

DATA ON DIURNAL LEPIDOPTERAN FAUNA OF NATURE RESERVE SPRING FROM CORBII CIUNGI (DÂMBOVIȚA)

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ABSTRACT. The article presents the results of the research carried out on the diurnal lepidopteran fauna of the Nature Reserve Spring from Corbii Ciungi, Dâmbovița County, during May-September 2012. There were identified 33 species of diurnal lepidopteran of which only one species *Lycaena dispar* (Haworth, 1803) is included in the list of protected species at European level. There are presented data on grouping of the diurnal lepidopteran species according to ecological and biogeographical characteristics.

Key words: fauna, diurnal lepidopteran, reserve, Corbii Ciungi.

REZUMAT. Date asupra faunei de lepidoptere diurne din Rezervația Naturală Izvorul de la Corbii Ciungi (Dâmbovița). Articolul prezintă rezultatele cercetărilor efectuate asupra faunei de lepidoptere diurne din Rezervația Naturală Izvorul de la Corbii Ciungi, județul Dâmbovița, în perioada mai-septembrie 2012. Au fost identificate 33 de specii de lepidoptere diurne, dintre care o singură specie, *Lycaena dispar* (Haworth, 1803) este inclusă în lista speciilor protejate la nivel european. Sunt prezentate date cu privire la gruparea speciilor de lepidoptere diurne în funcție de caracteristicile ecologice și biogeografice.

Cuvinte cheie: faună, lepidoptere diurne, rezervație, Corbii Ciungi.

INTRODUCTION

The first data on the fauna of the area Nature Reserve Spring from Corbii Ciungi was published by L. Botoșăneanu and Șt. Negrea, in the year 1961 (Botoșăneanu & Negrea, 1961). They are the result of a larger study on the fauna of the springs and groundwater from Romanian Plain, started in year 1959. After the discovery of the complex of springs from Corbii Ciungi, L. Botoșăneanu and Șt. Negrea started a systematic faunal and ecological study, before this complex springs to be changed by man (Negrea & Negrea, 1999). Rich biological material collected for two years (14 May 1959 - 5 April 1961) was the basis of publication of the first faunal lists, which highlighted the extraordinary diversity of the springs complex and relict character of many species identified here

(Botoșăneanu & Negrea, 1961; 1962). The faunal results, complete by the floristic data, have led authorities to declare the springs complex from Corbii Ciungi reserve, on June 24, 1966, under the name: *Nature Reserve Spring from Corbii Ciungi*. The studies mentioned above have been focused on aquatic fauna inventorying of the springs, being mentioned 73 supraspecific taxa, most hydrobionts (aquatic macroinvertebrates).

Over the period 2005-2007, C. Ciubuc (Ciubuc, 2007) conducting a study on the **Maintaining and improving the favorable conservation status of habitats and species and stopping the decay of biodiversity in Nature Reserve Corbii Ciungi, Dâmbovița County**. On this occasion were partially inventoried and terrestrial invertebrates from riparian areas adjacent to the springs and creeks that are part of the reserve, including the butterflies, which are mentioned as order, without being given a list of species.

In the year 2012 the latest study on habitats and species of the aquatic and terrestrial vertebrates and invertebrates was conducted at Nature Reserve Spring from Corbii Ciungi for inventorying species and habitats of Community interest. On this occasion it was written and a list with the diurnal lepidopteran species identified, which partially covers the lack of information on the lepidopteran fauna of the reserve perimeter.

The springs complex is located on the left bank of the Neajlov Valley, at approximately 800 m from the Neajlov River, at approx. 2 km after exiting the commune Corbii Mari, toward commune Izvoru (former village Corbii Ciungi), on the right side of DN61 (at approx. 200 m from road), at a medium altitude of 110 m (Negrea & Negrea, 1999). The frontal springs are arranged in the form of an arc of circle, with a length of about 600 m. They are grouped into two complexes, appointed by the locals' fountains, to the west, fountain his Lisandru Vlăduț and to the east the Căcaleților fountain. The two fountains are separated by a swampy area which representing the watershed. The water of each springs complex is drained by one the collector creek, which flows into the Neajlov River. The two creeks (the creek his Lisandru Vlăduț and the Căcaleților creek), delimiting between them an area of about 9 ha (Fig. 1).

