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FAUNISTIC NOTE

Rare or Overlooked? The Ponerine Ant, *Cryptopone ochracea* (Hymenoptera, Formicidae): An Updated Distribution in Romania with insights on the species swarming activity

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Abstract

Cryptopone ochracea (Mayr, 1855) is a hypogeous ant species with a poorly known biology. Usually, alate or dealate queens are recorded by myrmecologists. Data on the species distribution is scarce. However, the species occurs mainly in the southern part of Europe. In Romania, the species was previously known from only two locations. Herein, we report new records of the species during a 6-year observation period. Insights on the species swarming activity are given.

Keywords

anthropogenic habitats, Dobrogea, hypogaeic species, Maramureș, new records, Ponerinae urban species.

The genus *Cryptopone* comprises roughly 25 described species and subspecies, usually with a cosmopolitan distribution, but with a centre of diversity in Asia. They are known to be hypogeous ants foraging in soil, leaf litter or under stones. Most likely, they are generalist predators of small soil invertebrates. Colonies are rather small (up to 100 workers) and may be polygynous (Schmidt and Shattuck 2014).

Cryptopone genus has only one species occurring in Europe and two subspecies, namely *Cryptopone ochracea* (Mayr, 1855) which is a meridional to submeridional

element, distributed from Spain to Caucasus, and to north as far as Switzerland and Hungary (de Jong 2016).

The species is known from Saudia Arabia and mainly from the Palaearctic region Balearic Islands, Bulgaria, Croatia, Georgia, Greece, Hungary, Iberian Peninsula, Italy (type locality), Romania, Russian Federation, Slovenia, Serbia, Spain and Switzerland (according to https://www.antwiki.org/; Borowiec 2014). In many countries, the species is poorly known with one or few records of the species. The story of *Cryptopone ochracea* is similar to other ponerine ants, at least in Romania. There are two *Ponera* species occurring, namely *P. coarctata* (Latreille, 1802) and *P. testacea* Emery, 1895. If the first species is rather well documented, *P. testacea* is rather scarcely known (Csósz and Seifert 2003; Markó et al. 2006; Markó 2008; Tăușan et al. 2020). The same case is for *Proceratium melinum (*Roger, 1860) also poorly known in terms of distribution in Romania (Stănică and Tăușan 2022). Moreover, there is a single record of the invasive species *Hypoponera punctatissima* (Roger, 1859) (Markó 2008). It is very likely that such hypogeic species may be observed if the effort of sampling and the proper tehniques are applied.

However, very recent, studies have shown that we might have overlooked *Cryptopone ochracea*. Báthori et al. (2022) have built up an impressive 46 new records from Hungary and one from Serbia using Citizen-Science.

In Romania, until now only two records are available for the species. The first record dates from almost a century ago from Bucharest (Montandon and Santschi 1910) and the latter one is 20 years old from Băile Herculane (Csösz 2003). Herein, we highlight new records of the species and novel records for Dobrogea and Maramureș region (North and South-Est Romania).

The species biology is poorly known. However, more recent Purkart and Repta (2022) have made important discoveries regarding the species nesting strategies in artificial conditions. Seifert (2018) mentions that "*all records refer to single alate or dealate gynes caught within the narrow period of 5–20 September*". Other specific data is not given by Seifert. In contrast to Seifert's (2018) statement, the species was also collected in other time periods. Namely, Bračko (2003) collected one alate queen in late autumn (20th of November). Verdinelli et al. (2007) collected two workers (25th of September) and one dealate queen on 27th of July and five dealate queens on the 21st of October. Collingwood (1985) collected a single worker from leaf litter under bushy trees on 30th of March. In most cases, specimens were collected using hand collecting mainly in gardens.

We carried out observations in the field for 6 years in an urban area in Techirghiol City (Constanța County - Dobrogea region). The investigated area was in the surrounding of City's Hall, which consisted of typical urban green area. From June to October in each year of our study we investigated the area at least one observation/ month.

We first observed multiple males and queens on 31st August 2017 on a cloudy day early in the morning. The second observation was on the 11th of September in the same year also a nuptial flight in a garden in the same city. One week later, an alate

was observed in a park. The last record from 2017 was on the 23rd of September also of an alate, which was collected.

