

DATA ON THE DIURNAL LEPIDOPTERAN FAUNA FROM THE PERIMETER OF THE IMPORTANT BIRD AREA - THE STORAGE LAKES ON ARGEȘ

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ABSTRACT. The article presents an inventory of diurnal lepidopteran species identified in the perimeter of the Important Bird Area ROSPA0062 - The Storage Lakes on the Argeș. For each species there were made clarifications depending on: the number of identified specimens, ecological preferences, spread, frequency and conservation status at national level. There were identified 57 species of diurnal lepidopteran, grouped in 6 families, of which a single species, *Lycaena dispar* (Haworth, 1803), is included in the list of species protected at European level.

Key words: fauna, diurnal lepidopteran, Important Bird Area ROSPA0062 - Storage Lakes on Argeș.

REZUMAT. Date asupra faunei de lepidoptere diurne din perimetrul Ariei de Importanță Avifaunistică - Lacurile de acumulare de pe Argeș. Articolul prezintă un inventar al speciilor de lepidoptere diurne identificate în perimetrul Ariei de Importanță Avifaunistică ROSPA0062 - Lacurile de acumulare de pe Argeș. Pentru fiecare specie au fost făcute precizări cu privire la: numărul de exemplare identificate, preferințele ecologice, areal, frecvența și starea de conservare la nivel național. Au fost identificate 57 de specii de lepidoptere diurne, grupate în 6 familii, dintre care o singură specie, *Lycaena dispar* (Haworth, 1803), este inclusă în lista speciilor ocrotite la nivel European.

Cuvinte cheie: faună, lepidoptere diurne, Aria de Importanță Avifaunistică ROSPA0062 - Lacurile de acumulare de pe Argeș.

INTRODUCTION

Inventorying the flora and fauna, as the human pressure increases on the natural environment, is the first step of the development of nature protection measures. For this reason, faunal researches have a major role in the foundation of management plans for conservation of biodiversity, especially for protected areas such as Important Bird Area ROSPA0062 - The Storage Lakes on the Argeș.

During the research there were pursued primarily the faunal aspects, the qualitative. The emphasis was put on investigating the biodiversity of some target

groups, as well as for the identification of the protected species and the pressures to which they are subject, in order to elaborate the management measures which ensure the protection and the conservation of these species within the habitats where they have been identified. Taking into account: the nature and characteristics of the site studied, the ecological importance and the size of invertebrate groups, the number of protected species in each group, there was chosen for the study three orders from the class Insecta: Odonata (dragonflies), Coleoptera (beetles) and Lepidoptera (butterflies). Amongst lepidoptera were studied the following families: Hesperidae, Papilionidae, Pieridae, Riodinidae, Lycaenidae and Nymphalidae, which include diurnal species of butterflies.

MATERIAL AND METHODS

From the geographical point of view, the researched area is located in the middle basin of the Argeş River, where the Romanian Plain & the platforms Căndeşti, Argeş and Cotmeana (all of them parts of the Getic Plateau) meet.

The site, with a total area of 2260.30 hectares and an altitude that varies between 226 meters and 417 meters, (the average altitude is 292 meters), is part of Continental biogeographical region. The central coordinates of the site are: 24.983889 longitudes and 44.813056 latitudes.

The main habitats of the perimeter of the site are: beaches and sand dunes, low areas with herbaceous vegetation - 10%; inland waters, continental (water surfaces, stagnant or flowing) - 66%; puddles, bordered by aquatic vegetation, swamps - 12%; extensive crops of cereals (including rotation crop on regular grubbing land) - 5%; pastures - 2%; deciduous forests - 2%; coniferous forests - 3% (http://biodiversitate.mmediu.ro/rio/natura2000/view?doc_id=ROSPA0062).

The climate of the area is temperate continental. The hilly influence is well marked. The annual mean of the air temperature is 9 °C (-2 °C in January and 20 °C in July). The precipitations are about 700 mm/year. Generally, the driest month is February and the rainiest is June (Barco & Nedelcu, 1974).

The studied area was represented by the riparian zones surrounding the storage lakes on the Argeş River, which are part of site ROSPA0062 - The Storage Lakes on the Argeş. The site has got 6 lakes: Zigoneni, Vâlcele, Budeasa, Bascov, Piteşti, Goleşti (Fig. 1).