Riparian areas, from the immediate vicinity of the watercourse, are covered by herbaceous vegetation and shrubs. In the marshy areas we meet typical paludous vegetation consisting of species belonging to the genera: *Phragmites*, *Typha*, *Carex* and *Juncus*, which form thickets of rush and reed on relatively small surfaces. Shrub layer is composed of young specimens: *Alnus glutinosa* (L.), *Salix fragilis* L., *Salix cinerea* L., *Evonymus europaeus* (L.), *Cornus sanguinea* (L.), *Viburnum opulus* L., *Rosa canina* (L.), *Crataegus monogyna* (Jacq.), *Rhamnus frangula* (L.) etc., disposed singly or in compact groups, around the springs and along the two creeks. In some places, width the zone with spontaneous vegetation, one side and other of the watercourse, is less than 10 m. The entire reserve is surrounded by crops, including the area bounded by the two creeks is cultivated.

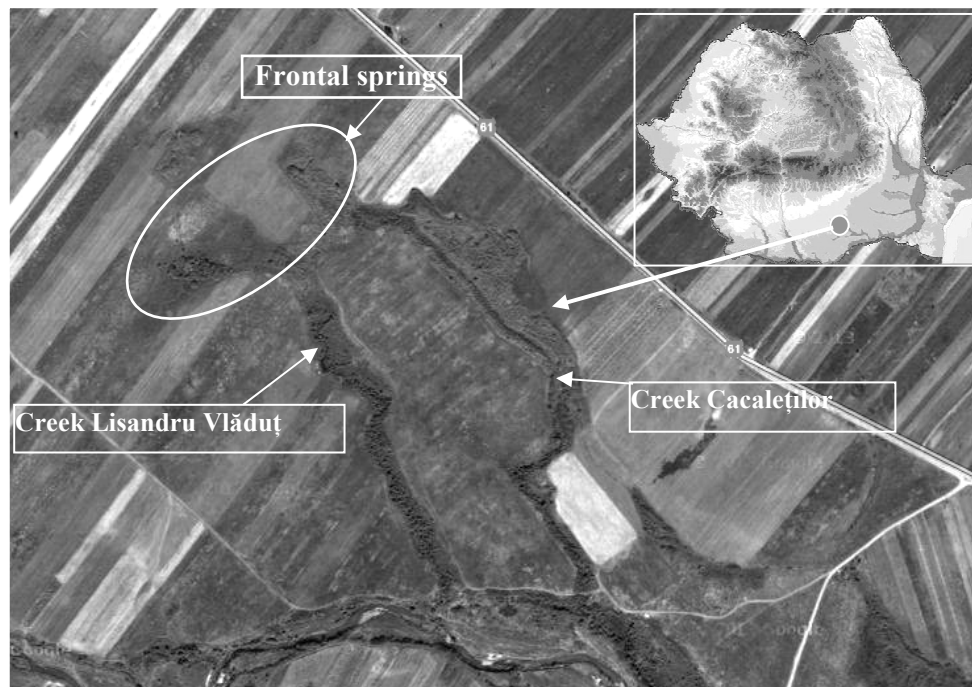


Figure 1 - Locating the wetland complex Spring from Corbii Ciungi (<http://maps.google.ro>).

MATERIALS AND METHODS

For identification/collection in the terrain of the species were chosen the areas with herbaceous vegetation and/or shrubs, from vicinity of the water. Thirty meters long transects parallels with the watercourse were made. At browse the transects we walk slowly and steadily to identify and to count/collect individuals; identifying/the collection the specimens was done in an imaginary cube with sides of 5 m; 2.5 m to the left and right of the observer and 5 m in front and above. For common species identifying was made „at sight”, directly or with binoculars; for the most part of species the identification was performed by the capture method, the identification and the release; the species that could not be identified in the field were collected in entomological envelopes and determined in laboratory. We used an entomological net with the opening of 30 cm.

