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# COMPARATIVE STUDIES ON THE EPIGEAN INVERTEBRATES COMMUNITIES IN DIFFERENT TYPES OF FOREST AND AGROSYSTEM

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***Key words:*** *epigean, invertebrates communities, forest, agrosystem*

## INTRODUCTION

Researches regarding epigean invertebrates communities were carried out in two stages (july 2010 and july 2011) in three types of forest from Valea Uzului, Bacau county (beech and hornbeam, oak and beech, pine plantation) and a maize crop placed nearby Perchiu hill reserve, Bacau county.

The aim of the present study is the assessment of the quantitative as well as the qualitative structure of the invertebrate communities in the epigean fauna, and also to highlight the representative taxa and the trophic categories characteristic for each type of ecosystems.

## MATERIAL AND METHODS

The biological material was sampled regularly, in the same period of each of the two years (2010, 2011) by using Barber traps. After that, the biological material was laboratory processed. 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 440 invertebrate individuals belonging to 9 classes was sampled in all of the three In pine plantation four beetle family were well represented, of which Carabidae family is dominant (57.14%) and it is followed by Chrysomelidae (19.05%) (Figure 3).

From the point of view of the food regime we found that in all of the three types of forest, the predators are the best represented (51.68% in beech and hornbeam forest; 50.94% in oak and hornbeam forest; 80.33% in pine plantation), and they are followed by the phytophagous species (Figure 4).

In the maize crop agrosystem an amount of 915 individuals belonging to six invertebrates classes were sampled.

types of forest, with an unequal numerical distribution: 327 individuals in the first type of forest (beech and hornbeam), 52 individuals in the second type of forest (oak and hornbeam) and 61 individuals in pine plantation. The lowest value of individuals number was recorded in the second type of forest (oak and hornbeam) probably due to the substrate structure (scree), and due to a big slope and a poor litter. Insect class is dominant in all of the sampling sites (Figure 1).

In all of the three types of forest we found that the most of insects belong to coleopterans (79.83%). Even if the coleopterans are dominant in each of the forest types, the average dominance is different. Thus, in beech and hornbeam forest the beetles have recorded an average dominance of 75.44%, in oak and hornbeam forest 92.11%, and in pine plantation 89.29% (Figure 2).

In all of the three types of forest ten families of coleopterans were identified, with the dominance of Carabidae (63.33%), followed by Silphidae (13.89%). Other coleopterans families have recorded lower values of dominance.

In beech and hornbeam forest we found 9 beetle families, with the dominance of Carabidae family (70.63%) followed by Geotrupidae (7.94%) (Figure 3).

In oak and hornbeam forest we found only 4 beetle family, with the dominance of Silphidae family (54.55%) followed by Carabidae (39.39%) (Figure 3).

The insect class is dominant (Figure 1), and it is represented by four insect orders. Obviously, the beetles are dominants (Figure 2). Within coleopterans, Carabidae family is by far the dominant (83.96%) (Figure 3).

From the point of view of the food regime we found that in maize crop agrosystem the predators are the best represented (82.08%), and they are followed by the phytophagous species (9.18%) and then by omnivorous species (5.25%) (Figure 4).


Figure 1. The relative abundance of invertebrate classes in the epigean invertebrate communities in different types of forest and agrosystem (2010-2011)

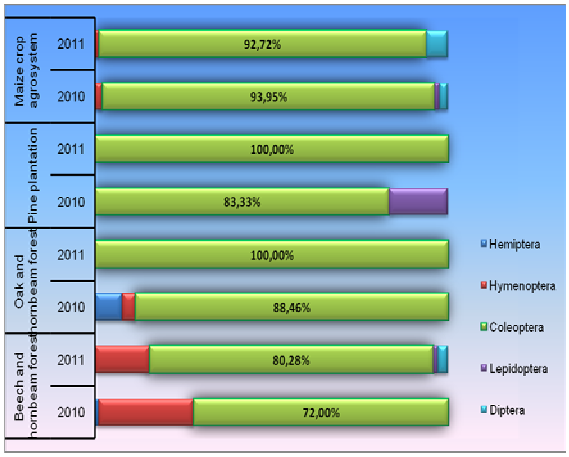


Figure 2. The relative abundance of the insect orders in the epigean invertebrate communities in different types of forest and agrosystem (2010-2011)