Data were collected of the pitch between April & October 2013. In the aforementioned period, there were made monthly outputs on each of the lakes that are part of the site ROSPA0062 - The Storage Lakes on the Argeş. In order to identify/collect the species there were chosen areas with herbaceous, shrub and/or tree vegetation, located on the banks or at the tail of the lakes, close to the water surface, areas populated with: *Carex* sp., *Juncus* sp., *Phragmites* sp., *Typha* sp., *Salix* sp., *Alnus* sp., *Populus* sp., *Juglans* sp., *Rosa* sp., *Humulus* sp., etc. In the case of the levees, transects were made on internal slope or on surfaces between water surface and internal slope, being researched the areas with vegetation from the vicinity of the water.

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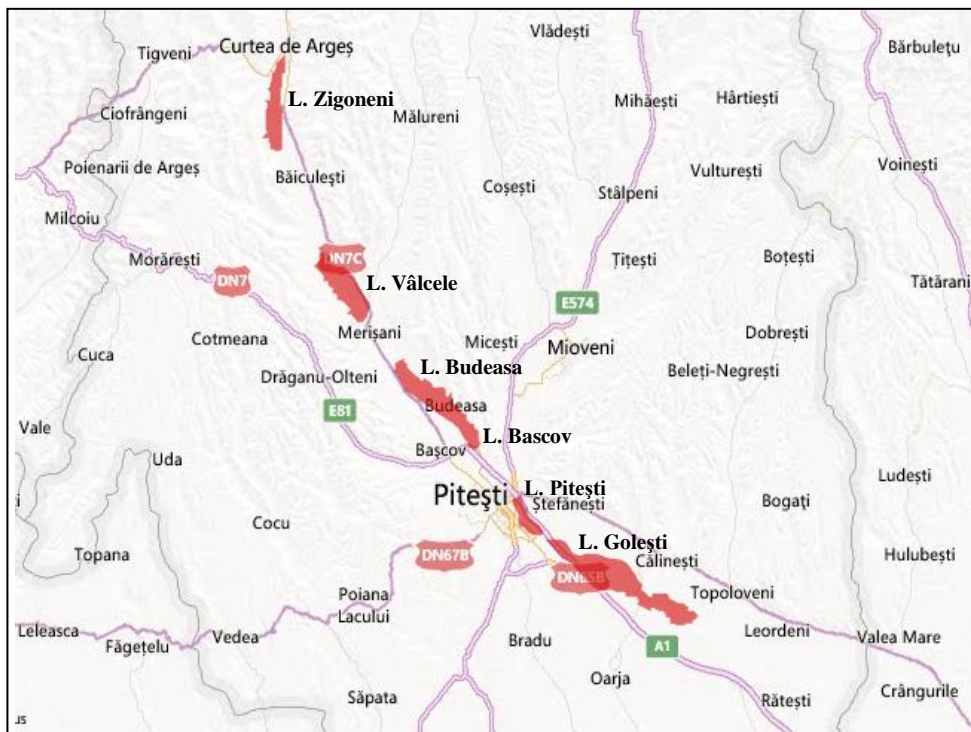


Figure 1 - The map of the storage lakes that are part of the Important Bird Area ROSPA0062 - The Storage Lakes on the Argeș (<http://natura2000.eea.europa.eu/Natura2000/SDFPublic.aspx?site=ROSPA0062>).

In these areas there were made transects of variable length, depending on the land configuration. During browsing through transect there were identified/collected the species belonging to the researched taxons. When the species could not have been identified in the field, the collection was performed using an entomological net. The transect was crossed walking slowly and constantly in order to identify & count the individuals in the group studied; identify/collect the specimens it was made into an imaginary cube, with sides of 5 meters; 2.5 m at left and right the observer and 5 m in front and upward (Swaay et al., 2012). For the common species, identification was made “at sight”, directly; in most cases, identification was performed using the method: catch, identify and release; the species which could not be identified in the field were collected in entomological envelopes and determined in laboratory. The transects were made in sunny days, without wind, between 9 AM & 4 PM

Quantification of parameters: ecological character, biogeographical distribution, frequency and conservation statute was done in accordance with the data existing in literature (Niculescu, 1961, 1963, 1965, Kudrna, 1986; Tolman, 1997; Van Swaay & Warren, 1999; Rákósy et al., 2003; Székely, 2008; Tatole et al., 2009; Rákósy, 2013; IUCN Red List; Moths and Butterflies of Europe and

North Africa; Natura 2000; UK Butterflies). Systematic classification of the diurnal lepidopteran species was made after Rákósy (Rákósy, 2013); the species of the same genus were alphabetically arranged. For frequency and conservation status were taken into account national's data (Rákósy, 2013, Székely, 2008).

