

Short scientific note

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***Capnodis cariosa* (Pallas, 1776) found in a new Romanian location at the northern limit of its distribution range (Coleoptera: Buprestidae)**

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Abstract

Here we report a new population of *Capnodis cariosa* from the South-Western Romania, at the border with the Republic of Serbia (Danube's Defile). The presence of this species was reported in the past from Southern Dobroudja (South-Eastern Romania, near the Bulgarian border), this being its only, yet nowadays probably extinct, local Romanian population. In our citizen science-based investigations, which started in the spring of 2020, we found 16 specimens in the area of the Iron Gates Natural Park, between Dubova and Svinița (Danube's Defile, Mehedinți County). This location represents the northernmost one for this species in Europe and the only verified present-day location for this species in Romania. Some considerations about biology, ecology and distribution of *Capnodis cariosa* are also provided. Two updated distribution maps of this species in Romania, in the Danube's Defile and in the whole Mediterranean areas, are also presented.

Key words: *Capnodis cariosa*, Danube Defile, new population, Romania, Citizen Science.

Introduction

The genus *Capnodis* Eschscholtz, 1829 (Buprestidae; subfamily Chrysochroinae, tribe Dicerini) includes 15 species, most of them being distributed around the Mediterranean Sea and in the Near East. In Romania, there are three recorded species [*C. cariosa*, *C. tenebrionis* (Linnaeus, 1761), and *C. tenebricosa* (Olivier, 1790)]. Only the nominate subspecies (*C. cariosa cariosa*) occurs in the fauna of Romania.

***Capnodis cariosa cariosa* (Pallas, 1776)**

Diagnosis. Length, 18–35 mm. The body colour is black. The pronotum is covered with white wax, except the smooth impressions. Elytra are black with white, waxy spots.

Biology & ecology. *Capnodis cariosa* develops in Anacardiaceae, such as the Pistachio tree (*Pistacia vera*), in southern Europe its main host plants being usually represented by *Pistacia lentiscus* and *P. terebinthus*.

In Romania, it develops in the roots and necks of the smoke tree, *Cotinus coggygria* (Fig. 1). The larval stage

lasts about 1-2 years, depending on the food quality and the climatic conditions. The adults live about one year, sometimes surviving until the next year. They can be found on the host plants (Fig. 2). *Capnodis cariosa* prefers xero-thermophilic woods, plantations or shrubs, mostly on sunny slopes.

Distribution. The species (thus including the nominate subspecies and *C. cariosa hauseri* Obenberger, 1928 from the Near East) is distributed in Northern-Mediterranean and Irano-Anatolian areas, from Sardinia westwards to the Near East eastwards (GBIF.org 2021; Löbl & Löbl 2016; Fig. 4)¹. The northernmost known location is in the Krasnodar Region (SW Russia) (Volkovitsh 2018). In Romania, *Capnodis cariosa* were previously recorded only from the southern Dobrudja (Oltina, Canarua Fetii, Cărpiniș-Băneasa-Adamclisi, Constanța County) (Negru et Roșca 1967; Ruicănescu 2013; Panin et al. 2015).

¹ The presence of *Capnodis cariosa* in Iran and Irak, also reported by Löbl & Löbl (2016), is not recorded in the GBIF database.



Fig. 1 – Hills with *Cotinus coggygia* shrubs, biotope of *Capnodis cariosa* Pall. at Svinița.

Material and methods

We have studied 209 individuals, hence 192 are stored in the collections of the two largest natural history museums in Romania: Grigore Antipa National Museum of Natural History, Bucharest (MGAB) and Brukenthal National Museum of Sibiu, the Natural History Section (BMS). One specimen, collected by Dr Raul Constantineanu, from Cărpiniș-Băneasa is stored in Adrian Ruicănescu's personal collection (AR).

Nineteen individuals were observed and mapped in the field between April 2019 and June 2020; three additional observations were communicated by non-entomologist people. The individuals were studied in the laboratories of MGAB, MBS and the Institute for Biological Research, Cluj-Napoca, part of them being already published in the museum catalogues (Serafim & Ruicănescu 1995). Each label has been verified and recorded. All observed individuals were recorded, with geographical coordinates, using OruxMaps on the Android based smartphone, all records being afterward placed on digital maps, using the computer application QGIS 3.12. Being an endangered species in Romania, we collected only two individuals, while all other observed specimens were released after their data of occurrence had been recorded.