The collecting was made monthly, from May to September 2012, between hours 9:00 and 16:00.

Researches have focused on faunal aspects; therefore the work can be classified in the category called „checklist”. We followed compiling the list of species and identify species of conservation interest. Were investigated only diurnal lepidopteran. The faunal data are accompanied by a brief characterization of the ecological and zoogeographical structure of the diurnal lepidopteran fauna

from Nature Reserve Spring from Corbii Ciungi. The quantitative data that complement the faunistical information are indicative, working methodology was not designed to investigate the quantitative aspects.

RESULTS AND DISCUSSIONS

207 exemplary of diurnal lepidopteran from 33 species, grouped into 5 families (Tab. 1) were identified.

Table 1 - The list of the diurnal lepidopteran species collected in the Nature Reserve Spring from Corbii Ciungi (Dâmbovița), including data about: the number of collected exemplars from each species, the ecological character and the geographical spreading.

No.	Taxon	15.05.2012	07.06.2012	10.07.2012	03.08.2012	01.09.2012	28.09.2012	Sum	Ecological character	Zoogeographical elements
	Phylum Arthropoda									
	Class Insecta									
	Order Lepidoptera									
	FAM. HESPERIIDAE									
1	<i>Erynnis tages</i> (Linnaeus, 1758)				1			1	Mxt	EuA
2	<i>Ochlodes sylvanus</i> (Esper, 1777)				1			1	Mh	EuA
3	<i>Pyrgus malve</i> (Linnaeus, 1758)					1		1	Eu	EuA
	FAM. PAPILIONIDAE									
4	<i>Iphiclides podalirius</i> (Linnaeus, 1758)	2	1	2	1			6	Mxt	PM
5	<i>Papilio machaon</i> (Linnaeus, 1758)		1	1		1		3	M	Hol
	FAM. PIERIDAE									
6	<i>Leptidea sinapis</i> (Linnaeus, 1758)	2	4	3	1	3		13	M	EuA
7	<i>Anthocaris cardamines</i> (Linnaeus, 1758)		3	1				4	M	EuA
8	<i>Aporia crataegi</i> (Linnaeus, 1758)		2	2				4	M	EuA

Continues.

Table 1 - Continuation.

No.	Taxon	15.05.2012	07.06.2012	10.07.2012	03.08.2012	01.09.2012	28.09.2012	Sum	Ecological character	Zoogeographical elements
9	<i>Pieris brassicae</i> (Linnaeus, 1758)		2	1	4	2		9	M, Mg	EuA
10	<i>Pieris napi</i> (Linnaeus, 1758)			5	2			7	Eu, Mg	PM
11	<i>Pieris rapae</i> (Linnaeus, 1758)	4	5	3	3	4	1	20	Eu, Mg	Hol
12	<i>Pontia edusa</i> (Fabricius, 1777)	2	2	3		1		8	Mx	PM
13	<i>Colias croceus</i> (Fourcroy, 1785)		1	2	4			7	Mxt, Mg	EuA
14	<i>Colias hyale</i> (Linnaeus, 1758)		2	2	6	1		11	M, Mg	EuA
15	<i>Gonepteryx rhamni</i> (Linnaeus, 1758)	1			3	1		5	M, Mg	EuA
	FAM. LYCAENIDAE									
16	<i>Aricia agestis</i> (Denis & Schiffermüller, 1775)			2	3			5	Mxt	EuA
17	<i>Celastrina argiolus</i> (Linnaeus, 1758)					2		2	M	Hol
18	<i>Lycaena phlaeas</i> (Linnaeus, 1761)	1	3	3	2			9	Mxt, Mg	Hol
19	<i>Lycaena dispar</i> (Haworth, 1803)		1		1			2	Hg	PM
20	<i>Plebeius argus</i> (Linnaeus, 1758)	2	5	1	2			10	Mh	EuA
21	<i>Polyommatus icarus</i> (Rottemburg, 1775)			7	2	3		12	M	EuA
	FAM. NYMPHALIDAE									
22	<i>Aglais urticae</i> (Linnaeus, 1758)			3	1	2	1	7	Eu, Mg	EuA
23	<i>Argynnis paphia</i> (Linnaeus, 1758)			1	3	1		5	Mh	EuA
24	<i>Boloria selene</i> (Denis & Schiffermüller, 1775)				1			1	Mh	Hol
25	<i>Inachis io</i> (Linnaeus, 1758)				2			2	M	EuA

Continues.

