 2, 4, 7, 9-10)

Morphological analysis. The new species is closely related to *Kyklioacalles alcornocalensis* Stüben, Torres & Astrin, 2011 from Spain (Cádiz).

***Kyklioacalles igualeja*.** 1. elytra with nearly parallel sides in front of the middle; widest directly behind the base; always with a broad and white fascia on the elytral slope (Fig. 1); 2. rostrum clearly shorter, 3.0x as long as wide between the insertion of the antennae (Fig. 4A); 3. eyes bigger, rounded towards the forehead (Fig. 1, lateral); 4. medianlobus of the aedeagus shorter and wider (ventral view); compare the different circular structures of the endophallus: Fig. 6, 7.

***Kyklioacalles alcornocalensis*.** 1*. elytra more egg-shaped (oblong-oval), widest at or directly in front of the middle; without a white fascia (Fig. 2); 2*. rostrum more slender, 3.5x as long as wide (Fig. 4B); 3*. eyes narrower, long-ovaly rounded towards the forehead (Fig. 2, lateral); 4. medianlobus of the aedeagus longer (ventral view); compare the different circular structures of the endophallus: Fig. 6, 7.

The rostrum of the similar species *Kyklioacalles teter* (Boheman 1844) is a little bit shorter, densely and coarsely punctuated (Fig. 4C). This species from Italy (Sicily) has a different structure of the endophallus (see, Stüben et al. 2011: Fig. 7).

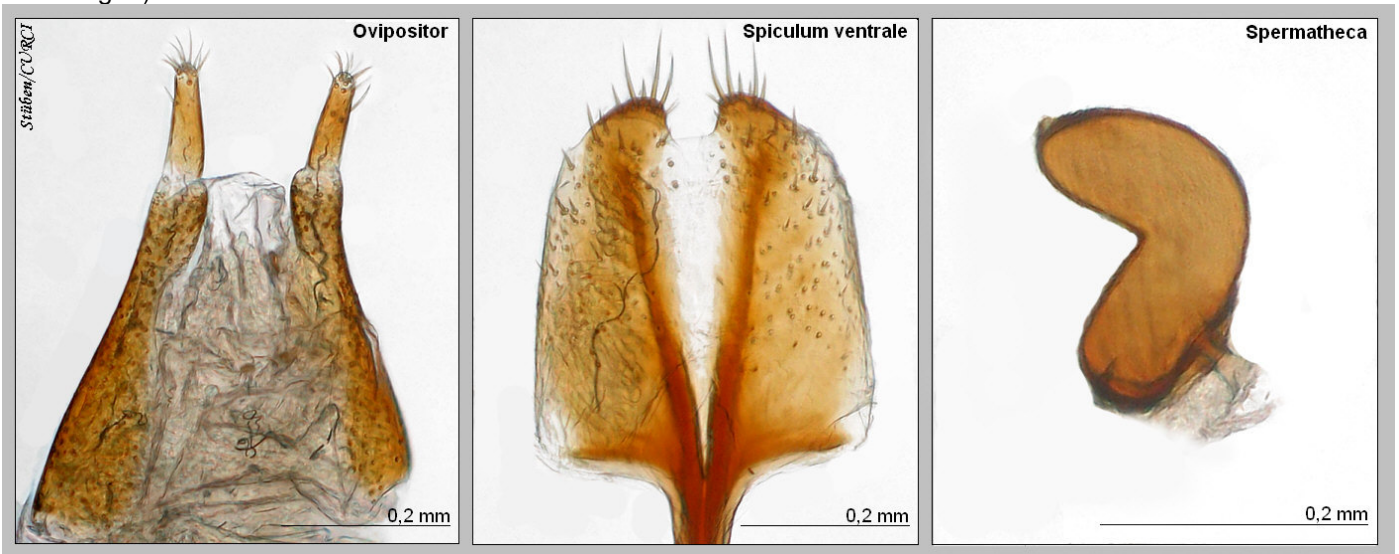


Fig. 8 *K. igualeja*, female genitalia: Ovipositor, spiculum ventrale, spermatheca.

