



First records of *Natula averni* (Costa, 1855) and *Cyrtaspis scutata* (Charpentier, 1825) in Montenegro

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Abstract

Natula averni and *Cyrtaspis scutata* are species known from many regions in the Mediterranean region. This paper presents newly documented records that confirm the presence of both species in Montenegro.

Keywords: Distribution, Mediterranean area, Montenegro

Zusammenfassung

Erstnachweise von *Natula averni* (Costa, 1855) und *Cyrtaspis scutata* (Charpentier, 1825) für Montenegro. Die Arten *Natula averni* und *Cyrtaspis scutata* sind aus vielen Regionen des Mittelmeerraums bekannt. In diesem Artikel werden neue dokumentierte Funde der beiden Arten in Montenegro präsentiert.

Schlüsselwörter: Mittelmeerraum, Montenegro, Verbreitung

Recent investigations of the Orthoptera fauna in Montenegro provided new distributional data on some rare and endangered species distributed in the Mediterranean area of Europe (Ivković et al. 2020). Due to lack of research, specific life-style and inaccurate methodology, several species present in neighboring countries were not recorded so far in Montenegro, though their presence was expected since there are suitable habitats in the country. Ivković et al. (2020) presented examples for species such as *Gampsocleis abbreviata* (Herman, 1874), *Natula averni* (Costa, 1855) and *Cyrtaspis scutata* (Charpentier, 1825). In 2021, the two latter species were recorded for the first time in Montenegro.

The cricket *N. averni* was described from Lago di Averno (Italy) by A. Costa in 1855. The species was reported from reed vegetation along the rivers in the major

rity of Mediterranean countries in southern Europe (Odé et al. 2011, Iorio et al. 2019, Willemse et al. 2018), the only exception being the northeast shore of the Adriatic Sea (Fig. 1A).

During a field trip on June 18, 2021 on the Velika Plaža beach (N 41°53'20.1", E 19°18'38.5"), we heard *Pteronemobius heydenii* (Fischer, 1853) together with dozens of, to us unknown, singing crickets. After comparing the song with data provided in Willemse et al. (2018), we realized that song belongs to *N. averni*. Even though the song is loud (Fig. 2C), our efforts to locate singing males were unsuccessful, thus we spent two hours beating the vegetation and the only result achieved was capturing of a single female (Fig. 2A, B).

