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New distributional data and species records of Cypriot ants (Hymenoptera: Formicidae) based on museum collections

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SUMMARY

Specimens deposited in Natural History Museum collections are vital for the study of biodiversity, human drivers of biodiversity loss, and other environmental and socioeconomic problems. Despite recent advances in filling our knowledge gaps regarding the myrmecofauna of Cyprus, the island's biodiversity is considered to be under-sampled. In this article, ant specimens from Cyprus deposited at the Natural History Museums of Crete, the Agricultural University of Athens (Greece), the Muséum d'Histoire Naturelle de Genève (Switzerland), the Royal Belgian Institute of Natural Sciences (Belgium), and the Lund University Biological Museum (Sweden) are examined, presenting a total of 163 specimens belonging to 24 species examined. *Stigmatomma denticulatum* Roger, 1859 (Amblyoponinae), *Myrmecina graminicola* (Latreille, 1802), *Stenamma debile* (Foerster, 1850) (Myrmicinae), and

Cryptopone ochracea (Mayr, 1855) (Ponerinae) are reported for the first time for the island of Cyprus, raising its known ant diversity from 77 to 81 species, while additional distributional data are given for species with only a handful of distributional records, i.e. *Tapinoma festae* Emery, 1925 (Dolichoderinae), *Aphaenogaster subterraneoides* Emery, 1881 (Myrmicinae), and *Hypoponera eduardi* (Forel, 1894) (Ponerinae).

INTRODUCTION

Museum collections are vital both to the scientific community and the public, supplementing our knowledge and understanding of a wide spectrum of environmental and socioeconomic problems inter alia related to public health, agricultural pests, biological invasions, and climate change (Suarez and Tsutsui 2004; Johnson et al. 2023). Specimens deposited in museums are essential to science by supplementing both national and regional species lists while ensuring the robust identification of species through the examination of type-material. Additionally, they enhance conservation efforts through the provision of data for extinction risk assessments, studies of the invasion history and spread of invasive non-native species, documenting the historical distribution of threatened taxa, and studying human drivers of biodiversity loss such as the impacts of climate change and urbanisation on species' distributions (Winston 2007; Pyke and Ehrlich 2010; Colvin 2014; Kharouba et al. 2019; Shultz et al. 2020; van Noort 2024). New and innovative technologies such as advances in molecular methods, metadata curation, and specimen digitalisation and imaging have further assisted these endeavours, improving phylogenetic studies by extracting genetic information from historical samples, enhancing data standardization and usefulness as well as assisting taxonomic studies (Graham et al. 2004; Short et al. 2018).

Cyprus is the third largest Mediterranean island situated at the crossroad between Africa and Asia. It is considered a biodiversity hotspot (Myers et al. 2000) and rarity centre for Mediterranean ants (Kass et al. 2022), hosting a large number of both non-native and endemic ant species (Demetriou et al. 2023; Salata et al. 2023a,b,c, 2024). Nevertheless, the island's myrmecofauna is still considered to be under-sampled, as several significant sites for the island have not been properly censused. Thus, its ant biodiversity is expected to increase in the following years as further research is currently being undertaken. In this article, metadata for a total of 163 examined specimens belonging to 24 species deposited at five European Natural History Museums are presented, with *Stigmatomma denticulatum* Roger, 1859 (Amblyoponinae), *Myrmecina graminicola* (Latreille, 1802), *Stenamma debile* (Foerster, 1850) (Myrmicinae) and *Cryptopone ochracea* (Mayr, 1855) (Ponerinae) being reported for the first time for the island of Cyprus. These new records raise the total ant biodiversity of Cyprus from 77 (excluding a literature record of *M. graminicola* not based on material) to 81 species (Demetriou et al. 2025; current study).

