

TEMPORAL VARIATION AND SPATIAL DISTRIBUTION OF GROUND
COLEOPTERA IN AN INSULAR MEDITERRANEAN ECOSYSTEM
(CYCLADES IS., GREECE)

by A. TRIHAS and A. LEGAKIS

Dept. of Biology, Univ. of Crete, Iraklion, Greece

Introduction

Very few facts are known about the ground fauna of mediterranean ecosystems and especially of the eastern mediterranean regions. Most of the data concern systematic and faunistic studies, carried out by foreign researchers who make short collecting trips.

The present study attempts to give a first view on the fauna of ground-living Coleoptera of an insular medit. ecosystem situated on the island of Naxos in the Cyclades Is. This study is part of the research project "Structure and energy flow in Aegean insular ecosystems" carried out by the Sect. of Ecology and Taxonomy of the Univ. of Athens and partly financed by the EEC.

Site description

The ecosystem under study is situated in the eastern part of Naxos island, on a calcareous substrate, composed mainly of rocks of medium to large size. The vegetation consists of Juniperus phoenicea (37% cover.), Olea europaea silvestris (8% cover) and Pistacia lentiscus (7% cover). A large proportion (47%) is open ground containing various herbaceous species. Human interference expresses itself mainly by grazing from goats. The climate of Naxos can be considered as temperate to maritime with an annual range of temper. of about 13°C.

Materials and methods

Forty pitfall traps (6cm. i.d., 8cm depth) were placed throughout the ecosystem under the three dominant species and in the open ground. The contents were collected each month from April 1982 to April 1983.

Results

The number of ground Coleoptera species that were caught was 66. The dominant families both in number of species in number of individuals are Carabidae, Staphylinidae, Tenebrionidae, Scarabaeidae and Curculionidae. Also the fam. Dasytidae, Anthicidae and Ptinidae,

although poor in numbers of species, have a very high number of individuals during some months.

Seasonal variation: The greatest number of individuals has been caught during spring and in the middle to late autumn.

In particular, Carabidae have a high number of individuals in May with a second peak in October. Tenebrionidae appeared to be active between May and June. Curculionidae had a long period of activity both in spring and autumn. Scarabaeidae had two totally different peaks, early spring and late autumn. Staphylinidae have a long but low activity during spring and appear in high numbers in November and December. Of particular interest was the high population number of Dasytidae, Anthicidae and Ptinidae during May and their almost total absence during the rest of the year. Other smaller families were poorly represented in the samples throughout the year.

Spatial distribution: As regards the habitat preferences of the beetles, a slight migration seems to take place from one microhabitat to another as climatic conditions change. This is most obvious in the cases of Carabidae and Tenebrionidae. During May they are active in the open ground and under the drier Olea. When temperature increases in June they are found preferably under the more dense and humid Pistacia and Juniperus. The same trend is obvious with Carabidae, Curculionidae and Staphylinidae during October and November. Finally Dasytidae and Anthicidae appear mainly in the open ground and under Olea during their short presence in May.

Conclusions

The lack of information and published results are indicative of the problem one is faced with, when studying the ground beetles of ins. mediterranean ecosystems. It is therefore difficult to compare our results with those from other similar ecosystems. However comparisons with temperate forest ecosystems show similar activities (e.g. Carabidae) in coniferous forests and in our mediterranean shrublands. Slight differences are evident between deciduous forests and mediterranean ecosystems and consist of a lower activity during autumn in the former. Staphylinidae on the other hand reach a peak earlier in deciduous forests contrary to mediterranean shrublands. The Tenebrionidae and Scarabaeidae are more thermophilous and xerophilous families so they are more active in the mediterranean ecosystems. Ground living Curculionidae are also very rare in temperate forests but they were not in our captures.