An overview and new findings on the coleopteron-Fauna of Malesia E Madhe Region

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Abstract

Malesia e Madhe Region is an area characterized by very high geo-diversity and entomo-fauna constitutes one of the most significant components. Of the variety of insects, Coleopteras and especially Carabidae and Scarabidae Family, constitute the richest species in diversity and one of most important links in the food chains from the ecologic viewpoint. This study is based on the material collected in the spring and autumn of 2011 through 2014. There have been determined 56 species integrated in 51 genders of Carabidae and Scarabidae Family. On account of this study, a database has been elaborated. All necessary information on the Coleopterons of Carabidae and Scarabidae families of Malesia e Madhe Region is available in this program. The Scarabidae Family is presented by 40 types included in 24 genera The Carabidae Family is presented by 16 types included in 11 genera. In this study are given the data on 13 new types of the Coleopteron-fauna of Malesia e Madhe Region. Seven of them belong to Carabidae Family and the rest to Scarabidae Family.

Keywords: Coleopterophauna, taxonomic data, Carabidae Family, Scarabidae Family, bio-ecology of species, chorology of species.

1. Introduction


Following them, in the context of full recognition of the Albanian Entomofauna in this paper are given the data on the species of two families Carabidae and Scarabidae, as well as the analysis of taxonomic ecological and biogeographical features.

The sheath-wing insects represent the richest order in kind of the class of Insecta (Coleoptera represent 80% of them) [1, 2]. They play an important role in the links of the food chains, the process of decomposition, and the pollination of plants. About 300 000 species, widespread in all environments, have been hitherto known [3]. The sheath-wing insects have a varied lifestyle. Some of them are helpful. Like nature caretakers in the biological war, they play a special role in the pollination of plants. The represented of Carabidae Family play a particular rol in the biological war, may be cited Coccinella septempunctata. Some types of the Scarabidae Family like Melolontha melolontha, Oxytherea funesta have been as insects that ruin agricultural and forest products.

2. Material and Methods

The material is collected is conducted during the years 2011-2014, determining the 5 stations Rec, Razêm, Bog, Rrapsh, and Dedaj.

Methods of collection and material are based on the publications listed in the literature, mainly to Colas (1969). The frequency of sampling was random since the survey is a systematic type. The material was collected mainly during spring and autumn. Because of the great diversity of species of families Carabidae and Scarabidae, collecting methods were varied. The material collection is done with the uptake, Japanese umbrellas, combs methodical, Pit's traps, nets entomological etc. Collected material is inserted in jars labeled with ether and is scored for each station, collection date, the collector's name and information on the time it is received [4, 13].
To can to processing, the material is placed in bottles with ethyl alcohol mixture 90% white vinegar, distilled water, in the ratio 80: 5: 15 and a few drops of ether. Further work continued in the laboratory. Once the bottles are derived from insects are inserted and left for 24 hours at room ice in a refrigerator. Later a part of the insects are stored in the refrigerator to be stored in the frozen state and the rest in entomological mattresses. The material collected, and stored in this way is determined using stereomicroscope based on literature listed [9, 10, 12].

3. Results and Discussion

In this paper, are determined 56 species belonging to Carabidae and Scarabidae Family, displayed as follows:
Carabidae Family; encountered in 11 species and 16 types Scarabidae Family; encountered in 24 species and 40 types

Based on this study, a database that reflects every hitherto achieved result has been designed. In this program, all necessary updated information on the Coleoptera of Northern Albania, Carabidae and Scarabidae Familly, that can be accessed.

Analyzing the representans of Carabidae family, is evident that the Gene with the highest number of species are Carabus with 5 species (Carabus glabratus, Carabus scarabeus, Carabus hungaricus Gene, Carabus intricatus, Carabus cariaceus) and Harpalus with 2 types (Harpalus afinis, latus). Analyzing the representans of Scarabidae family, is evident that the gene with the highest number of species are Geotrupes with 4 (Geotrupes vernalis, Geotrupes sylvaticus, Geotrupes mutator, Geotrupes spiniger) and Anyspolia with 4 types (Anyspolia tempestiva, Anyspolia erichsoni, Anyspolia agricola, Anyspolia austriaca).