MATERIALS AND METHODS

Museum and collection abbreviations

AUA: Agricultural University of Athens (Greece) (Themistokles Shiakides collection)

MHNG: Muséum d'Histoire Naturelle de Genève (Switzerland)

MZLU: Lund Museum of Zoology (Sweden)

NHMC: Natural History Museum Crete (Greece)

RBINS: Royal Belgian Institute of Natural Sciences (Belgium)

Caste abbreviations

g – gyne

m – male

w – worker

Specimen examination and identification

The collections at MHNG and NHMC were studied by SS during his internship at the NHMC (2014) and a research visit at MHNG (2014 and 2019). Specimens deposited at the RBINS were located by CG. Subsequently, the material was curated and photographed by WD and TL. Specimen identification was performed by CG, JD and SS, based on the provided high-resolution photographic material. Upon communication with Dr Jadranka Rota at the University of Lund, a single specimen deposited at the MZLU was identified based on high resolution photographic material (2024). Specimens in the AUA were examined by JD and CG (2025). New species records were determined based on the original species descriptions and available taxonomic revisions (e.g. DuBois 1993; Rigato 1999; Baroni Urbani and de Andrade 2003). Specimen label metadata were deciphered and standardized according to Darwin Core Data Standards (Table 1; Suppl. Table S1).

Specimen photography

Photographs of specimens in the RBINS were prepared using the Focus stacking set-up described in Brecko et al. (2014). Photographic material is available at: https://virtualcollections.naturalsciences.be/. Links to photographed specimens can be also found in Suppl. Table S1 in the "associatedMedia" column.

Table 1. Table of sampled localities with standardized format adhering to DarwinCore data standards.

Decimal Latitude	Decimal Longitude	Coordinate Uncertainty In Meters	Geodetic Datum	Georeferenced Remarks	Recorded By	Identified By
34.8581	33.0815	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.9222	32.8333	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.9105	33.011	1000	WGS84		Tsaousis	S. Salata
35.0564	32.3439	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.9881	32.6863	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.95	32.42	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.9838	32.7412	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.9334	32.9667	1000	WGS84		Efstathiou	S. Salata
34.8779	33.6073	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.87	32.89	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.8881	32.8633	1000	WGS84	Coordinates not given in specimen data	D. Agosti	S. Salata
34.8389	32.4346	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
34.9512	32.9272	1000	WGS84	Coordinates not given in specimen data	Håkan Lindb.	J. Demetriou, S. Salata

34.879166	33.625	5000	WGS84	Coordinates not given in specimen data	E. Deschamps	J. Demetriou, C. Georgiadis, S. Salata
34.879166	33.625	5000	WGS84	Coordinates not given in specimen data	A. Ball	J. Demetriou, C. Georgiadis, S. Salata
34.935556	32.821667	1000	WGS84	Coordinates not given in specimen data	A. Ball	J. Demetriou, C. Georgiadis, S. Salata
34.699	33.087	1000	WGS84	Coordinates not given in specimen data	G. Mavromoustakis	J. Demetriou, S. Salata
35.166668	33.36667	5000	WGS84	Coordinates not given in specimen data	A. Ball	J. Demetriou, C. Georgiadis, S. Salata
35.2542	33.4833	1000	WGS84	Coordinates not given in specimen data	A. Ball	J. Demetriou, C. Georgiadis, S. Salata
34.92917	32.7	1000	WGS84	Coordinates not given in specimen data	C. Besuchet	S. Salata
35.166668	33.36667	5000	WGS84	Coordinates not given in specimen data	S. Pieris	J. Demetriou & C. Georgiadis
35.1214	33.9369	5000	WGS84	Coordinates not given in specimen data	Th. Shiakides	J. Demetriou & C. Georgiadis
35.1501	33.2772	2000	WGS84	Coordinates not given in specimen data	Th. Shiakides	J. Demetriou & C. Georgiadis
35.0668	32.4876	1000	WGS84	Coordinates not given in specimen data	Th. Shiakides	J. Demetriou & C. Georgiadis

RESULTS

New records of species

Amblyoponinae

Stigmatomma denticulatum Roger, 1859 (Fig. 1a)

1 w.: Chypre, 500 m, / Kritou Terra, / 21.iv.1981 / leg. C. Besuchet / coll. Donat Agosti / MHNG-1999 (MHNG)

Notes: The species is widely but sparsely distributed in the Mediterranean (Schembri and Collingwood 1981; Janicki et al. 2016; Guénard et al. 2017). It has been collected in leaf litter of deciduous trees (e.g *Quercus*, *Platanus*), under rocks or close to streams in forests (Baroni Urbani 1978; Borowiec and Salata 2022). However, only a handful of distributional data are provided from neighbouring Turkey, and Israel (Aktaç 1977; Baroni Urbani 1978; Vonshak and Ionescu-Hirsch 2010).

