

## Short communication

# Ants (Hymenoptera: Formicidae) of San Marino

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**Abstract** - A recent catalog of the ants of Europe and surrounding areas listed no ants recorded from San Marino. One afternoon of collecting in urban sites of San Marino yielded 23 ant species: *Aphaenogaster subterranea*, *Camponotus aethiops*, *Camponotus fallax*, *Camponotus lateralis*, *Camponotus piceus*, *Crematogaster scutellaris*, *Formica cunicularia*, *Formica gagates*, *Hypoponera eduardi*, *Lasius emarginatus*, *Lasius lasioides*, *Lasius paralienus*, *Messor structor*, *Pheidole pallidula*, *Plagiolepis pygmaea*, *Tapinoma nigerrimum* s.l., *Temnothorax angustulus*, *Temnothorax flavicornis*, *Temnothorax italicus*, *Temnothorax lichtensteini*, *Temnothorax tergestinus*, *Temnothorax unifasciatus*, and *Tetramorium caespitum*. Surprisingly, despite collecting in heavily disturbed urban sites, none of the ants known so far from San Marino are exotic to Europe.

**Key words:** San Marino, ants, biodiversity.

**Riassunto** - Le formiche (Hymenoptera: Formicidae) di San Marino.

Un recente catalogo delle formiche dell'Europa e delle aree circostanti, non elenca formiche da San Marino. Un pomeriggio di raccolta in siti urbani di San Marino ha prodotto 23 specie di formiche: *Aphaenogaster subterranea*, *Camponotus aethiops*, *Camponotus fallax*, *Camponotus lateralis*, *Camponotus piceus*, *Crematogaster scutellaris*, *Formica cunicularia*, *Formica gagates*, *Hypoconera eduardi*, *Lasius emarginatus*, *Lasius lasioides*, *Lasius paralienus*, *Messor structor*, *Pheidole pallidula*, *Plagiolepis pygmaea*, *Tapinoma nigerrimum* s.l., *Temnothorax angustulus*, *Temnothorax flavicornis*, *Temnothorax italicus*, *Temnothorax lichtensteini*, *Temnothorax tergestinus*, *Temnothorax unifasciatus*, and *Tetramorium caespitum*. Sorprendentemente, nonostante la raccolta in siti urbani pesantemente disturbati, nessuna delle formiche note finora di San Marino è esotica in Europa.

**Parole chiave:** San Marino, formiche, biodiversità.

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## INTRODUCTION

Borowiec (2014) recently published a catalog of the ants of Europe and neighboring areas, but listed no ants recorded from San Marino, a small (61 km<sup>2</sup>) land-locked country surrounded by peninsular Italy. The websites AntWeb (AntWeb, 2017a) and AntWiki (AntWiki, 2017b) currently list only two ant species from San Marino: *Solenopsis fugax* (Latreille) and *Stenamma debile* (Foerster). Neither of these web sites list the original source of this information.

A short visit to San Marino afforded a chance to increase the number of ant species known from the country. One aim of the study was to look for exotic ants, such as the Argentine ant, *Linepithema humile* (Mayr), an invasive species originally from South America that has become a worldwide pest, particularly in areas with Mediterranean climates, and has widespread records across Italy (e.g., Baroni Urbani, 1971).

## METHODS AND RESULTS

On the afternoon of 26 June 2017, JKW collected ants, mostly through hand collecting and vegetation beating, at seven urban sites around San Marino (geo-coordinates in parentheses): 1. Domagnano, Hotel Rossi, hotel garden (43.9489, 12.4622), 2. San Marino City, Via Francesco, castle parking (43.9330, 12.4504), 3. San Marino City, Viale A. Onofri, along stairway (43.9320, 12.4497), 4. Borgo Maggiore, Strada Sotomontana (43.9385, 12.4490), 5. San Marino City, Murata, Via del Serrone (43.9207, 12.4522), 6. Domagnano, Via XXV Marzo, roadside (43.9486, 12.4643), and 7. Domagnano, Via XXV Marzo, roadside (43.9512, 12.4667). FR identified the specimens, recording 23 ant species (Tab. 1).

Tab. 1 - Ant species collected at seven sites in San Marino.

Species	Sites
<i>Aphaenogaster subterranea</i> (Latreille)	3
<i>Camponotus aethiops</i> (Latreille)	7
<i>Camponotus fallax</i> (Nylander)	7

Species	Sites
<i>Camponotus lateralis</i> (Olivier)	4, 6, 7
<i>Camponotus piceus</i> (Leach)	2
<i>Crematogaster scutellaris</i> (Olivier)	1, 4, 7
<i>Formica cunicularia</i> Latreille	1, 4, 7
<i>Formica gagates</i> Latreille	2
<i>Hypoponera eduardi</i> (Forel)	3
<i>Lasius emarginatus</i> (Olivier)	1, 2, 3, 4, 5, 7
<i>Lasius lasioides</i> (Emery)	6, 7
<i>Lasius paralienus</i> Siefert	1, 3, 6
<i>Messor structor</i> (Latreille)	2
<i>Pheidole pallidula</i> (Nylander)	1, 6
<i>Plagiolepis pygmaea</i> (Latreille)	1, 4, 6, 7
<i>Tapinoma nigerrimum</i> Nylander s.l.	1, 6
<i>Temnothorax angustulus</i> (Nylander)	7
<i>Temnothorax flavicornis</i> (Emery)	1
<i>Temnothorax italicus</i> (Consani)	1, 6
<i>Temnothorax lichtensteini</i> (Bondroit)	3
<i>Temnothorax tergestinus</i> (Finzi)	3
<i>Temnothorax unifasciatus</i> (Latreille)	1, 6, 7
<i>Tetramorium caespitum</i> (L.)	1, 2, 4, 5

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## DISCUSSION

One afternoon of collecting in disturbed urban sites of San Marino yielded 23 ant species, raising the total number of ant reported to 25. Surprisingly, despite collecting in heavily disturbed urban sites regularly frequented by foreign visitors, none of the ants known so far from San Marino are exotic to Europe. These records almost certainly represent only a small fraction of the actual number of ant species present in San Marino. For comparison, 183 ant species are currently known from Italy (Poldi *et al.*, 1995; AntWiki, 2017c). We hope that this short note will serve as a starting point for a much more thorough study of the ants of San Marino.

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