

**A PROPOSE TO ACCEPTATION OF *CALCHAENESTHES PRIMIS* ÖZDİKMEN (COLEOPTERA: CERAMBYCIDAE: CERAMBYCINAE) AS A THREATENED LONG-HORNED SPECIES AT THE EUROPEAN AND EUROPEAN UNION LEVEL**

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ABSTRACT: *Calchaenesthes primis* Özdikmen (Coleoptera: Cerambycidae: Cerambycinae) has not been classified on the European Red List of Saproxyllic Beetles yet, is reported from Cyprus and Turkey in Eastern Mediterranean Region. In Cyprus, it exists in Paphos and Larnaca districts. In Turkey, it occurs in Adiyaman, Amasya, Burdur, Gaziantep, Hatay, İçel, Mardin, Niğde and Siirt provinces. Known host plants include kermes oak (*Quercus coccifera* L.) probably also other *Quercus* species (Fagaceae).

KEY WORDS: *Calchaenesthes primis*, longhorned beetle, distribution, host plant

*Calchaenesthes primis* (Coleoptera: Cerambycidae: Cerambycinae) was described by Özdikmen (2013 in Özdikmen et al., 2013) from İçel province of Turkey. This species, therefore, has not been classified on the European Red List of Saproxyllic Beetles until now (Nieto and Alexander 2010). Information on this species is critical to efforts to protect this species from extinction in the Eastern Mediterranean basin.

The Eastern Mediterranean denotes the countries geographically to the east of the Mediterranean Sea (Levantine Sea basin). This is commonly interpreted in two ways: the region of Syria plus the Cyprus (also known as the Levant), and Turkey, or the Levant plus Greece, and Egypt, thereby including European and African components to the definition. The Levantine Sea is bordered by Turkey in the north, Syria, Lebanon, Israel and the Gaza Strip in the east, Egypt and Libya in the south, and the Aegean Sea in the northwest. The largest Island in the Levantine Sea is Cyprus. The greatest depth of 4384 meters is found in the Pliny Trench, about 80 km south of Crete. The Levantine Sea stretches over an area of 320 000 km<sup>2</sup>. The countries and territories of the Eastern Mediterranean include Cyprus, Greece (mainland and Aegean Islands), Lebanon, Syria, Palestine, Israel, Turkey, Egypt, Jordan and Libya. The Eastern Mediterranean Region encompasses only two countries as Greece and Cyprus within the European Union (Sundseth & Brussels, 2009).

The Mediterranean basin is recognised as a biodiversity hotspot. About one-third of the Mediterranean fauna is endemic. According to the International Union for Conservation of Nature Red List of Threatened Species, 19% of faunal species (amphibians, birds, cartilaginous fishes, endemic freshwater fishes, crabs and crayfish, mammals, dragonflies, and reptiles) are threatened with extinction (5% Critically Endangered, 7% Endangered, 7% Vulnerable) in the Mediterranean Region. In addition, at least 16 irreplaceable species are already extinct, including some endemics (Vlachogianni et al., 2012; Avgın et al., 2015). With most representatives in the Order Coleoptera, insect diversity in the region is also high.

Within borders of region as well as in neighboring countries and regions, Turkey is surrounded on 3 sides by large water bodies, it has continental properties including exceptionally diverse topographical features. The latter have provided refugia in which many species have survived in spite of harsh geological and climatic changes. Turkey is located at an intersection of geographical regions with large climatic and geographical gradients as well as a diversity of ecosystems and habitats (Kahraman et al., 2011; International Union for Conservation of Nature, 2012; Avgin et al., 2015). The great biological importance of Turkey is evident from the remarkable variety of arthropods in Turkey. The coleopteran fauna of Turkey is estimated to include 25 000 species (Koçak & Kemal, 2009). As a result of this, Turkey plays an important geographic and ecological role in safeguarding biodiversity.

