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Redescription of a little-known species, *Cryptocephalus surdus* Rapilly, 1980 (Coleoptera: Chrysomelidae: Cryptocephalinae), with notes on new distribution localities and habitat preference in Türkiye

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Abstract: *Cryptocephalus surdus* Rapilly, 1980 is a little-known species which was described based on specimens collected from Iran. Due to the fact that the species was described very briefly in its original description, the taxonomic features of the species are redescribed in here. In addition, information about additional taxonomic characters, habitats and distribution in Türkiye of this little-known species are given for the first time in this study. Habitus and genital features of the species are photographed. Habitat preference and a map showing the previous and new distribution localities of the species are provided.

Key words: Chrysomelidae, *Cryptocephalus surdus*, Türkiye, distribution, habitat preference

Cryptocephalus surdus was described by Rapilly (1980) on the basis of twelve specimens collected from Khorramabad (Lorestan Province) and Kermanshah (Kermanshah Province), Iran. After its original description, the species was also recorded from Armenia, Georgia, Jordan, Syria, and Türkiye (Lopatin and Chikatinov, 1997; Şen and Gök, 2009; Lopatin et al., 2010; Ekiz et al., 2013; Özdikmen et al., 2021). Rapilly (1980) gave a very short description in the original description of the species, including drawings of aedeagus and spermatheca shapes. No detailed information about the taxonomic features of the species has been found in the literature up to now (Sassi and Kısmalı, 2000; Lopatin et al., 2010; Özdikmen et al., 2021). Also, information on this species in Türkiye includes only two localities (Şen and Gök, 2009; Özdikmen et al., 2021).

During the faunistic surveys of the beetles in Türkiye, the specimens of this species were collected from Isparta, Konya, Mersin, and Adana provinces (Türkiye). These specimens gave us the opportunity to reexamine the species. Consequently, the aim of this study is to give a detailed description of this little-known species in Türkiye, including its habitat preference and distribution data.

The study is based on nine specimens collected from the vicinity of Aşağı Gökdere village (Isparta Province, Eğirdir) in 2006, Beyreli village (Konya Province, Hadim) in 2006, Zeybekler village (İçel Province, Mezitli) in 2006, and Akçatekir village (Adana Province, Pozantı) in 2007. All images were taken using a Canon EOS KISS X3 digital camera attached to a Zeiss Discovery V12 stereomicroscope. CombineZM was used for image stacking. All images were edited and grouped in Adobe Photoshop CS3. Most of the specimens are deposited in the Department of Biology, Faculty of Science, Gazi University, Ankara and some of them are stored in Department of Biology, Faculty of Arts and Sciences, Süleyman Demirel University, Isparta.

Cryptocephalus surdus Rapilly, 1980

Specimens examined: Isparta, Eğirdir, Aşağı Gökdere village, 380 m, 20.08.2006, 1 ♂; 27.08.2006 1 ♂, leg. İ. Şen; Konya, Hadim, Beyreli village, 1577 m, 06.07.2006 2♂♂, 2♀♀ leg. A. Hasbenli; İçel, Mezitli, Zeybekler village, 1298 m, 23.04.2006 1♂ leg. A. Hasbenli; Adana, Pozantı Akçatekir village, Karboğazı plateau, 1611 m, 27.06.2007 1♂ leg. A. Hasbenli; Adana, Pozantı Akçatekir village, Karboğazı plateau, 1678 m, 29.06.2007 1♀ leg. A. Hasbenli.

Redescription of male (Figures 1a and 1b)

Total body length: 3.7 mm. (Figure 1a).

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Head. Vertex brownish, frons and genae yellow with dense, fine, and irregular punctures. Eyes reniform. Clypeus light yellow, maxillary palpi brownish. Clypeus and labrum sparsely covered with very short pale setae. First antennomere yellowish, antennomeres II-IV light brown, the remaining segments black. Antennomeres covered sparsely with pale setae. Antennal length ratio: 20:9:12:13:8:19:19:18:18:17:18.

Pronotum. Convex, transverse, approximately 1.7 times as broad as its length, broadest at base, conical with almost straight side margins. The pronotum generally yellow, with slightly darkened areas (slightly brownish) on the anterior, posterior, and lateral parts of the disc. The surface with dense, fine, and irregular punctures. Posterior margin of pronotum with a black toothed and a lengthwise thin, black stripe.

Scutellum. Scutellum as long as wide, triangular, with truncate apex, smooth, glabrous, yellow; all sides with a brown stripe.

Elytra. 2.3 times as long as pronotum. Elytra yellow with coarse and regular puncture rows. Basal margin of elytra with slightly thin, dark brown stripe. Humeral callus raised, with very light brownish spot.

Venter. Yellow, mesosternum partly dark brown, Venter sparsely covered with thin, white hairs.

Legs. Legs completely yellow, tarsal segments dark brown in all legs.

Abdomen. Yellow, impunctate, sparsely covered with thin, white hairs.

Aedeagus. Triangle at apex in dorsal view, strongly curved in lateral view, laterally deep grooves at apex in ventral view (Figure 1b).

Female. Total body length: 4.8 mm. Females are larger than males, generally very similar to the male except for the whole body length.

Spermatheca. Sickle shaped, ductus very long and conspicuously coiled (Figure 1c).

