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Oribatid mite (Arachnida: Oribatida) coenoses from SW Sardinia*

MASSIMO MIGLIORINI
Department of Evolutionary Biology, University of Siena, via A. Moro 2, I-53100 Siena, Italy. E-mail: migliorinim@unisi.it

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Abstract

Oribatid mite communities were investigated at five sites in SW Sardinia (Carbonia-Iglesias and Medio Campidano provinces) in three representative habitat types: holm oak (*Quercus ilex*) forest, cork oak (*Quercus suber*) forest and pineland (*Pinus radiata* and *P. pinaster*).

A total of 1,180 oribatid mite specimens, belonging to 67 different species, were extracted from soil samples. Significant differences in species diversity, abundance and Berger-Parker index of dominance were found among the different vegetation types throughout the sampling period, and non-metric multidimensional scaling (n-MDS) ordination confirmed a clear separation between the three coenoses, showing how oribatid assemblages are significantly affected by habitat evolution.

The faunistic knowledge of the oribatid mites of Sardinia is rather poor, the present research represents one of the first contributions for the main Sardinian island. Besides a majority of eurytopic and widespread species representing the main part of the edaphic communities in Mediterranean landscapes, some rare and characteristic species are recorded. They are remnants of the original populations of Sardinia and the western part of the Italian peninsula, resulting from the complex tectonic events that formed the western Mediterranean basin. Among these, *Belorchestes gebennicus* Grandjean, 1957 (Zetorchestidae), *Microppia minus longisetosa* Subías & Rodriguez, 1988, and *Pluritrichoppia insolita* Subías & Arillo, 1989 (Oppiidae) had never been collected in Italy, single individuals of *Oxyoppioides* and *Thamnacarus* probably belong to undescribed species, while *Brachychthonius hirtus* Moritz, 1976 (Brachychthoniidae), *Mongaillardia aeoliana* (Bernini, 1979) (Amerobelbidae), *Berniniella aeoliana* (Bernini, 1973), *Lauroppia similifallax* Subías & Minguez, 1986, *Ramusella* (*Ramusella*) *gyrata* (Mahunka & Paoletti, 1984) (Oppiidae) and *Ophidiotrichus oglasae* Bernini, 1975 (Oribatellidae) are new to the Sardinian fauna.

Key words: Oribatidae, soil fauna, faunistics, biogeography, population dynamics, Italy

Introduction

There is a vast diversity of organisms that live in the soil. Globally, the majority of these organisms are invertebrates that spend at least a portion of their life-cycle belowground (Wardle 2002; Cole *et al*. 2006). Identifying patterns and determinants of species richness is a major theme of community ecology and is of fundamental importance for the management and preservation of biological diversity. Traditionally, the study of these issues—the causes and ecological consequences of biological diversity—has had an aboveground focus (Lawton 1994), but zoologists and ecologists are increasingly turning their attention belowground where the majority of the earth's terrestrial organisms dwell (Wardle 2002). This surge of interest in soil biodiversity stems from the recognition that the organisms living belowground regulate major ecosystem processes such as organic matter turnover and nutrient mineralization, and that feedbacks between aboveground and belowground communities have a key role in governing ecosystem functioning (Bardgett *et*

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