*Calchaenesthes primis* is among the saproxylic beetles in Europe and Turkey, has not been classified on the European Red List of Saproxylic Beetles until now (Nieto & Alexander, 2010). Thus, the primary objective of this paper is to propose for acceptance of this beetle as a threatened long-horned species at the European and European Union level and is to define the known distribution of this insect along with information on its ecological habits and host plants. In addition, a bibliography of previous studies related to this species is included.

## MATERIALS AND METHODS

The material of this work is a comprehensive review of the scientific literature that was conducted to delineate the known distribution of *Calchaenesthes primis*. Host plants and ecological habits were recorded when available. Additional surveys for this insect were conducted by many researchers and are reported herein. We included information and data that are important in assessing the level of threat to the species. These protocols included geographic range, population data, and habitat preferences (Nieto & Alexander, 2010; International Union for Conservation of Nature, 2012). Information and data of this species are presented under the title Taxonomic history, Reported occurrence in Turkey, Reported occurrence outside Turkey, Host plants, Life cycle and biology and Status and conservation of threatened species. Moreover, a distribution map of *Calchaenesthes primis* in the Eastern Mediterranean Region is also given (Fig. 1). Reported global occurrence of *Calchaenesthes primis* with bibliographic citations is also provided (Table 1).

## RESULTS AND DISCUSSION

**Taxonomic history.** The cerambycid genus *Calchaenesthes* was erected by Kraatz (1863) with the type species *Callidium oblongomaculatum* Guérin-Méneville, 1844. *Callidium nogelii* Frivaldszky, 1845, *Calchaenesthes oblongomaculatus* var. *subjunctus* Pic, 1945 and *Calchaenesthes oblongomaculata* var. *quadrimaculata* Pic, 1912 are known synonyms of the type species. *Calchaenesthes oblongomaculata* (Guérin-Méneville, 1844) is distributed in Balkan Peninsula (Bulgaria, Greece and Romania), European Turkey, ?Jordan and ?Cyprus.

The other senior species, *Calchaenesthes sexmaculata* was described by Reiche (1861) from Algeria (Kabylia) as *Anoplites oblongomaculatum* var. *sexmaculatum*. This species occurs also in Europe (Spain) and North Africa (Morocco and Tunisia). *Calchaenesthes 6-maculatus* var. *junctus* Pic, 1922 and

*Purpuricenus (Calchaenesthes) sexmaculatus* var. *parvamaculatus* Rungs, 1947 are known synonyms of the species.

*Calchaenesthes diversicollis* was described by Holzschuh (1977) from Iran (Luristan) as a subspecies of *Calchaenesthes oblongomaculatus*. This species is also distributed in Iraq and Turkey.

*Calchaenesthes pistacivora* was described by Holzschuh (2003) from Iran (Kerman). This species is endemic to Iran.

*Calchaenesthes primis* was described by Özdikmen (2013 in Özdikmen et al. 2013) from Turkey (İçel). This species occurs also in Cyprus.

Consequently, the Western Palaearctic genus *Calchaenesthes* Kraatz, 1863 is included 5 species.

**Reported occurrence in Turkey.** *Calchaenesthes primis* is reported as occurring in 9 of Turkey's 81 provinces (Fig. 1). These are Adiyaman, Amasya, Burdur, Gaziantep, Hatay, İçel, Mardin, Niğde and Siirt provinces. All records before 2013 from Anatolia are given as *Calchaenesthes oblongomaculata* (Özdikmen et al., 2013). Location reports along with specific citation(s) of those reports are listed in Table 1.

**Reported occurrence outside Turkey.** *Calchaenesthes primis* is recorded from the Western Palaearctic Region, from Turkey (Anatolia) and Cyprus. Citations of confirmed occurrence of *Calchaenesthes primis* are listed in Table 1, and the recorded distribution is shown in Fig. 1.