Myrmicinae

Myrmecina graminicola (Latreille, 1802) (Fig. 1b)

2 w.: Chypre, 1200 m / Cedar Valley, 15 / 12.iv.1981 / leg. C. Besuchet (MHNG)

Notes: A species widely distributed in Europe and the Mediterranean (Janicki et al. 2016; Guénard et al. 2017). Generally reported for Cyprus by Borowiec and Salata (2012) and Borowiec (2014), without mentioning examined material. As such, the two specimens collected from Cedar valley represent its first actual records from the island. *Myrmecina graminicola* is a slow-moving ant, which responds to disturbance with immobility and/or rolling itself into a ball (Collingwood 1979; Grasso et al. 2020; Borowiec and Salata 2025). Regarding its habitats, the species has been collected from Greece and Turkey from various habitats, including forests, shaded and moist habitats such as creeks, streams, gorges, valleys as well as

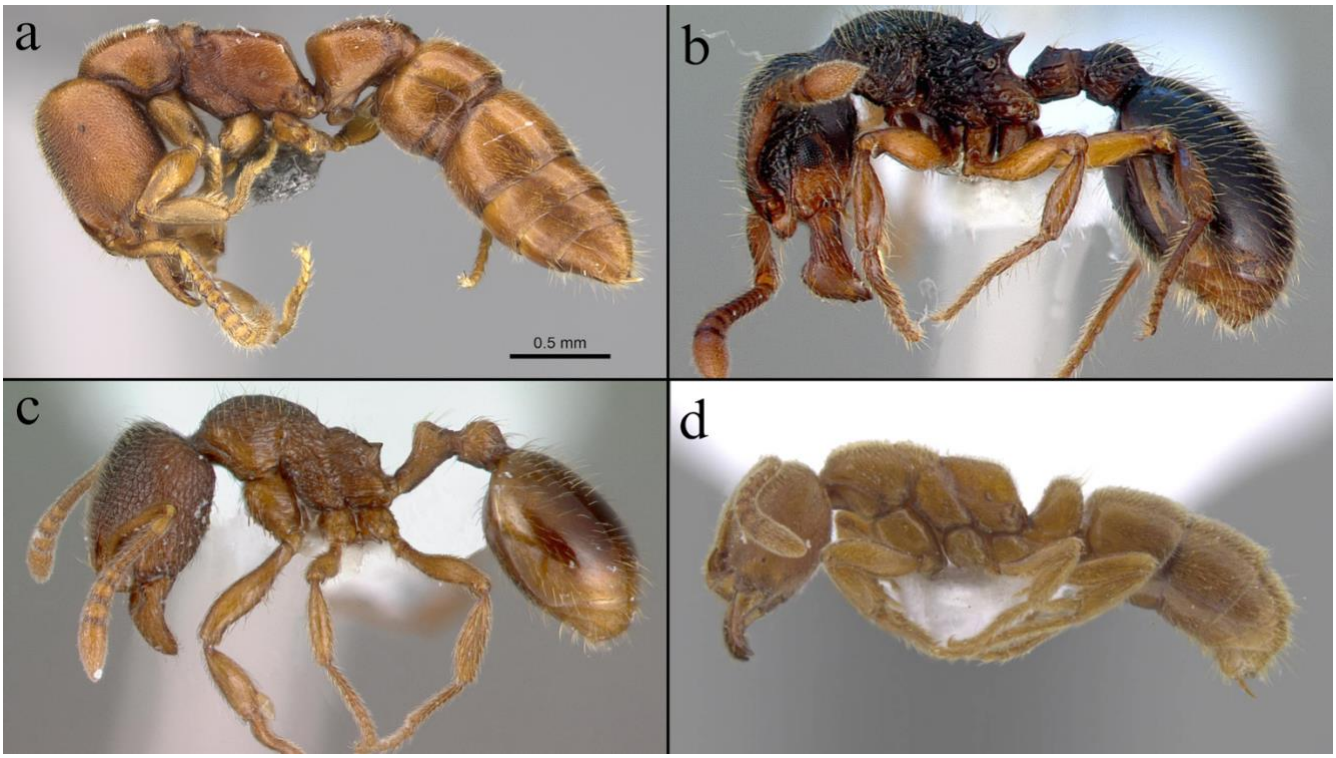

Figure 1. a. *Stigmatomma denticulatum* Roger, 1859, photographed by Michele Esposito (CASENT0923403). b. *Myrmecina graminicola* (Latreille, 1802), photographed by April Nobile (CASENT0008643). c. *Stenamma debile* (Foerster, 1850), photographed by April Nobile (CASENT0010691). d. *Cryptopone ochracea* (Mayr, 1855), photographed by M. Pierce (CASENT0637778). Photographs are provided as a visual reference and made available from AntWeb (https://www.antweb.org/).

pastures with phrygana in low to moderate altitudes (Lapeva-Gjonova et al. 2012; Karaman et al. 2014; Kiran and Karaman 2020; Borowiec and Salata 2025). Its collection site in Cyprus corresponds to a protected NATURA2000 site covered by coniferous forests and large populations of the narrow endemic Cyprus cedar *Cedrus brevifolia* (Hook. f.) A. Henry.

Stenamma debile (Foerster, 1850) (Fig. 1c)