Table 1 - Continuation.

No.	Taxon	15.05.2012	07.06.2012	10.07.2012	03.08.2012	01.09.2012	28.09.2012	Sum	Ecological character	Zoogeographical elements
26	<i>Issoria lathonia</i> (Linnaeus, 1758)			2				2	Mxt, Mg	EuA
27	<i>Polygonia c-album</i> (Linnaeus, 1758)						4	4	Eu	EuA
28	<i>Vanessa atalanta</i> (Linnaeus, 1758)				2			2	Eu, Mg	EuA
29	<i>Vanessa cardui</i> (Linnaeus, 1758)			1	1			2	Eu, Mg	Cos
30	<i>Coenonympha pamphilus</i> (Linnaeus, 1767)			6	5	2	3	16	M	EuA
31	<i>Lasiommata maera</i> (Linnaeus, 1767)			2	2	3	1	8	M	EuA
32	<i>Maniola jurtina</i> (Linnaeus, 1767)			5	1	7	3	16	M	EuA
33	<i>Melanargia galathea</i> Fruhstorfer, 1917			2				2	M	PM
	Total species	7	13	23	24	15	6			
	Total individuals	14	32	60	54	34	13	207		

Legend: Eu – Eurybiont; Hg – Hygrophilous; Mh – Mesohygrophilous; M – Mesophilous; Mg – migratory; Mx – Mesoxerophilous; Mxt – Mesoxerothermophilous; Cos – Cosmopolitan; EuA – European-Asian; Hol – Holarctic; PM – Ponto-Mediterranean.

The small number of species and individuals of diurnal lepidopteran identified was determined by the small size of the site, approximately 9 ha (Ciubuc, 2007) and of the sampling method.

The most of the identified species belong to the family Nymphalidae (Fig. 2), their weighting was 36.36%. It was followed by the families: Pieridae (30.30%) and Lycaenidae (18.18%). The other two families, Hesperidae and Papilionidae, had smaller weightings by 10% (9.09% and 6.07%).

As number of identified specimens, raised weighting had families: Pieridae (42.51%) and Nymphalidae (32.37%), followed at a big distance by: Lycaenidae (19.32%), Papilionidae (4.35%) and Hesperidae (1.45%), (Fig. 2).

Out of the 33 species identified, most specimens belonged to species: *Pieris rapae* (9.66%), *Coenonympha pamphilus* (7.73%), *Maniola jurtina* (7.73%) and *Leptidea sinapis* (6.28%), followed by: *Polyommatus icarus* (5.80%) and

Colias hyale (5.31%). The other species were recorded percentages less than by 5%. It is noted that no species no exceeded the threshold of 10%.