Concerning the types referred to for the first time [6, 7], it results that there are 30 new types of the Albanian Coleopterofauna. This study provides a table displaying the types referred to for the first time in detailed. These types belong to the following families:
Carabidae Family represented by 7 types
Scarabidae Family represented by 6 types

Analyzing the representans of Carabidae family, is evident that the Gene with the highest number of species are Carabus with 5 species (Carabus glabratus, Carabus scarabeus, Carabus hungaricus, Carabus intricatus, Carabus cariaceus) and Harpalus with 2 types (Harpalus afinis, latus).

Fig 1: Gene and species according 2 families.

Fig 2: Genes and species referred for the first time

In this study, the type composition of Coleopterofauna has a modest addition in its type number, as displayed in Fig.no.3.

Fig 3: Additions in Coleopterofauna composition

Fig 4: Table showing number of species according to chorology for Carabidae Family
Compared to other families, the Carabidae, Scarabidae, Cerambycidae, Curculionidae, Chrysomelidae Families have the greatest type addition. The zoogeographic analysis [8] of these types in this study shows that they are widely spread in space, and as such they are included in many zoogeographic groups.

Fig 5: Graph showing number of species according to chorology for Carabidae Family

In this study, these data together with their zoogeographic type pertinence have been displayed in Fig.no.4

<table>
<thead>
<tr>
<th>Zoogeographic group</th>
<th>Number of species</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>European</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Palarctic</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Euroasiatic</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Balcan-Anatolic</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Euro-Siberian</td>
<td>15</td>
<td>37.5</td>
</tr>
</tbody>
</table>

Fig 6: Table showing number of species according to chorology for Scarabidae Family

The table and the respective graph clearly illustrate the inclusion of the types of zoogeographic groups according to families in the Malësia e Madhe Region in different zoogeographic groups.

The zoogeographic groups evidence the phenomenon of distribution [7] in space whereas the chorology bears special values with respect to type characteristics.

For Carabidae family, according to chorology, the biggest zoogeographic group is Palarctic with 8 representants, while European and Siberian have 2 representants.

For Scarabidae family, according to chorology, the biggest zoogeographic group is Eurosiberian with 15 representants, while Palarctic has 11 representants.

Of the Coleoptera of Malesia e Madhe Region, there are also 12 types [5] included in the list of the endangered species and as such, they are written in The Red Book of the Albanian Flora and Fauna.

Carbus coriaceus  Carbus glabratus  Calosoma sycophanta  Calosoma inquisitor

Carabus auronitens  Gnorimus nobilis  Gymnopleurus mopsus  Oryctes nasircomis
4. Conclusions
Coleoptera represent the biggest of the animal world and one of the main links in the food chain and the ecosystem. For this reason, a lot of efforts should be made to propagate their values, the role they play in the eco-system, and their economic importance.

As concerns the diversity of the areas and habitats, Malesia e Madhe Region represents one of the areas that draws most interest in the process of the fauna study in our country.

In the curse of this study, 56 species representatives of Carabidae and Scarabaeidae families of Coleoptera which belong by 16 species, belonging to 11 genes.

Concerning the types referred for the first time the Carabidae Family has 7 types, while the Scarabaeidae Family has 6 types. The analysis of the respective geographic revalence of the Carabidae and Scarabaeidae Family in Malesia e Madhe Region, shows that groups that exhibit the greatest type diversity are Palearctic with 8 species (Carabidae Family) and Eurosiberian with 15 species (Scarabaeidae Family).

5. Recommendations
Thought completed with new types by study, because of the big number of species (80% of all insects are represented by Coleoptera) the order of Coleoptera in still vaguely familiar and not properly studies. For this reason, we recommend that in the future, owing to the big family diversity and the high degree of difficulty some families pose in the course of their indentification, studies on family basis.

For the future study of microscopic Coleoptera, we recommend that the digging method with methodological comb be used at the foot of the tres and trunks then, the material should be either collected with all the subtractor selected with the assistance of the aspirator. We recommend that the study of coleopteran be focused on the larval stage, because in most cases, they represent harmful periods in both agriculture and arboriculture.

Special attention should be paid to the study of the biology and ecology of the types and the methods of the biological struggle. To have a complete of their real state, and to determine their habitat, genuine studies should be made in the Biology of the types with a specials status, accomplish in this way their best possible protection.

6. References