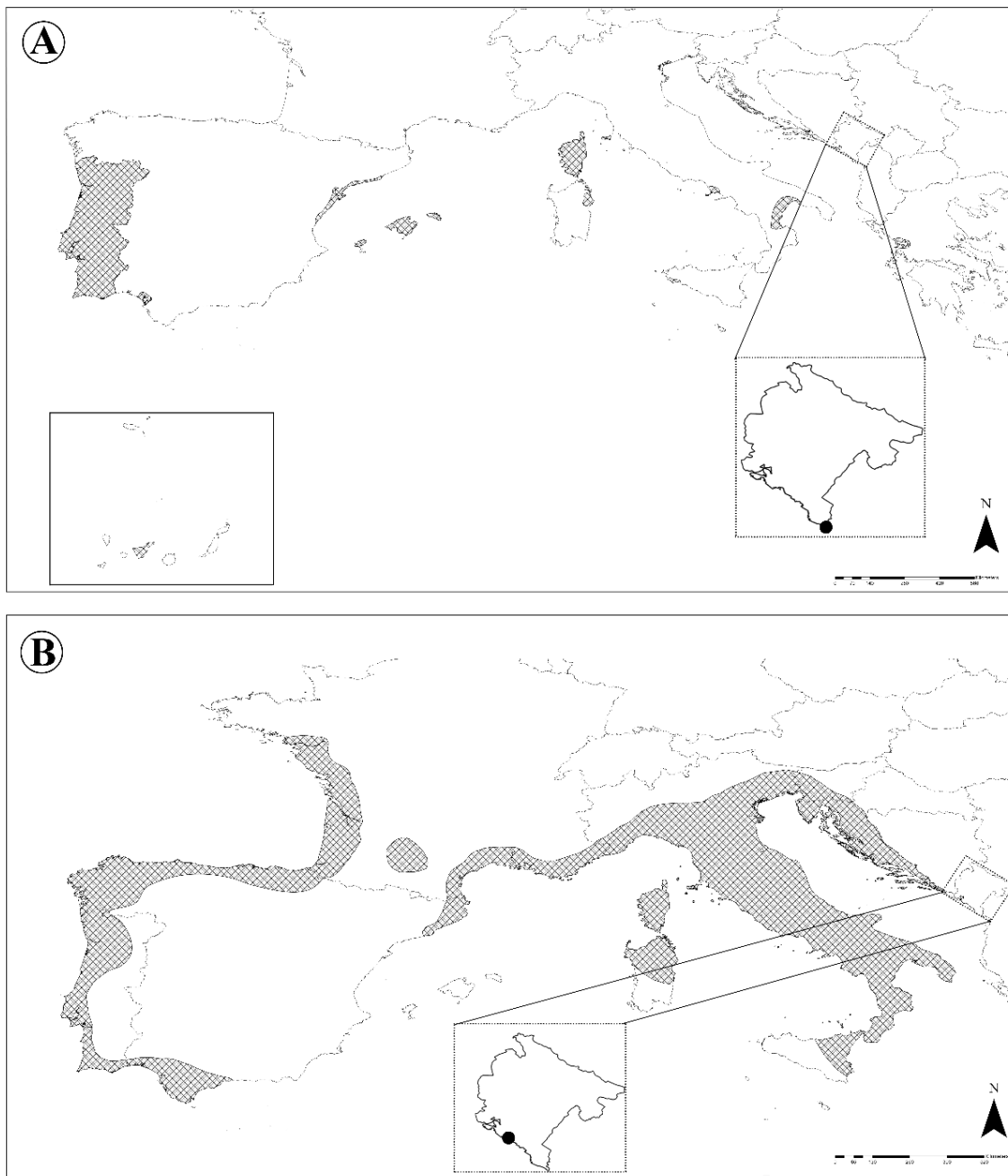


Fig. 1: Distribution map of *Natula averni* (Costa, 1855) (A) and *Cyrtaspis scutata* (Charpentier, 1825) (B). Black dots represent new records for Montenegro.

C. scutata is widespread across the Atlantic and western Mediterranean areas of Europe and North Africa (Braud et al. 2016) with Croatia being the easternmost border of its distribution (Skejo et al. 2018) (Fig. 1B). It can be found mostly on oak trees (Iorio et al. 2019), but in Croatia we also observed specimens on leaves of grape, fig and olive. On September 16, 2021, a female specimen was photographed in Montenegro by Nikolay Skobelev (Fig. 2D; inaturalist.org/observations/95563162), in Pržno (N 42°15'53.0", E 18°53'33.2") (Fig. 1B).

Both records presented in this study are the first and currently the only known for Montenegro. Future studies on species' distribution and threats along the Adriatic shore are crucial for conservation of both species, especially for *N. averni*, as the habitats inhabited by this species are likely to be destroyed due to rapid development of tourism present in Montenegro (Fig. 3).

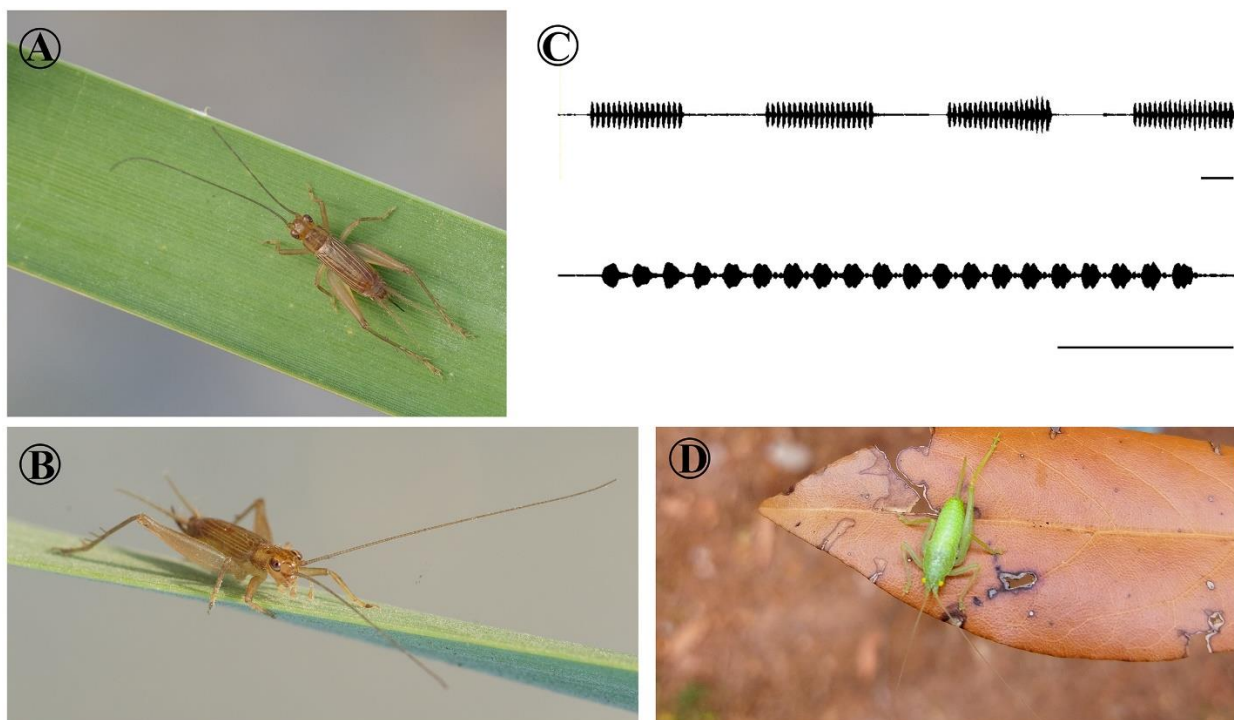


Fig. 2: A - *Natula averni* (Costa, 1855), dorsal view; B - *N. averni*, lateral view (Photos: L. Horvat); C - Oscillograms of the songs of *N. averni* (18 VI 2021, air temperature 22 °C; scale – 100 ms); D - *Cyrtaspis scutata* (Charpentier, 1825) (Photo: N. Skobelev).



Fig. 3: Habitat of *Natula averni* (Velika Plaža beach) with tourist resorts in the background (Photo: L. Horvat).

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