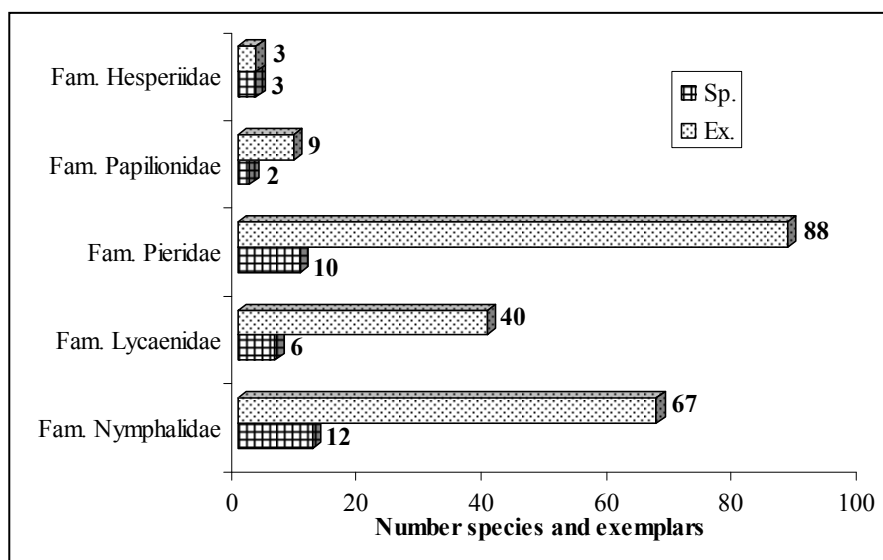


Figure 2 - The number of exemplars and species identified in each family of diurnal lepidopteran.

In accordance with their ecological preferences, the 33 species of diurnal lepidopteran identified in the Nature Reserve Spring from Corbii Ciungi were grouped into 6 ecological categories (Rákossy, 1997; Székely, 2008). The most of the species have entered in the category of mesophilous species, their weighting was of 42.42%. These together with the eurybiont species (21.21%) totaled 63.64% of total the species identified, being followed by the mesoxerothermophilous species (18.18%) and by ones mesohygrophilous (12.12%). Were identified only one hygrophilous species (3.03%) and one mesoxerophilous (3.03%), (Fig. 3).

If we exclude from the analysis the mesophilous and eurybiont species, which do not have the discriminant character in relation, regards characterization of the environmental conditions, we observe a slight dominance of the mesoxerothermophilous species on the mesohygrophilous species. This can be the result the aridization tendency of the area, due to restricting the original riparian habitats, wet, phenomenon accompanied by the expansion of xerophyllous habitats, due to anthropic pressure at which is subjected to the area. This tendency, observed at level to other groups of invertebrates, is confirmed and by the presence of a single hygrophilous species, *Lycaena dispar* (Haworth, 1803).

Zoogeographical analysis of diurnal lepidopteran fauna of the reserve perimeter Spring from Corbii Ciungi show net dominance of the species European-Asian (66.67%) followed by Holarctic and Ponto-Mediterranean species (15.15% each), (Fig. 4).

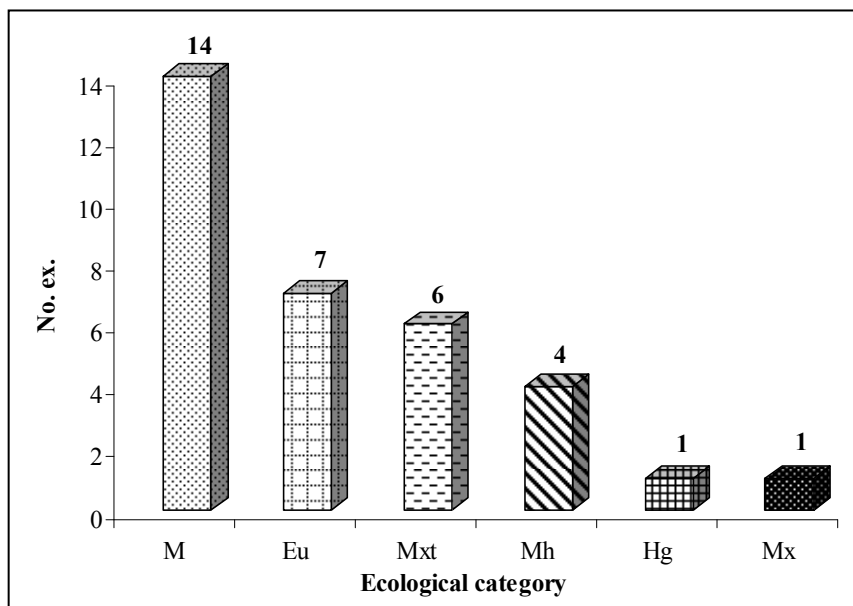


Figure 3 - The number of diurnal lepidopteran species that entering in each ecological category (Eu – Eurybiont; Hg – Hygrophilous; M – Mesophilous; Mh – Mesohygrophilous; Mx – Mesoxerophilous; Mxt – Mesoxerothermophilous).

