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MACROLEPIDOPTERA SPECIES WITH VULNERABLE STATUS AND THEIR IMPACT ON THE PROTECTED AREA OF DUMBRAVA SIBIULUI

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Abstract

The present work is a part of a complet study concerning of Macrolepidoptera from the forest "Dumbrava Sibiului" in the Sibiu county. They are presented only the species found by myself for the frist time from this area. I mention that these species were not found by me in the five collections of Lepidoptetra studied by me and preserved at the Natural Hystory Museum in Sibiu.

***Key words*:** *collections, "Dumbrava Sibiului" Natural Rezervation, Macrolepidoptera, species vulnerable*

INTRODUCTION

Data on Macrolepidoptera species collected from "Dumbrava Sibiului" are reported over 120 years since the nineteenth century onwards. These are summarized in the following collections: Dr. Daniel Czekelius, Dr. Eugen Worell, Viktor Weindel, Heinrich von Hannenheim and Rolf Weyrauch. Existing material in collections aimed at the study mentioned, contributed to valuable scientific information to achieve this study [1,10,15,17].

During 2001-2011, the research work allowed to identify 243 species of Macrolepidoptera belonging to 162 genera and 18 families, out of entomological material consisting of 2.271 samples.

This material comes in a proportion of 54% and 46 % private collections of data in the museum collections mentioned above. Species nomenclature was updated after classification presented by László Rakosy, Marin Goia, Zoltan Kovacs in catalog published by the Society Lepidoptera Lepidopterological Romanian Romania in Cluj in 2003 [7,8,9,16].

MATERIALS AND METHODS

Macrolepidoptera for research and knowledge of Forest "Dumbrava Sibiului", I used the method of observation, photography and collecting adults to determine the species.

For collecting, transporting and displaying adult material and tools are needed to avoid any damage to the specimens collected in field laboratory where they are to be prepared and preserved stone.

Materials and tools used for the collection and display of butterflies:

- Wire entomological (net)
- jar with cork
- dropper bottle for ether or chloroform
- Envelopes for butterflies
- Tweezers flat-blade screwdriver (very good are the philatelic)
- Ace entomological
- Boxes of land
- Tension for butterflies
- Boxes insectary for collection
- Scrapbook for notes
- Labels
- Black Pencil
- Pocket Magnifier
- Kit for collection

For nocturnal Lepidoptera collection, are necessary :

- A strong light source,
- A very white screen,
- A screen stand,
- More wide-mouth jars with cork
- A rigid plastic.

RESULTS AND DISCUSSIONS

Of the 2,271 specimens belonging to 243 species, 1,698 were collected by the author which is 74.76 % of the species reported in forest "Dumbrava Sibiului". Other collections studied 573 specimens, representing 25.24 %, is divided as follows: 357 specimens belonging to 12 families, 110 genera, 142 species data from Weindel Viktor 's collection of 143 specimens belonging to 11 families, 35 genera and 51 species from the collection of Eugene Worell, 43 specimens belonging to 5 families, 28 genera and 35 species from the collection of Daniel Czekelius, 15 specimens belonging to 2 families, 6 genera and 7 species from the collection of Heinrich von Hann Hannenheim and 15 specimens belonging to 2 families, 2 genera and 2 species collection of Rolf's Weyrauch.

The oldest existing collections of data collection studied belong to Daniel Czekelius of the late nineteenth like Pericalia matronula L. existing species in a single sample collected at 29.VI.1888, species was not recovered until currently used by any other collector .

General faunal analysis (diversity, abundance, dominance) we made a show considerable diversity and abundance Macro studied area. According to these analyzes and observations of six families are dominant in diversity and abundance: *Hesperiidae* (10 species, 75 specimens) *Pieridae* (22 species -92), *Nymphalidae* (22 species, 213), *Satyridae* (14 275 species), *Lycenidae* (12 67 species), *Plebejinae* (14 species, 82).

Of the 243 species described November 71 species reported to the studies by the 55 genera and 14 families respectively, which is 29.3 % of the species described in the area. As a result, the choice of the habitat by the new species was due to environmental conditions have changed over time. Others have been introduced with different crops in the surrounding areas of the forest, so finding a favorable habitat by host plants, which is the place of submission of tips for females and larvae feed support. All of the species, 114 species have been found 46.9 % and 58 fauna species of interest, 23.8 % were collected species present but in the past they can be found also in the 5 entomological collections studied.

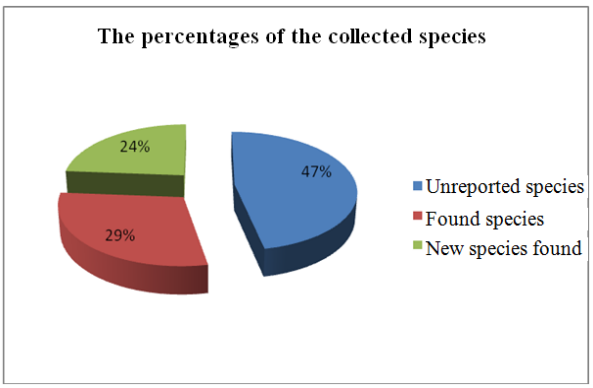

Fig.1.The percentage of the collected species

The dominant and characteristic species in the euconstante area are: Brassicae, *Pieris brassicae* L. - Family *Pierinae* -68 samples

- *Pieris rapa rapa* L., family - Pierinae -92 samples
- *Melita cinxia cinxia* L.-Family *Nymphalidae* -148 samples
- *Melanargia galathea* - Family *Satyridae* - 134 samples