One year later, on the 12th of June on a cloudy day we observed and collected an alate which was escorted by workers out a crevice from the sidewalk.

In 2019, we observed and collected one alate queen on the 31st of July, also on a cloudy day. In 2020, we did not collect any specimens. We assume that this may be explained due to the heavy draught that was recorded for August and September. Moreover, most of our observations were undertaken on cloudy days when humidity levels were higher. In 2021, we collected more than 20 alate queens on the 25th and 26th of August. Our latest findings are from 2022, when we observed and collected 10 alate queens from the 1st to 3rd of September. In addition, we collected on the 3rd of October 2020 when an alate queen from Baia Mare City Centre from an urban park, also on a cloudy day. Overall, the species is known from at least five locations (Fig. 1). The collected specimens are deposited in Ioan Tăușan's personal collection.

Therefore, the species is more common than previously thought. Yet, males and queens may be observed mainly from late summer to late autumn (August – October), mainly in the swarming period, which may be more prolonged than previously known.

The habitats are associated with urban areas (i.e. parks in Bucharest, Techirghiol, Baia Mare and in gardens – see Purkart and Repta 2022), yet this anthropic feature

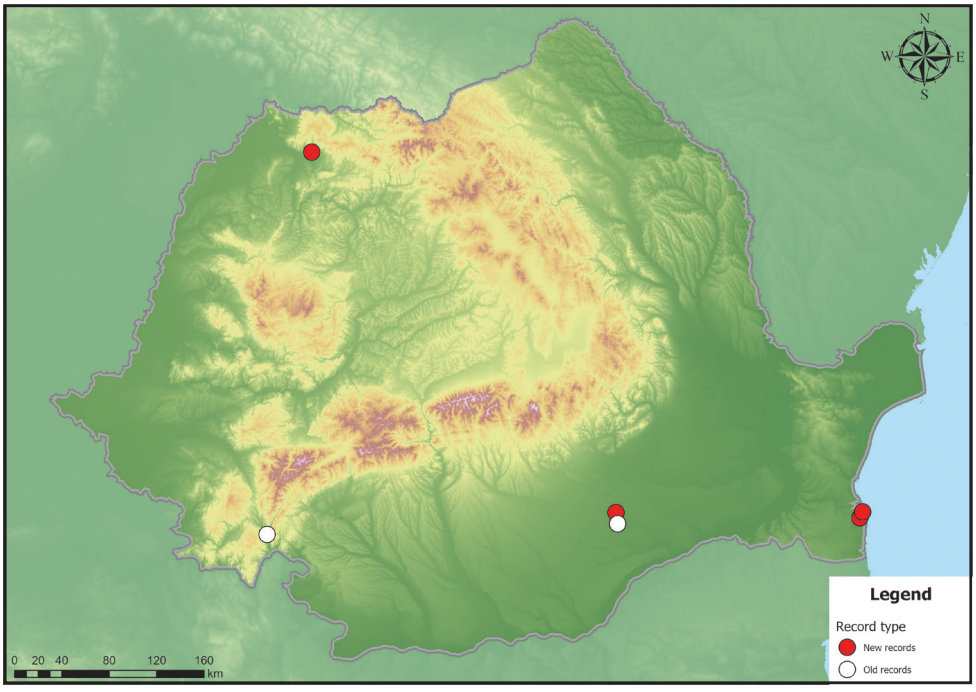

Figure 1. Known distribution of *Cryptopone ochracea* in Romania (codes: white circles – published data; red circles – new records)

could be typical for other hypogaeic ant species (e.g. agricultural habitats for *Proceratium melinum* - Tăușan and Rădac 2014). Moreover, it is very probable that the species has a small mobility considering that all observations were undertaken roughly in the same area.

Citizen Science is a useful tool as previously shown in many studies (Roy et al. 2024; Sheard et al. 2024). Moreover, for *Cryptopone ochracea* based on data from the iNaturalist data base, there are two records (one from Bucharest, and one from Agigea). Thus, the *Cryptopone ochracea* distribution has been improved and the use of Citizen Science similar to Báthori et al. (2022) and knowing the main period of swarming activity and the habitat preferences of the species, one can demonstrate that cryptic species may be just simply overlooked and not necessarily rare.

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