

## COMPARATIVE RESEARCHES ON THE STRUCTURE OF EPIGEAN FAUNA IN TWO TYPES OF NATURAL ECOSYSTEM AT POIANA SARATA, BACAU COUNTY, ROMANIA

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**Key words:** *epigean, invertebrates communities, deciduous forest, meadow hay*

### INTRODUCTION

Researches regarding epigean invertebrates' communities were carried out in the year 2011 in two types of natural ecosystem from Poiana Sarata, Bacau county: deciduous forest, and meadow hay. The first one is located on the left bank of the river Halos and the second one is on the right bank of it. This paper aims to assess the taxonomic structure of both habitats in ecological context.

### MATERIAL AND METHODS

The biological material was sampled regularly during 2011, by using Barber traps, from the different types of sampling sites: from the middle part of the slope and from the base of the slope in deciduous forest, and from different distance from the river in the meadow hay.

The identification process of the individuals stopped to family level, and sometimes at genus and even species level. Ecological study of the invertebrate communities has required the calculation of some ecological indices.

### RESULTS AND DISCUSSIONS

An amount of 8484 invertebrate individuals belonging to 8 classes was sampled in both ecosystems, with an unequal numerical distribution: 5702 individuals in deciduous forest and 2782 individuals in the meadow hay. Insect class is dominant in all of the sampling sites (Figure 1).

Analyzing the biological material we found that in the deciduous forest the dominant insect order is Coleoptera (48.63%), followed by Hymenoptera (46.06%) while in the meadow hay is vice versa (62.07% Hymenoptera and 43.69% Coleoptera) (Figure 2).

In the deciduous forest 13 families of coleopterans were identified, of which Carabidae family is the best represented (80.10%), and it is followed by Staphylinidae (9.78%). Other coleopterans families have recorded very low values of relative abundance.

In the meadow hay we found 12 beetle families, and as in deciduous forest, Carabidae family has the highest value of relative abundance (79.92%), and it is followed by Staphylinidae (8.81%) (Figure 3).

In the whole material, Carabidae family is represented by 12 genera. In each of the two studied ecosystems we found 10 genera, but not the same. Only eight genera are common for the two types of ecosystem.

Thus, in the deciduous forest the best represented is Pterostichus (63.15%), followed by Carabus (13.46%) and by Bembidion (13.35%), while in the meadow hay the best represented are Poecilus (37.95%) and Pterostichus (31.28%) (Figure 4.).

From the point of view of the food regime we found a different situation in each of the two types of ecosystem. In the deciduous forest the predators are the best represented (53.23%), and they are followed by the omnivorous species (21.29%) and by the detritivorous species (17.24%).

Unlike the forest, in the meadow hay the best represented trophic category is omnivorous (44.50%), followed by the predators (37.74%) and the phytophagous (10.39%) (Figure 5).

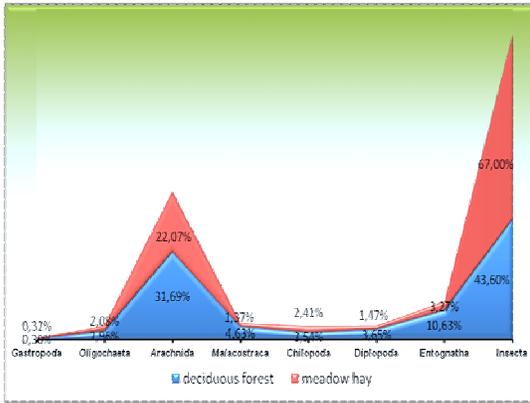


Figure 1. The relative abundance of invertebrate classes in the epigean fauna in different types of natural ecosystems

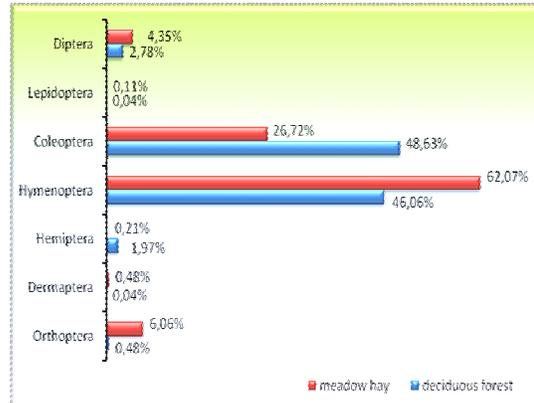


Figure 2. The relative abundance of insect orders in the epigean fauna in different types of natural ecosystems