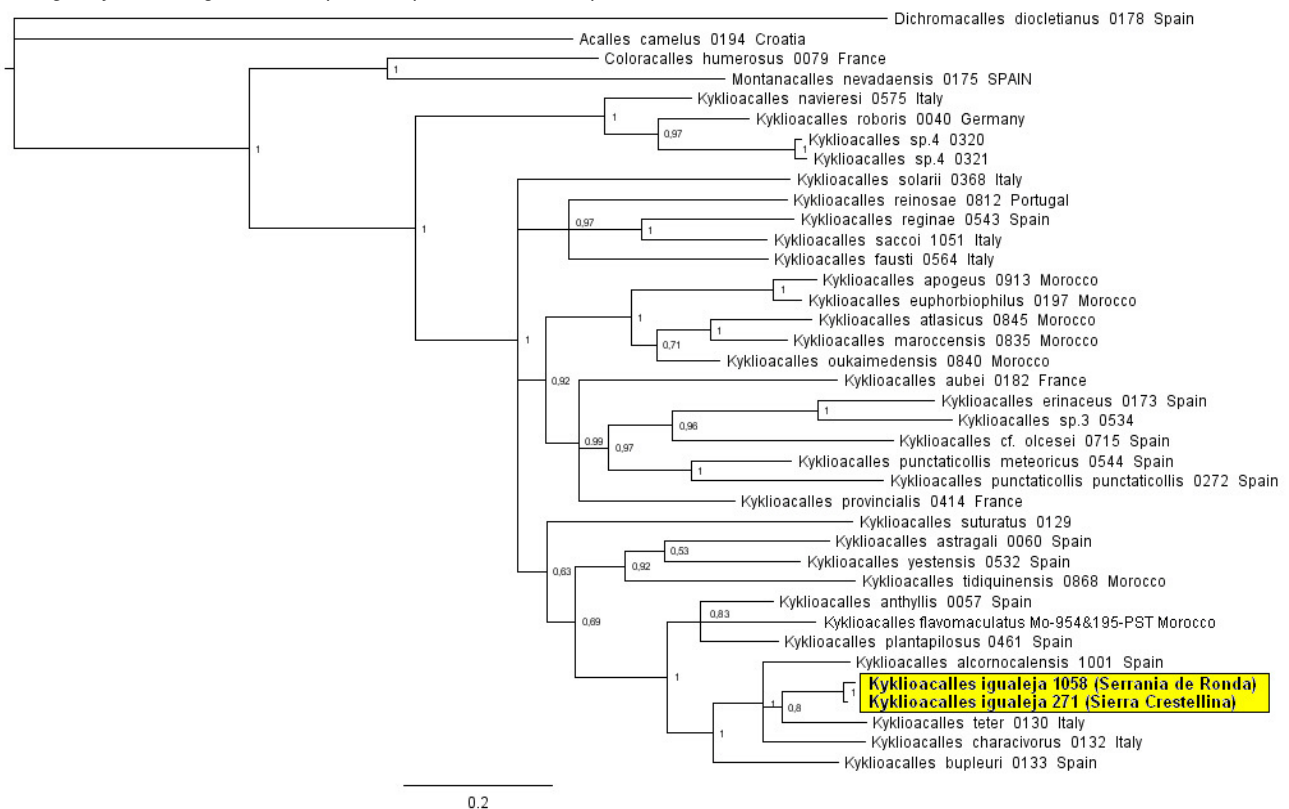


Fig. 9 Species of the genus *Kyklioacalles*: Bayesian consensus tree for COI and 16S.

Molecular phylogenetic analysis. The molecular analysis is based on 30 (+ 2 "sp.") of 43 valid *Kyklioacalles* species and on 4 cryptorhynchine outgroup species (Fig. 9). Collecting and vouchering information as well as GenBank accession numbers are given in Stüben & Astrin (2010; *K. sp.1*), Stüben, Torres & Astrin (2011, *K. sp.1*) and Stüben (2012). Voucher specimens and extracted genomic DNA are deposited at the tissue and DNA bank of the ZFMK (Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany). The laboratory routine followed Astrin & Stüben (2008). Bayesian MCMC analyses were run in MrBayes ver. 3.1.2 (Ronquist & Huelsenbeck 2003) for mitochondrial COI and 16S. We ran 2x 60 million generations and obtained 59990 trees (after discarding burn-in), of which a 50%-majority rule consensus tree was built (Fig. 9). BioEdit 7.0.9 was used to calculate individual *p*-distances of the COI gene between *K. igualeja* and related species (see map in Fig. 10).

Etymology. The species name refers to the village Igualeja (locus typicus) in the province Málaga 20 km from Ronda (near the source of the river Genal).

Ecology. The three specimens were found sieving the dead branches and roots of *Ficus carica* in a narrow and permanently humid valley near Igualeja (Fig. 5).

Distribution. This species is so far only known from Serrania de Ronda and Sierra Crestellina (Spain: Málaga). Localities are separated by only 25 km (Fig. 10).



Fig. 10 Distribution of related species of *K. igualeja* in the south of Spain and Italy (Sardinia, Sicily) with values of COI *p*-distance.

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