1 g., 6 w.: Chypre / Kykko Monastery / 12.iv.1981 / leg. C. Besuchet (MHNG); 15 w.: Chypre, 700 m. / Moniatis, 17 / 13.iv.1981 / leg. C. Besuchet (MHNG); 1 g., 8 w.: Chypre, 500 m, / Kritou Terra, 33 / 21.iv.1981 / leg. C. Besuchet (MHNG); 5 w.: Chypre / Tala, 19.iv.1981 / leg. C. Besuchet (MHNG); 1 w.: Chypre, 1500 m / Prodhromos, 3 km / au S. 14.iv.1981, 20 / leg. C. Besuchet (MHNG); 1 g., 5 w.: Chypre, 1200 m / Cedar Valley, 15 / 12.iv.1981 / leg. C. Besuchet (MHNG); 1 g., 8 w.: Chypre, 500 m, env. / 10 km. au N. Akrounda / 09.iv.1981 / leg. C. Besuchet (MHNG)

Notes: *Stenamma* is considered a “leaf-litter ant genus”, with representatives being collected predominantly through leaf-litter sifting in forests. Their nests usually consist of just a few individuals, which are slow-moving and become immobile upon disturbance. Their prevalence in moist, forested habitats alongside the ever-increasing habitat fragmentation caused by humans, has led DuBois (1998) to speculate that many representatives of the genus may face extinction or are already extinct. Confusions regarding the taxonomy and identification of *S. debile*, *S. lippulum*, and *S. westwoodi* have been widely discussed, with specimens of *S. westwoodi* mentioned prior to DuBois’ publications probably concerning the more

widespread *S. debile*, although both *S. debile* and *S. westwoodi* have been confirmed in some regions (DuBois 1993, 1998; Dekoninck and Vankerkhoven 2001; García et al. 2015; Whitehead 2020). *Stenamma debile* is widespread in Europe (Janicki et al. 2016; Guénard et al. 2017), with the examined material deposited at the MHNG illustrating its wide distribution on the island, collected from both the highlands and lowlands in the districts of Nicosia, Limassol, and Paphos. However, specimens from Cyprus seem to bear some morphologically differences from populations from the Balkans and central Europe. Further examination of specimens is necessary to access the taxonomic status of Cypriot populations, which are provisionally assigned to *S. debile*.

