

ASPECTS OF THE DISTRIBUTION OF ANTS IN AN INSULAR
MEDITERRANEAN ECOSYSTEM (CYCLADES IS., GREECE)

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Sommaire

Sont étudiés quelques aspects de l'écologie d'une communauté de fourmis dans un maquis sur l'île de Naxos, Grèce. Dix espèces ont été identifiées, parmi lesquelles prédominent Plagiolepis pygmaea et Cremastogaster sordidula. La densité des nids pour l'ensemble des espèces a été évaluée à 0,74 nids/m². Les nids présentent une distribution de type contagieux. Presque toutes les espèces construisent leur nid sous les pierres. Le volume du nid et la superficie couverte par celle-ci ont été évalués pour les deux espèces prédominantes. Des observations sur l'habitude alimentaire de toutes les espèces ont été effectuées. L'île de Naxos et des écosystèmes similaires d'Italie sont comparés.

Summary

The composition, spatial distribution, nest density and dimensions and feeding habits of an ant community in a maquis ecosystem on the island of Naxos, Greece were studied. A comparison was made between the ant fauna of that ecosystem and similar ecosystems in Italy.

Since 1981, a research program has been undertaken in order to study the structure and function of a representative insular ecosystem in the island of Naxos, the largest of the Cyclades islands in the Aegean Sea. The principal vegetational components of this ecosystem are evergreen sclerophylls such as Juniperus phoenicea, Olea europea, Pistacia lentiscus and Quercus coccifera. A full description of the area under study is under preparation. This communication deals with the first results obtained in the study of the ecology of the ant community of this ecosystem, namely the composition and the spatial distribution together with some notes on other aspects of their ecology.

The ant fauna of the study area consists of ten species: Plagiolepis pygmaea (1), Cremastogaster sordidula (2), Camponotus aestroi (3), Leptothorax sp. (4), Pheidole pallidula (5), Camponotus kiesenwetteri (6), Camponotus aethiops (7), Messor meridionalis (8), Tetramorium caespitum (9) and Solenopsis fugax (10). Two are predominant, (1) and (2). The number of their nests amounts to 73% of the total. All species are common, widely distributed in the eastern mediterranean area. Most of them are anthropophilous. The nest density for all species is 0.74 nests/m².

The nests are dispersed contagiously throughout the study area tending to aggregate around the principal plant species. Three species, (1), (3) and (6), prefer to make their nests near Olea europea while three others, (2), (4) and (5), have no preference. There are no sufficient data for the other four species. Also, three species, (1), (4) and (6), prefer to make their nests under the tree cover and especially one of them, (4), near the trunk. Another three species, (2), (3) and (5), prefer a short distance outside the edge of the cover. No species has preference for a specific orientation of its nests around a tree.

All species except one, (4), make their nests under stones with one or more entrances. The dimensions of the nests of the two dominant species were calculated. Nest volume ranges from 1200 up to 5500cm³ for (2) and from 100 to 200cm³ for (1). Ground area ranges from 50 to 250cm² for (2) and from 20 to 40cm² for (1).

Three species, (3), (6) and (7), are primarily carnivorous either hunting their prey or foraging for freshly killed animals. Four species including (1) and (2), are omnivorous utilising both plant and animal material. One species, (8), is primarily granivorous.

Most species use trails from the food source to their nest. The maximum size of the foraging territory of (8) is 700m², of (2) 55m² and of (1) 4m².

Finally, a comparison was made between the study area in Naxos and two similar areas in Italy studied by Baroni-Urbani in 1968. Using three parameters, the relative abundance, the Motomura index of complexity and the Shannon index of stability, it was found that the ant community of the Naxos area is most similar to that of a macchia region of Quercus ilex, Q. pubescens and Arbutus unedo, while it is not so similar to a degraded macchia of Fraxinus ornus and Pistacia lentiscus.

Currently, the study continues towards the elucidation of the daily and seasonal fluctuations of the ants' population and their activity as well as the estimation of biomass and energy content which will give an idea of the role of the ants in that ecosystem. A similar study in a small Cyclades island and a site on mainland Greece will give information on the zoogeography and the influence of the insular character in these ant communities.

References

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