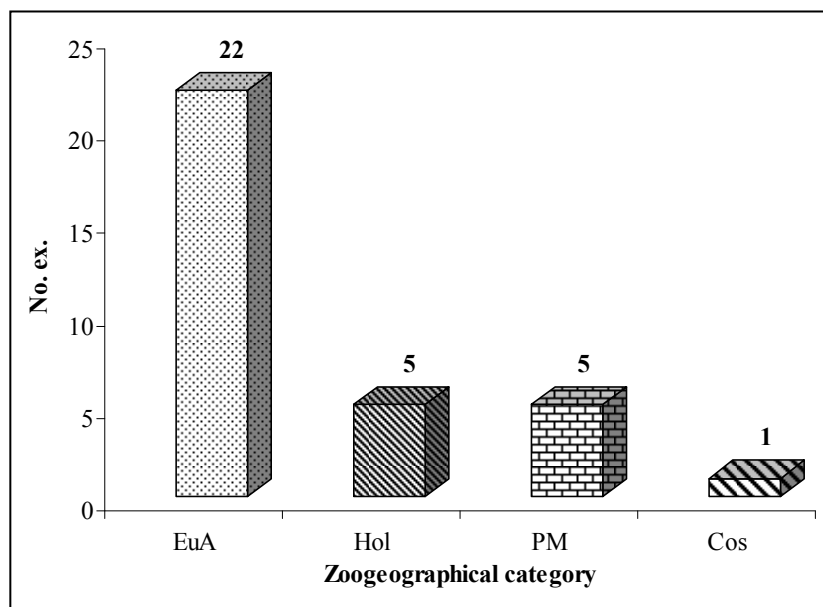


Figure 4 - Zoogeographical structure of diurnal lepidopteran fauna from Nature Reserve Spring from Corbii Ciungi (Cos – Cosmopolitan, EuA – European-Asian, Hol – Holarctic, PM – Ponto-Mediterranean).

Previously submitted data shows that, from the zoogeographical point of view, the diurnal lepidopteran fauna from Nature Reserve Spring from Corbii Ciungi is dominated by widely spread species. Weighting the Holarctic and European-Asian species (spread throughout Europe, except the extreme north and in the temperate zone of Asia) is 81.82%. This finding indicates existence in the perimeter of the reserve of a large number by species with average and big ecological valence. This characterizes the fauna with relatively low specificity for particular environment conditions.

The large share of European-Asian elements show that diurnal lepidopteran fauna from Nature Reserve Spring from Corbii Ciungi is resembling, from zoogeographic point of view, with fauna of some regions in Romania localized at latitudes and altitudes greater (Brașov, Cluj, Timișoara), characterized by a weighting of European-Asian elements greater than 60% (Székely, 2006).

From conservative point of view, was put into evidence the presence of a species protected at European level *Lycaena dispar* (Haworth, 1803), mentioned in: Habitats Directive 92/43/EEC (the Annex II); O. U. G 57/20.06.2007, Annex 3 (plant and animal species whose conservation requires the designation of Special Areas of Conservation and a Avifaunistic Special Protection Areas) and Annex 4A (species of Community interest; animal and plant species requiring strict protection). Due to protection measures taken at European level, IUCN changed its status from Vulnerable species (VU) to the Near Threatened species (NT).

CONCLUSIONS

In the period of the achievement the study (May-September 2012), were identified, in the Nature Reserve Spring from Corbii Ciungi, 33 species of diurnal lepidopteran, grouped into 5 families.

Of the 33 species identified, a single species, *Lycaena dispar* (Haworth, 1803), the order Lepidoptera, family Lycaenidae, is included in the list of species of Community interest, being protected at European level.

Specific composition of diurnal lepidopteran fauna is not characteristic for wet riparian areas. Most of the identified species are common species, widespread, which have penetrated in riparian habitats due to their degradation under the influence of anthropic activities, represented by grubbing of coppices and expanding crops.

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