Ponerinae

Cryptopone ochracea (Mayr, 1855) (Fig. 1d)

3 w.: Chypern, 1977 / Bath of Aphrodite / leg. Besuchet (MHNG)

Notes: Representatives of the genus *Cryptopone* in Europe and Central Asia consist of only two native species i.e. *C. arabica* and *C. ochracea*, with the latter being widespread (Janicki et al. 2016; Guénard et al. 2017). *Cryptopone ochracea* is a hypogaeic species, foraging in soil, leaf litter, under moss or rocks (Schmidt and Shattuck 2014), forming small colonies and is thus rarely encountered. Nevertheless, it has been found from a variety of lowland habitats in Greece (Borowiec and Salata 2022). In Hungary, a citizen-science project revealed it is far more widespread than thought and nests in both natural and anthropogenic habitats (Báthori et al. 2022). Such citizen science projects targeting selected (easily identifiable) species through photographic material or broadly through specimen collection and subsequent identification by specialists can supplement our knowledge of species previously thought to be "rare" or those with only a handful of georeferenced occurrences.

New distributional data

Dolichoderinae

Tapinoma festae Emery, 1925

6 w.: Chypre / Larnaca, au N. de / l'aeroport, 05.iv.1981 / leg. C. Buschet (MHNG)

Notes: Previously known only from a single locality in Limassol (Lofou) (Demetriou et al. 2024).

Tapinoma glabrella (Nylander, 1849)

1 w.: Agros, 1062 m, 34.9105oN / 33.011oE, 19.viii.2001, leg. Tsaousis (NHMC)

Notes: A widespread species on the island (Demetriou et al. 2024).

Tapinoma phoeniceum Emery, 1925

1 g.: Larnaca (Chypre) / coll. E. Deschamps (RBINS), specimen located under Tapinoma erraticum in the collection box; 1 w.: Chypre: Larnaca / 9.xi.1932 / coll. A. Ball / previously identified as *Tapinoma simrothi* Em. v. *phoenicum* Em. by Dr. F. Santschi 1937 (RBINS)

Notes: A widespread species on the island (Demetriou et al. 2024).

Formicinae

Camponotus sp. (undet.)

1 m.: Larnaca (Chypre) / coll. E. Deschamps / previously identified as *Camponotus maculatus* Fabricius v. *sanctus* Forel v. *cypriacus* Forel / Type (RBINS); 1 m.: Cyprus, Argaka / 3.vii.1973 / coll. Th. Shiakides (AUA)

Notes: Specimens not identified to species-level. Unfortunately, male ants are difficult to identify to the species level if no associated workers were collected alongside during the collecting event, leading to major taxonomic bias (Boudinot 2015).

Figure 2. *Camponotus rebeccae* Forel, 1913 worker deposited at the Royal Belgian Institute of Natural Sciences (RBNIS).

Camponotus rebeccae Forel, 1913

1 g.: Chypre / Yermasogia Riv. / 20.i.1931 / coll. Mavromoustakis (erroneously as Mavromostakis) / Ex-Typis / previously identified as *C. (Myrmentoma) lateralis* v. *cypridis* n. var by Dr. F. Santschi 1937 (RBINS); 1 w.: Chypre / Yermasogue riv. / 20.i.1931 / coll. Mavromoustakis / Ex-Typis / previously identified as *C. (Myrmentoma) lateralis* v. *cypridis* n. var by Dr. F. Santschi 1937 (RBINS) (Fig. 2)

Notes: Specimens from the same locality previously published in Santschi (1939) and Seifert (2020) are stored in the Natural History Museum of Basel (NHMB).

Camponotus samius Forel, 1889

1 w.: Chypre / Paleomylos / 27.x.1932 / coll. A. Ball / previously identified as *C. (Myrmoturba) compressus* st. *sanctus* For. by Dr. F. Santschi 1937 (RBINS) (Fig. 3)

Notes: A widespread species on Cyprus (Salata et al. 2023c; Demetriou et al. 2024).