**Host plants.** *Calchaenesthes primis* is apparently monophagous in deciduous trees in the plant family Fagaceae, e.g. *Quercus coccifera* (Özdikmen et al., 2013; Özbek et al., 2015; Hoskovec et al., 2016) and probably also other *Quercus* species (Rejzek & Hoskovec, 1999; Malmusi & Saltini, 2005; Sama et al., 2011; Hoskovec et al., 2016).

**Life cycle and biology.** *Calchaenesthes primis* is a very rare species. Adults and larvae can be collected only from the host plants growing in lowland and foothill habitats up to 1,000 m above sea level. Adults can usually be found sitting on the leaves or flying around of their host, especially from early April to early June. Duration of the life cycle is at least 2-3 years. Larvae develop in living twigs of the host plant. The overwintering stage is most likely the larval stage. Pupation takes place in the autumn and adults overwinter in the pupal cells. Interestingly, the beetles tend to gather on selected living trees showing a strong preference for stunted oaks growing on poor stony grounds. This behaviour implies that a infochemical (aggregation or sex pheromone) mediated communication might be used by this species (Demelt, 1963; Rejzek & Hoskovec, 1999; Malmusi & Saltini, 2005; Sama et al., 2011; Özdikmen et al., 2013; Ambrus et al., 2014; Özbek et al., 2015; Hoskovec et al., 2016).

**Status and conservation of threatened species.** *Calchaenesthes primis* is among the saproxylic beetles in Europe and Turkey, however, has not been classified on the European Red List of Saproxylic Beetles until now (Nieto & Alexander, 2010). Since this species was described by Özdikmen (2013 in Özdikmen et al., 2013) from Turkey and was firstly reported by Ambrus et al. (2014) from Cyprus. We included information and data that are important in assessing the level of threat to the species. These protocols included geographic range, population data, and habitat preferences (Nieto & Alexander, 2010; International Union for Conservation of Nature, 2012). Subsequently, we propose that this beetle should be classified in the category of Endangered on the European Red List at the European and European Union level. Besides, we suggested that the species should be listed in the category of Vulnerable in the

Turkish Red List based on its distribution, collection dates, and records from Turkey and Cyprus in Eastern Mediterranean Region.

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Table 1. Reported global occurrence of *Calchaenesthes primis*, with bibliographic citations.

Country	Province	Locality	Citations
Turkey	Adiyaman	Kahta (Karadut)	Rejzek & Hoskovec, 1999; Özdikmen et al., 2013; Hoskovec et al., 2016
Turkey	Amasya	Gümüşhacıköy (İnegöl Mt.)	Malmusi & Saltini, 2005; Özdikmen et al., 2013
Turkey	Burdur	Göhlisar	Sama et al., 2011
Turkey	Gaziantep	Islahiye	Demelt, 1963; Özdikmen et al., 2013
Turkey	Hatay	Hassa (Akbez)	Pic, 1897
Turkey	İçel	Erdemli (Güzeloluk)	Malmusi & Saltini, 2005; Özdikmen et al., 2013; Hoskovec et al., 2016
Turkey	İçel	Erdemli (Arslanlı)	Ambrus et al., 2014
Turkey	İçel	Mut	Özdikmen et al., 2013; Özbek et al., 2015
Turkey	Mardin	Midyat (Haberli)	Hoskovec et al., 2016
Turkey	Niğde	Ulukışla (Çiftehan)	Holzschuh, 1977; Özdikmen et al., 2013
Turkey	Siirt	Şirvan	Holzschuh, 1977; Özdikmen et al., 2013
Turkey			Lodos, 1998; Ambrus et al., 2014; Danilevsky, 2016
Cyprus	Paphos	Eledio	Ambrus et al., 2014
Cyprus	Larnaca	Pano Lefkara	Ambrus et al., 2014
Cyprus			Ambrus et al., 2014; Danilevsky, 2016

Figure 1. Distribution of *Calchaenesthes primis* Özdikmen in provinces of Turkey and Cyprus in Eastern Mediterranean basin.