Variations. Total body length: 3.6–4.9 mm, the color of the vertex of the head varies from light brown to dark brown. The area between the eyes is dark yellow in some specimens. The pronotal pattern of both males and females is quite variable. While the pronotal patterns are very prominently seen in some specimens, they are not clear in some specimens. The color of the legs varies from yellow to brown. Although the tarsal segments are generally dark brownish in males and females, they are completely yellow in two female specimens.

Phenology. It seems that adults are active between April and August, but the active period of adults can change probably according to the elevation and climatic conditions of the areas.

Distribution. The species is so far only known from Isparta and Diyarbakır provinces in Türkiye. The present records are the first one from Konya, Mersin, and Adana provinces (Figure 2).

Bionomy. According to observations in Isparta, the specimens were collected from willow (*Salix caprea*) trees growing by the creek in the close vicinity of Aşağı Gökdere village (Isparta Province, Eğirdir) at an altitude of 380 m. The area can be characterized as riparian habitat, consisting of willow and poplar trees. The sampling area has typical Mediterranean climate features.

Cryptocephalus surdus and *C. sulphureus* Olivier, 1808 very closely resemble each other in terms of the upper side patterns and coloration. However, they can be easily distinguished from each other by aedeagus and spermatheca structures (Rapilly, 1980). In the present study, some variations on the patterns of head, pronotum, and elytra, which are not included in the original description, are presented (see variation section). Also, it draws attention that these two close species are distributed allopatrically. *C. sulphureus* occurs in Western Asia while *C. surdus* is distributed in the western part of Mediterranean area.

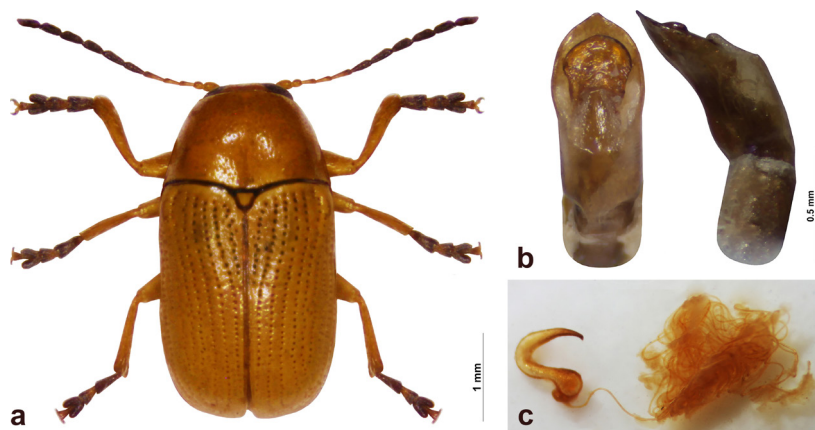


Figure 1. *Cryptocephalus surdus* Rapilly, 1980. a. Habitus (male) Scale bars = 1 mm; b. Aedeagus; dorsal and lateral view. Scale bars = 0.5 mm; c. Spermatheca.

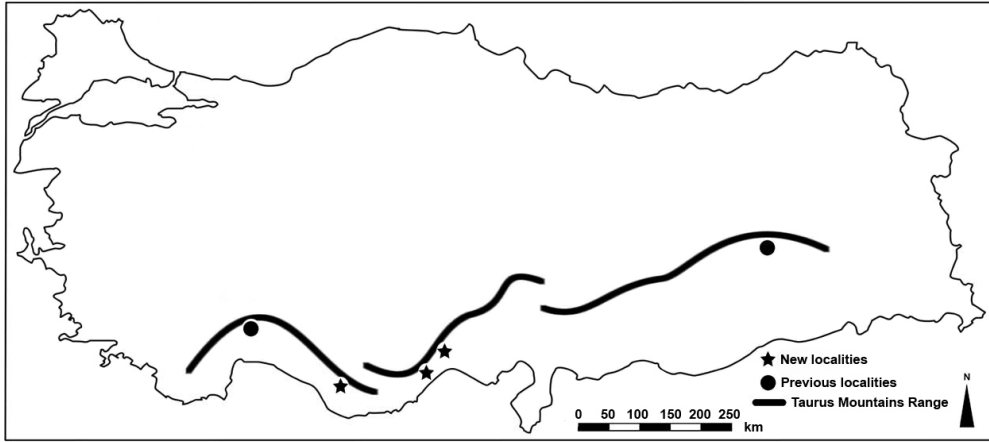


Figure 2. Map showing the previous and new distribution localities of *Cryptocephalus surdus*.

As far as we know, there are only two distributional records (Isparta and Diyarbakır provinces) in Türkiye of the species up to now. The new distribution records obtained from this study show that the distributional areas of the species were along the ridges of the Taurus Mountains in Konya, Mersin, and Adana provinces in Türkiye. These records show that the species may actually be distributed more widely along with the Taurus Mountain chains (Figure 2). However, additional records are needed to present the exact distributional range of this species in Türkiye.

Present records show that the adults of the species are active between April and August. In the original description of the species, the specimens from Iran were collected in June at 1750 m. Surprisingly, all of the records except Isparta Province are at relatively high altitudes. This situation shows that phenology of the adults can change according to the elevation and climate of the areas. Considering the general distribution areas in Türkiye, it can be concluded that the species is distributed in areas showing transition to Mediterranean climate and continental climate.

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