Camponotus sanctus Forel, 1904

1 w.: Chypre: Larnaca / 19.xi.1932 / coll. A. Ball (RBINS); 1 g, 2 w.: Famagusta / 4.ix.1932 / coll. Th. Shiakides (AUA).

Notes: A widespread species on Cyprus (Salata et al. 2023c; Demetriou et al. 2024).

Figure 3. *Camponotus samius* Forel, 1889 worker deposited at the Royal Belgian Institute of Natural Sciences (RBNIS).

Cataglyphis aphrodite Salata, Demetriou, Georgiadis & Borowiec, 2023

1 w.: Larnaca (Chypre) / coll. E. Deschamps / previously identified as *Myrmecocystus viaticus* v. *orientalis* Forel (RBINS); 1 w.: Chypre: Larnaca / 9.xi.1932 / coll. A. Ball / previously identified as *C. (Cataglyphis) bicolor* st. *nodus* Br. var ? by Dr. F. Santschi 1937 (RBINS)

Notes: A widespread species on Cyprus (Salata et al. 2023a; Demetriou et al. 2024).

Lasius cyperus Seifert, 2020

3 w.: Cyprus / Pano Platres / Fohrenwald / ca 1500 m / under stein / coll. Donat Agosti / MHNG-1999 (MHNG); 1 w.: Limassol dis., Kyperounta, 1327 m, 34.9334oN / 32.9667oE, 15.iv.2001, det. Efstathiou (NHMC); 1 w.: Limassol dis., Agros, 1062 m, 34.9105oN / 33.011oE, 19.viii.2001, det. Tsaousis (NHMC)

Notes: A widespread species on Cyprus (Seifert 2020; Demetriou et al. 2024).

Plagiolepis pallescens Forel, 1889

6 w.: Chypre / Tala, 19.iv.1981 / leg. C. Besuchet (MHNG)

Notes: A widespread species on Cyprus (Salata et al. 2018; Demetriou et al. 2024).

Plagiolepis perperamus Salata, Borowiec & Radchenko, 2018

2 w.: Chypre, 500 m, env. / 10 km. au N. Akrounda / 09.iv.1981 / leg. C. Besuchet (MHNG); 1 w.: Cypr. Troodos, Platania 18-23.vi.1939 / coll. Håkan Lindb. / MZLU00231968 (MZLU)

Notes: A widespread species on Cyprus (Demetriou et al. 2024).

Myrmicinae

Aphaenogaster subterraneoides Emery, 1881

1 w.: Chypre, 500 m. env. / 10 km au N Akrounda / 09.iv.1981 / leg. C. Besuchet (MHNG); 1 g.: Chypre: Larnaca / 9.xi.1932 / coll. A. Ball / previously identified as *Aphaenogaster pallida* st. *subterraneoides* by F. Santschi 1937 (RBINS)

Notes: Specimen deposited at the RBINS previously published in Santschi (1939).

Aphaenogaster syriaca Emery, 1908

1 w: Larnaca, au N de / l'aeroport, 05.iv.1981 / leg. C. Besuchet (MHNG); 12 w.: Chypre / Tala, 19.iv.1981 / leg. C. Besuchet (MHNG); 4 w.: Chypre, 700 m. / Moniatis, 17 / 13.iv.1981 / leg. C. Besuchet (MHNG); 9 w.: Chypre, 500 m. env / Kritou Terra, 33 / 21.iv.1981 / leg. C. Besuchet (MHNG)

Notes: Records above previously published in Salata et al. (2021). Widespread on the island, already known from Paphos, Nicosia, Limassol and Larnaca districts (Salata et al. 2021; Demetriou et al. 2024).

Messor bucephalus Salata, Demetriou, Georgiadis & Borowiec, 2023

1 g: Cyprus, airport / 20.xii.1969 / coll. Th. Shiakides (AUA); 1 m.: Cyprus, Argaka / 28.vi.1973 / coll. Th. Shiakides (AUA)

Notes: The specimen collected from the "airport" refers to the old Nicosia airport (now abandoned due to the geopolitical situation on the island), as the Larnaca and Paphos airports were not constructed at the time. *Messor bucephalus* is widespread on the island (Salata et al. 2023b; Demetriou et al. 2024).