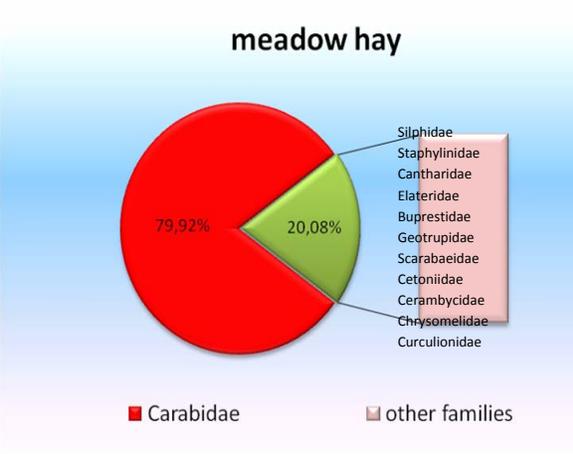
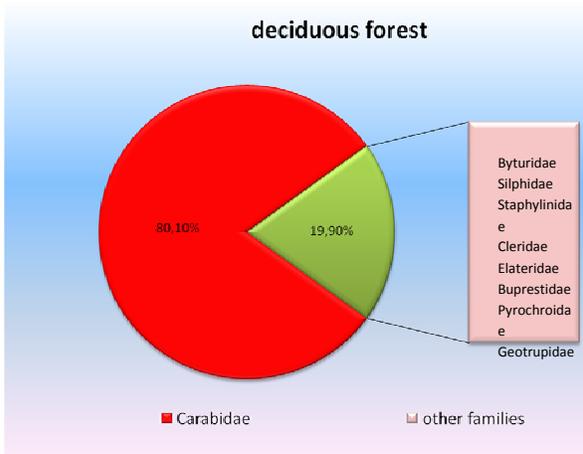


Figure 3. The relative abundance of beetle families in the epigean fauna in different types of natural ecosystems

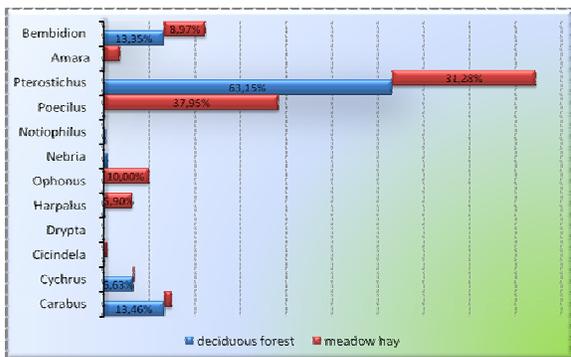


Figure 4. The relative abundance of beetle genera in the epigean fauna in different types of natural ecosystems

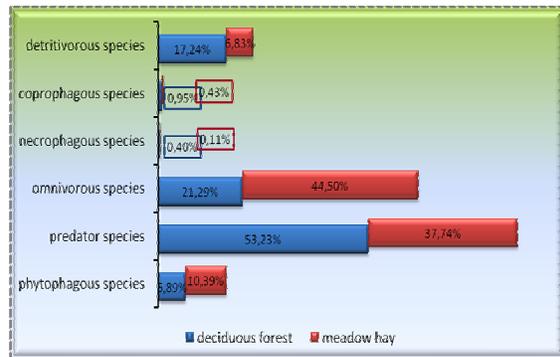


Figure 5. The relative abundance of trophic categories in the epigean fauna in different types of natural ecosystems

## CONCLUSIONS

This study on the epigeal invertebrates communities were carried out in the year 2011 in two types of natural ecosystem: deciduous forest and meadow hay.

The aim of this study is to assess the taxonomic structure of the invertebrate communities in the epigeal fauna of both habitats in ecological context, with emphasis of the quantitative structure. We also wanted to highlight the representative taxa and the trophic categories characteristic for each type of ecosystems.

An amount of 8484 invertebrate individuals belonging to 8 classes was sampled in both ecosystems. We found that the number of individuals increases with the distance of sampling site from the river.

Insect class is dominant in all of the sampling sites. Within the insect class, the best represented taxa are the Coleoptera order in the deciduous forest, and the Hymenoptera order in the meadow hay. One of the beetle families is dominant in both ecosystems: Carabidae.

In the deciduous forest the predators are the best represented, while in the meadow hay the best represented trophic category is omnivorous.

Although a decade ago the anthropogenic influences were much stronger in the study area, the large number of taxa identified in 2011 together with the quantitative data indicates a balanced structure of the epigeal fauna.

## ABSTRACT

Researches regarding epigeal invertebrates' communities were carried out in the year 2011 in two types of natural ecosystem from Poiana Sarata (Bacau County, Romania): deciduous forest, and meadow hay. The first one is located on the left bank of the river Halos and the second one is on the right bank of it. This paper aims to assess the taxonomic structure of both habitats in ecological context.

The biological material was sampled regularly during 2011, by using Barber traps, from the different types of sampling sites: from the middle part of the slope and from the base of the slope in deciduous forest, and from different distance from the river in the meadow hay.

An amount of 8484 invertebrate individuals belonging to 8 classes and 17 orders was sampled in both ecosystems, with an unequal numerical distribution: 5702 individuals in deciduous forest and 2782 individuals in the meadow hay. Insect class is dominant in all of the sampling sites.

Analyzing the biological material we found that in the deciduous forest, in the middle part of the slope, the dominant insect order is Coleoptera (54.48%), while at the base of the slope, the dominant insect order is Hymenoptera (48.48%), followed by Coleoptera (43.69%).

In the two types of sampling sites in the meadow hay we found that Hymenoptera and Coleoptera are dominants and the Carabidae family is by far the best represented. We also found that the number of individuals increases with the distance from the river.

Although a decade ago the anthropogenic influences were much stronger in the study area, the large number of taxa identified in 2011 together with the quantitative data indicates a balanced structure of the epigeal fauna.

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