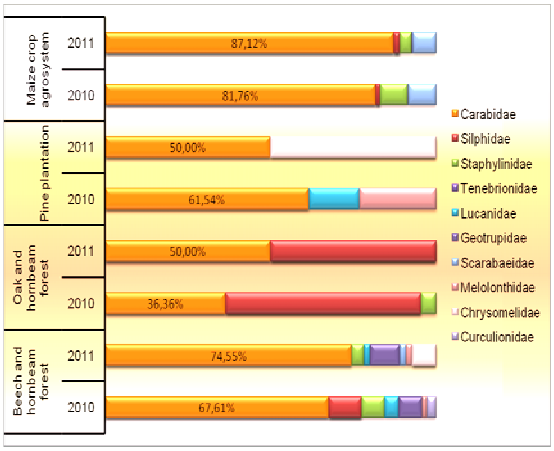


Figure 3. The relative abundance of the beetle families in the epigean invertebrate communities in different types of forest and agrosystem (2010-2011)

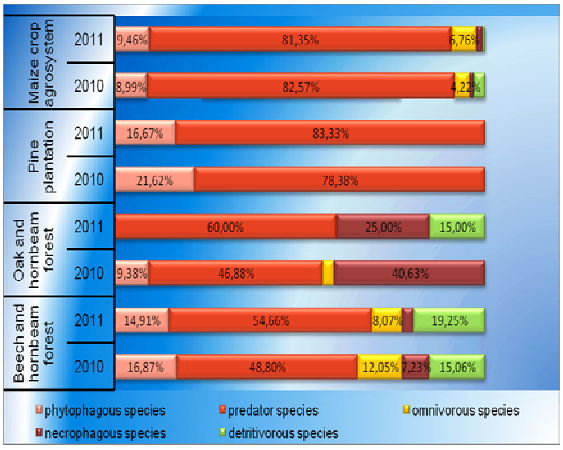


Figure 4. The relative abundance of trophic categories in the epigean invertebrate communities in different types of forest and agrosystem (2010-2011)

## CONCLUSIONS

The present study on the epigean invertebrates communities were carried out in two stages (july 2010 and july 2011), and in three types of forest and in a maize crop.

The aim of the present study is the assessment of the quantitative as well as the qualitative structure of the invertebrate communities in the epigean fauna, and also to highlight the representative taxa and the trophic categories characteristic for each type of ecosystems.

An amount of 1355 invertebrate individuals belonging to 9 classes was sampled in all of the four types of ecosystem. Insect class is dominant in all of the sampling sites. Within the insect class, the best represented taxa are the Coleoptera order, and the Carabidae family.

From the point of view of the food regime we found that in all of the three types of forest, as well as in the maize crop agrosystem, the predators are dominant and they are followed by the phytophagous species.

## ABSTRACT

Researches regarding epigean invertebrates communities were carried out in two stages (July 2010 and July 2011) in three types of forest from Valea Uzului, Bacău County (beech and hornbeam,

oak and beech, pine plantation) and a maize crop placed nearby Perchiu hill reserve, Bacău County. The aim of the present study is the assessment of the quantitative as well as the qualitative structure of the invertebrate communities in the epigean fauna, and also to highlight the representative taxa and the trophic categories characteristic for each type of ecosystems.

The biological material was sampled regularly, in the same period of each of the two years (2010, 2011) by using Barber traps. An amount of 411 invertebrate individuals belonging to 9 classes and 14 orders was sampled in all of the three types of forest, with an unequal numerical distribution: 327 individuals in the first type of forest (beech and hornbeam), 53 individuals in the second type of forest (oak and hornbeam) and 61 individuals in pine plantation. Insect class is dominant in all of the sampling sites. In all of the three types of forest we found that the most of insects belong to coleopterans (79.83%). Ten families of coleopterans were identified, with the dominance of Carabidae (63.33%), followed by Silphidae (13.89%). Other coleopterans families have recorded lower values of dominance.

In the maize crop agrosystem the insect class is also dominant and it is represented by six insect orders. Obviously, the beetles families are dominants. Within coleopterans, Carabidae family is by far the dominant (83.96%).

From the point of view of the food regime we found that in all of the three types of forest, as well as in the maize crop agrosystem, the predators are dominant and they are followed by the phytophagous species.

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