Messor orientalis (Emery, 1898)

1 w.: Limassol dis., Agros, 1062 m, 34.9105oN / 33.011oE, 19.viii.2001, det. Tsaousis (NHMC); 1 w.: Limassol dis., Kyperouta, 1327 m, 34.9335oN / 32.9666oE, 15.iv.2001, det. Efstathiou (NHMC); 1 w.: Limassol dis., Agros, 1062 m, 34.9105oN / 33.011oE, 19.viii.2001, det. Tsaousis (NHMC); 1 w.: Chypre: Larnaca / 9.xi.1932 / coll. A. Ball / previously identified as *Messor semirufus* st. *meridionalis* v. *intermedius* For. by Dr. F. Santschi 1937 (RBINS); 1 w.: Chypre: Larnaca / 9.xi.1932 / coll. A. Ball / previously identified as *Messor structor* st. *rufitarsis* v. *orientalis* Em. by Dr. F. Santschi 1937 (RBINS); 1 w.: Larnaca (Chypre) / coll. E. Deschamps / previously identified as *Stenamma (Messor) barbara structor* Forel (RBINS) (Fig. 4); 5 g.: Cyprus, Nicosia / 10.ii.1957 / S. Pieris (AUA).

Notes: A widespread species on the island (Demetriou et al. 2024), above records from the MHMC previously published in Salata et al. (2023b).

Messor syriacus Tohmé, 1969

1 w.: Limassol dis., Kyperouta, 1327 m, 34.9335oN / 32.9666oE, 15.iv.2001, det. Efstathiou (NHMC); 1 w.: Chypre / env. de Nicosie / 31.x.1932 / coll. A. Ball / previously identified as *Messor semirufus* st. *meridionalis* by Dr. F. Santschi 1937 (RBINS) (Fig. 5)

Notes: A widespread species on the island, record from NHMC previously published in Salata et al. (2023b).

Pheidole koshewnikovi Ruzsky, 1905

1 w.: Limassol dis., Kyperouta, 1327 m, 34.9335oN / 32.9666oE, 15.iv.2001, det. Efstathiou (NHMC); 1 w.: Limassol dis., Agros, 1062 m, 34.9105oN / 33.011oE, 19.viii.2001, det. Tsaousis (NHMC)

Notes: A widespread species on Cyprus (Seifert 2016; Demetriou et al. 2024).

Figure 4. *Messor orientalis* (Emery, 1898) worker deposited at the Royal Belgian Institute of Natural Sciences (RBNIS).

Figure 5. *Messor syriacus* Tohmé, G., 1969 worker deposited at the Royal Belgian Institute of Natural Sciences (RBNIS).

Solenopsis cypridis Santschi, 1934

1 g.: Chypre / Kythrea / 1.xi.1932 / coll. A. Ball / previously identified as Solenopsis fugax cypridis by Dr. F. Santschi 1937 (RBINS)

Notes: The species has been previously known from type specimens collected in Limassol by Mavromoustakis deposited at the Natural History Museum, Basel (Santschi 1934, 1937; Csősz et al. 2023). A worker from the same locality was previously published in Santschi (1939).

Temnothorax recedens (Nylander, 1856)

1 g., 4 w.: Chypre, 500 m. env. / Kritou Terra, 33 / 21.iv.1891 / leg. C. Besuchet (MHNG); 2 w.: Chypre, 1500 m / Prodhromos, 3 km / au S. 14.iv.1981, 20 / leg. C. Besuchet (MHNG); 1 g., 2 w.: Chypre, 700 m / Moniatis 17 / 13.iv.1981 / leg. C. Besuchet (MHNG); 3 w.: Chypre / Tala, 19.iv.1981, 28b / leg. C. Besuchet (MHNG); 4 w.: CHYPRE, 500 m env./ 10 km au N. Akrounda / 09.iv.1981 / leg. C. Besuchet (MHNG); 1 w.: Limassol dis., Agros, 1062 m, 34.9105oN / 33.011oE, 19.viii.2001, det. Tsaousis (NHMC)

Notes: A widespread species on the island (Demetriou et al. 2024; Salata et al. 2024).