Results

We found 19 individuals of *Capnodis cariosa*, in an area bounded by the localities of Svinița, Eibenthal, and Dubova

(Table 1). The biotope consists of steppe hills, covered with bushes dominated by *Cotinus coggygia*, and a few scattered trees (Fig. 1).

Table 1 – The number of individuals of *Capnodis cariosa* found in 2020 in the area between Svinița and Dubova (Danube's Defile).

Locality	Date	Nr. of individuals
Svinița	11.05, 14.05, 4.06.2020	5
Dubova	4.06.2020	10
Eibenthal	20.06.2020	1
Total		16

Both sexes were very active in the warmer time of the day (11.00–14.00), when the males were inspecting their territories, walking on the branches and sometimes flying from a bush to another. At that time, both sexes were busy feeding. In the afternoon (15.00–19.00), we also observed that the females were going down to the base of the bush to lay their eggs on the stem's neck or even on the ground. This is typical for most arboreal Buprestids (Ruicănescu & Stoica 2019).

Discussion

All earlier information, both from the literature and the 193 individuals stored in the collections of MGAB, BMS



Fig. 2 – Female *Capnodis cariosa* Pall. on a small branch of its local host-plant *Cotinus coggygria*.

and AR, proves that *Capnodis cariosa* was known thus far in Romania only from its extreme south-eastern region (Southern Dobruđja) (Negru & Roşca 1967; Panin et al. 2015; Ruicănescu 2013; Scobiola-Palade & Popescu-Gorj 1967; Serafim & Ruicănescu 1995; Vlad-Antonie & Ruicănescu 1996). However, the last documented record in that area refers to a specimen collected in May 1967 (N. Săvulescu legit, MGAB collection). No other subsequent records of this species are known from this area, despite the intensive research carried out during the most favourable months. There is no mention of the species in the South-Western Romania (Danube Defile, or “Iron Gates” area), in the earlier literature (Ieniştea 1975; Ruicănescu 1992, 2013; Panin et al. 2015).

The first discoveries of two individuals, made by Silviu Petrovan and Paul-Marian Szatmari, in 2019 and another one in earlier spring 2020, by Nicolae Sain in the area bounded by the localities Sviniţa, Dubova and Eibenthal, were posted on a Facebook group, dedicated to the nature and education, named “Insects of Romania and Europe”. This is why we estimate that a new population of *Capnodis cariosa* was established in the region. By using the information provided and the 16 individuals recorded by us, we realised a new, updated distribution map of this species in Romania (Fig. 3).

The new record for this rare species is a good example of how the popular social media platforms and Citizen Science can contribute with important information regarding the invertebrates of a country. We added our

new Romanian records in the GBIF database (GBIF. 2022) and completed them with the records provided by Mark G. Volkovitsh, Roman Bohdan Holyński and David Frank (pers. comm., 2021), to obtain an updated distribution map for *Capnodis cariosa* (Fig. 4). The location of Danube’s Defile, combined with that in Krasnodar’s region (SW Russia), constitute the northernmost-known localities for this species (Volkovitsh 2018). We suspect the occurrence of a recent slow northward migration of this species and of its host-plant, *Cotinus coggygria*.

Although the species may even cause damage in some N Mediterranean countries to the local pistachio orchards (Karadag et al. 2006), *Capnodis cariosa* is a big and impressive Buprestid beetle, having the potential to represent a flagship and umbrella species of its typical Mediterranean scrub environment, and it should be protected at least in the SE European marginal portions of its wide geographic range. According to this observation, we hope that the small Romanian population of this species can be properly preserved in protected natural areas.

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References

GBIF. 2021. *Capnodis cariosa* (Pallas, 1776) in GBIF Secretariat (2021). GBIF Backbone Taxonomy. Checklist dataset <https://doi.org/10.15468/39omei> accessed via GBIF.org on 2022-03-30.

Ieniște M.-A. 1975. Coleoptera. In M. Ionescu (Ed.), Grupul de cercetări complexe “Porțile de Fier”, Fauna (pp. 193–214). București: Academia R.S.R.

Karadag S., Mart C., Can C. 2006. Species belonging to the family Buprestidae in pistachio orchards and some biological properties of *Capnodis cariosa* (Haus.). Acta Horticulturae, 726: 545–549.

