ECOLOGICAL AND FAUNISTIC INVESTIGATIONS OF CAVE AG. PARASKEVI NEAR SKOTEINO (CRETE, GREECE)

K. PARAGAMIAN and A. LEGAKIS

Department of Biology, University of Crete, Iraklion (Greece)

Introduction

Greece is an important karstic region since limestone rocks comprise 60-65% of its surface. Up to now, 9000 karstic forms have been recorded. Crete is exceptionally rich in karstic forms. Although it has only 6% of the total surface of Greece, it has more than 30% of its caves. 3200 karstic forms have been recorded so far from Crete.

The cave fauna of Greece has not been studied sufficiently. Only 3% of the total known caves has been prospected so far. New species are continuously being discovered. However, little or no data exist on the ecology of greek caves. The present communication attempts to present a first report on such an investigation in a cave of Crete.

The cave of Ag. Paraskevi is near the village of Skoteino, east of the city of Iraklio in central Crete. Before the entrance to the cave, a doline has been formed by the fall of part of the roof. The cave itself consists of tree zones: the entrance, the variable temperature-twilight zone which is a large room 134m long and 33m wide, and the constant temperature-dark zone, a smaller room, 18x12.5x12m.

Both the large entrance and the spacious room after it cause significant fluctuations in temperature and humidity as they are readily connected with the outside. These fluctuations are more pronounced near the entrance but diminish towards the dark end. Relative humidity starts at 65% at the entrance and reaches 80% at the end of the large room. The dark room has a more or less constant humidity of 90%.

Ecological notes

The doline is the immediate external environment of the cave and therefore it interacts with both the cave itself and the surroundings. These are very degraded due to overgrazing. On the contrary, the vegetation of the doline is very rich. Dominant plants are Pinus brutia, Tamarix sp. and Rubus sp. Five species of birds were observed nesting in the doline. Six more were observed feeding only. The most abundant species is Passer domesticus with 150-200 individuals.

Finally, five mammal species have been observed in the doline.

The entrance zone connects the main cave with the outside. It has a rich vegetation. On the walls inside there are many nests of P. domesticus. One characteristic animal of this zone is the Orthopteran Troglophilus sp. This was the only zone where it was observed. It frequented the most humid part of the entrance. It is nocturnal and during the day it stays under stones. Other interesting inhabitants of the entrance are one isopod species, the coleopteran Blaps sp., the spider Tegenaria ferruginea and the diplopod Acanthopetalum furculigerum.

The variable temperature zone includes the largest part of the cave. The only birds nesting in this zone are Columba livia. Under their 3 nests large heaps of guano have been formed. These heaps are where most of the arthropods of this zone live. On the heaps were observed Discoptila lindbergi, T. ferruginea, Blaps sp. and A. furculigerum.

The constant temperature zone is where most of the troglobionts live. The most abundant arthropod in this zone was Schizidium perplexum. The population of this blind isopod, estimated by eight $1m^2$ quadrats, was appr. 450 adult individuals. Also abundant was the Orthopteran Dolichopoda paraskevi with an estimated population (mark-recapture method) of 200-500 individuals.The spider Minotauria attemsi was almost confined to this zone. Finally, in this zone nested appr. 50 Rhinolophus hipposideros bats.

Conclusions

The ecology of the cave of Ag. Paraskevi has some very interesting points. The fact that it is well delimited into three distinctive zones is obvious in the differentiation of the animals that live in it. This zonation is more evident in the case of the Orthopterans, the spiders, the isopods and the bats. In the three arthropod groups, each species is more or less confined to a particular zone and is exploiting its resources. Wherever two species of the same group are found in the same part, they differ in their habits and therefore minimize competition.

Some of the animals living in the cave have a systematic and biogeographic interest. The genus Troglophilus has 3 species recorded from Crete. The cave species is intermediate between two of them. The dipluran Campodeidae sp. and the diplopod Polydesmida sp. have not been recorded from Crete and may be new species. The other diplopod, A. furculigerum , is endemic of Crete.