Ponerinae

Hypoponera eduardi (Forel, 1894)

6 w.: Chypre, Loutra / Aphrodites, env. 50m / de la mer, 17.xi.1991, env. 20 m, ravin huide / leg. B. Hauser #14 (MHNG)

Notes: Previously known only from one locality for Cyprus from Stroumbi (Paphos) (Bolton and Fisher 2012).

Proceratiinae

Proceratium numidicum Santschi, 1912

1 w.: Chypre, 600 m. / Alonoudhi Junction / 15.vii.77 / C. Besuchet (MHNG)

Notes: Record previously published in Baroni Urbani and de Andrade (2003).

DISCUSSION

The examination of material from the Muséum d'Histoire Naturelle de Genève (Switzerland), the Lund Museum of Zoology (Sweden), the Royal Belgian Institute of Natural Sciences (Belgium), the Agricultural University of Athens (Greece), and the Natural History Museum Crete (Greece), provides us with the first records of four “rare” genera and species with rather “cryptic” lifestyles, dwelling in leaf litter and under the soil surface i.e. *Stigmatomma denticulatum* Roger, 1859, *Myrmecina graminicola* (Latreille, 1802), *Stenamma debile* (Foerster, 1850), and *Cryptopone ochracea* (Mayr, 1855) (Fig. 1). These new records raise the total ant diversity of Cyprus from 77 to 81 species (Demetriou et al. 2025; current study), with all new species being the sole known representatives of their respective genus, and the subfamily Amblyoponinae being reported for the first time from the island. As microphthalmous or blind soil-dwelling and leaf litter ants are rarely encountered in the field and in scientific literature, new records of the aforementioned elusive species emphasize the need for further research on hypogaeic ants, for which ecological and distributional data are scarce on Cyprus. The utilisation of specialized equipment e.g. hypogaeic pitfall traps, leaf litter sifting, Winkler traps, Berlese/Tullgren funnels, and subterranean trap nests or probes, would greatly benefit such studies emphasizing on both natural and anthropogenic habitats as well as the conservation status of leaf-litter ants.

Data from specimens in these five European collections also provide additional occurrence records for the species *Tapinoma festae* Emery, 1925, *Aphaenogaster subterraneoides* Emery, 1881, and *Hypoponera eduardi* (Forel, 1894) for which only a handful

of records have been published (Santchi 1939; Bolton and Fisher 2012; Demetriou et al. 2024). In greater detail, the known distribution of *T. festae* and *A. subterraneoides* is expanded to currently include both Larnaca and Limassol districts, while the examined specimen of *H. eduardi* provides a second occurrence record from the district of Paphos. Records of all three species constitute only their second find on the island. Taking into consideration all the presented data, the examined material not only adds to the checklist of Cypriot ants but also widens our knowledge of their distribution. Such data are crucial towards better understanding the distribution and ecology of species aiming towards assessments of their conservation status and risk of extinction through conservation tools such as the IUCN Red List.

In most cases, the examined specimens lacked coordinates of collection sites and habitat notes (Table 1), as regularly observed in older specimens, which in most cases are devoid of sufficient distributional or ecological information (other than locality and date of collection). Nevertheless, in such cases given localities and collection years can provide indications for future study sites, to assess the persistence of said species in an ever-changing landscape due to anthropogenic pressures such as urbanisation, land use change and habitat fragmentation (Kharouba et al. 2018). Further research on the ants on Cyprus is necessary to better understand their ecology and address conservation needs. This article highlights the importance of museum collections in supplementing national inventories, supplementing data on their distribution as well as providing insights for further ecological research i.e. on habitat requirements, species-interrelationships, and the conservation status of species.

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SUPPLEMENTARY MATERIAL

SupplementaryTable S1. Metadata of examined material standardized according to Darwin Core Data Standards.

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