Löbl I., Löbl D. 2016. Scarabaeoidea – Scirtoidea – Dasciloidea – Buprestoidea – Byrrhoidea. In Löbl I. & Löbl D. (Eds), Catalogue of Palaearctic Coleoptera (Vol. 3, pp. 1–984). Leiden / Boston: Brill. Doi: <https://doi.org/10.1017/CBO9781107415324.004>

Negru Ș., Roșca A. 1967. L’entomofaune des forêts du Sud de la Dobrudja. Ord. Coleoptera. Travaux Du Museum National d’Histoire Naturelle Grigore Antipa, 5: 119–147.

Panin S., Săvulescu N., Ruicănescu A. 2015. Insecta: Coleoptera-Buprestidae. In Fauna României, 10(7): 1–388. Bucharest: Editura Academiei Române. Doi: <https://doi.org/10.13140/RG.2.1.3326.9202>

Ruicănescu A. 1992. Coleoptere rare și noi pentru fauna României din zona „Porțile de Fier”. Buletin de Informare Societatea Lepidopterologică Română, 3(1): 22–29.

Ruicănescu A. 2013. The Jewel Beetles of Romania (Coleoptera: Buprestidae). Series Faunistica, 108: 1-203. Sofia-Moscow, Pensoft Publishers.

Ruicănescu A., Stoica A. 2019. The distribution and behaviour studies on a new invasive Buprestid species (*Lamprodila (Palmar) festiva festiva* (Linnaeus, 1767), (Coleoptera: Buprestidae) in Romania. Travaux Du Muséum National d’Histoire Naturelle “Grigore Antipa,” 62(1): 43–56. Doi: <https://doi.org/10.3897/travaux.62.e38488>

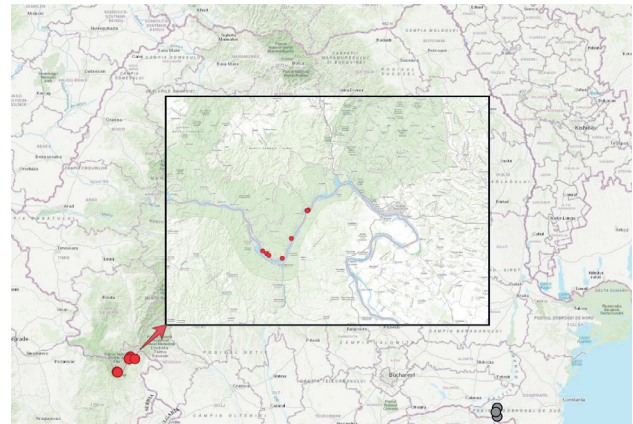


Fig. 3 – The distribution map of *Capnodis cariosa cariosa* (Pall.) in Romania (grey dots = old occurrences, red dots = new occurrences).

Scobiola-Palade X., Popescu-Gorj A. 1967. L’entomofaune des forêts du sud de la Dobrudja. Travaux Du Museum National d’Histoire Naturelle “Grigore Antipa,” 7: 181–212.

Serafim R., Ruicănescu A. 1995. Lista speciilor de Buprestoidea (Coleoptera) din colecția Nicolae Săvulescu de la Muzeul de Istorie Naturală “Grigore Antipa” din București. Buletinul de Informare Entomologică (Societății Lepidopterologice Române), 6: 123–142.

Vlad-Antonie I., Ruicănescu A. 1996. The Buprestoidea stored in the Coleoptera collections from the Natural History Museum of Sibiu (Coleoptera: Buprestoidea). Buletinul de Informare Entomologică (Societății Lepidopterologice Române), 7(3–4): 223–253.

Volkovitsh M.G. 2018. Buprestidae, pp. 253–258, in: Zamotailov A.C., Lohman Y.B., Volfov B.I. (Eds), Red Data Book of Krasnodar Territory. Animals, 3. Krasnodar, Kuban State University.



Fig. 4 – The entire distribution map of *Capnodis cariosa* (Pall.) (red dots = GBIF occurrences; blue dot = Romanian new occurrences; grey dot = Romanian old occurrences; “?” = the localities in Iran and Iraq are omitted in GBIF dataset, but the species is present in both countries according to Löbl & Löbl 2016).