Also in the study area are a number of rare species as: *Pyrgus alveolus Hub., Hesperia coma coma L., Neptis rivularis rivularis Scop., Neptis sappo Pallas, Nymphalis xanthomelas D.&S., Pararge achine achine Scop., Minois dryas Scop., Strymonidia pruni L., Lycaena tityrus Poda.*

Of the 10 studied species are migratory as: *Agrius convolvuli L., Acherontia atropos L., Macroglossum stellatarum L., Agrotis segetum L., Pieris brassicae L., Pontia daplidice daplidica L., Colias crocea crocea f. helice Geoff.&Foerc., Vanessa atalanta L., Vanessa cardui L., Aglais urticae L.*

On the basis of family structure relative to genus and species is noted that the following families: *Lemonidaea, Notodontidae, Chenuchidae* are very poorly represented in Forest "Dumbrava Sibiului" habitat at a rate of 0.62 % to 0.41% genera and species of all known species in the study. The proportion of 1.23% in genera representing two genera belonging to each family are included the following Families: *Saturniidae, Papilionidae*, with a rate of 1.85% which is three genera belonging to each

family: *Lymantriidae*, 2.47 % genres *Drepanidae* Families, *Thyatiridae*, 3.70% genres *Pieridae* families, genera of the Family *Hesperiidae* 4.32% with 4.54% genera of the family *Sphingidae*, 5.55% genra *Lasiocampidae* Family [3,4,5,6].

Top genres represented are Family *Geometridae*, a total of 38 genera, followed by the *Noctuidae* family has 32 genera and 13 genera *Nymphalidae* Family. The species is the largest family *Geometridae* with 53 species, followed by family Noctuidae and *Nymphalidae* 40 species with 25 species. There are also a number of species heliofile with a large number of representatives of families: *Lycaenidae* 26 species, *Pieridae* 19 species, *Arctiidae* 14 species, *Lasiocampidae* 14 species and *Satyridae* 10 species [11,12,13,15].

After analyzing the overall biological and ecological (environmental groups, food regimen, stage of development, during the flight) we obtained the following results:

It was founded that the predominant species oligophag (58 %) poliphag (24%) are less numerous; monophag is rare (18%);

Also related to flight period of the species have been reported classifies species according to the number of generations per year in species monovoltine which are the most numerous and represent 63 % of all species, bivoltine with a percentage of 33 % and trivoltine by only 4%.

From field observations, we could study the mating behavior of the species *Lotus corniculatus, Trifolium arvense, Vicia sp., Lathyrus aphaca, L. montanus, L. pratensis, L. tuberosus***,** and other spp especially legumes. Preferred hours are morning flight on sunny days 10-12, and other aspects of the ethology and ecology of Macrolepidoptera species that are described in each species[14].

We prepared a summary of the flight periods of the species studied, the general dynamics shows that during the fly most species were found in the interval between the months of May to August, these data are new to the area.

To facilitate national and international comparisons, we performed the analysis of the following categories and degrees of endangerment recommended by IUCN in 2000 and 2001 [8,9]:

CR- 4 species critically endangered taxa 1.6%
EN- 5 species endangered taxa 2.2%
VU- vulnerable taxa 28 species 11.5%
NT- potential- threatened taxa 62 species 25.5%
DD- 3 species 1.2%
species that do not fall into these categories 141 species 58 %

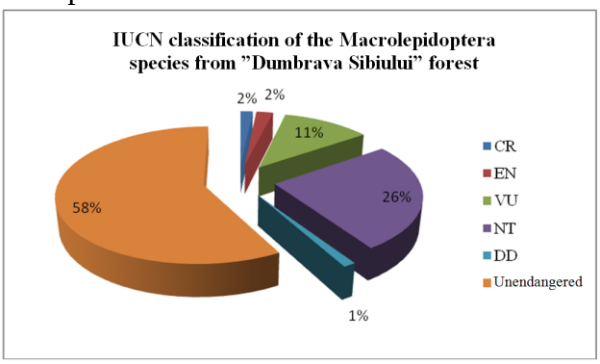

Fig.2.Classification of Macrolepidoptera speciaes from"Dumbrava Sibiului" forest

CONCLUSIONS

It can therefore be said that the macro-entomofauna in Forest Dumbrava Sibiului is diverse, well structured with 71 species and 129 species dominant constant. There is a specialization habitats and microhabitats, the species of host plants caused by ecological valence species. There are a variety of ecological niches, the full exploitation of trophic base.

Specifics of the forest, its important function mediogenă and biodiversity conservation, its declaration in 1994 led natural park. This decision contributed research results in forest grove Sibiu on various groups of insects [2].

As recommendations regarding protection lepidopterofaunei in Forest Dumbrava Sibiului suggest the following:

Taking special measures for the protection of wild flora that serves as the basis trophic larvae, and in the case of rare plant species or already extinct in the area to be cultivated in introducing the then directed spontaneous flora for its recovery.

Using classic electric lighting perimeter

Forest Dumbrava Sibiului where there are many tourist attractions and leisure , avoiding fluorescent lighting that attract some species of Lepidoptera *Noctuidae* especially of what are death and knowing that they have an affinity for lights.

Ban on night traffic on roads surrounding forest or use of motor vehicles to avoid collision with dipped *Noctuidae* species that are attracted to light sources.

Prohibition of use of chemical plant control Forest Dumbrava Sibiului and surrounding areas that are now forest plots.

Captive breeding of species which are now extinct elsewhere in the country raised for restocking the study area.

Priorities for further research on topics relating to the thorough study lepidopterofaunei which includes both species and Micro-Macrolepidoptera Forest "Dumbrava Sibiului", this is a step forward postdoctoral work in this research.

Research results have been materialized through the publication of the first monograph entitled Macrolepidoptera of Dumbrava Dibiului Forest area publishing in Press house University "Lucian Blaga" Sibiu.

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