RESULTS AND DISCUSSIONS

During conduct of the study were identified 57 species of diurnal lepidopteran, grouped in 6 families (Hesperiidae, Papilionidae, Pieridae, Riodinidae, Lycaenidae and Nymphalidae), summing 1,026 copies (Tab. 1).

Table 1 - List of the diurnal lepidopteran species (adults) identified in the areas bordering the lakes from composition of Important Bird Area ROSPA0062 - The Storage Lakes on the Argeş.

No.	Taxon	Zigoneni Lake	Vâlcele Lake	Budeasa Lake	Bascov Lake	Piteşti Lake	Goleşti Lake	Sum	Ecological character	Biogeographical distribution	Frequency	Conservation statute
	Cls. INSECTA											
	Ord. LEPIDOPTERA											
	Fam. HESPERIIDAE											
	Subfam. Pyrginae											
1	<i>Erynnis tages</i> (Linnaeus, 1758)	1	5	2	5	8	3	24	xth.	Sib.-Eu.	VC	LC
2	<i>Carcharodus alceae</i> (Esper, 1780)	1	2		2	3	2	10	mxth.	WPal.	C	LC
3	<i>Pyrgus malvae</i> (Linnaeus, 1758)	2	2	1	3	7	3	18	mxth.	Sib.-Eu.	C	LC
	Subfam. Hesperinae											
4	<i>Thymelicus lineola</i> (Ochsenheimer, 1808)	2	1		1	3	1	8	ub.	Hol.	C	LC
5	<i>Thymelicus sylvestris</i> (Poda, 1761)	2	1	1				4	ub.	WPal.	C	LC
6	<i>Hesperia comma</i> (Linnaeus, 1758)	1		1	2	2	3	9	ub.	Hol.	C	LC
7	<i>Ochlodes sylvanus</i> (Esper, 1777)	1	5	1	4	9	1	21	ub.	As.-Eu.	C	LC
	Fam. PAPILIONIDAE											
	Subfam. Papilioninae											
8	<i>Ipheclides podalirius</i> (Linnaeus, 1758)		1		2	3		6	xth.	Cent.As.-Eu.	RC	NT
9	<i>Papilio machaon</i> (Linnaeus, 1758)		1	3	1	4	1	10	m.	Hol.	RC	NT
	Fam. PIERIDAE											

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No.	Taxon	Zigoneni Lake	Vâlcele Lake	Budeasa Lake	Bascov Lake	Pitești Lake	Golești Lake	Sum	Ecological character	Biogeographical distribution	Frequency	Conservation statute
	Subfam. Dismorphiinae											
10	<i>Leptidea sinapis</i> (Linnaeus, 1758)	1	1	5	2	4	10	23	m.	WAs.-Med.	C	LC
	Subfam. Pierinae											
11	<i>Anthocaris cardamines</i> (Linnaeus, 1758)			2	1	6	5	14	m.	Pal.	VC	LC
12	<i>Aporia crataegi</i> (Linnaeus, 1758)	1	5	8	6	11	14	45	m.	Pal.	C	LC
13	<i>Pieris brassicae</i> (Linnaeus, 1758)	1	2	1	3	5	8	20	ub.	Cos.	C	LC
14	<i>Pieris napi</i> (Linnaeus, 1758)	2	4	15	13	10	15	59	ub.	Hol.	VC	LC
15	<i>Pieris rapae</i> (Linnaeus, 1758)	5	14	9	13	15	22	78	ub.	Pal.	VC	LC
16	<i>Pontia edusa</i> (Fabricius, 1777)	1	4	1	3	2	5	16	m.	WAs.-Med.	C	LC
	Subfam. Coliadinae											
17	<i>Colias croceus</i> (Fourcroy, 1785)	3	2	6	4	12	9	36	ub.	WAs.-Eu.	C	LC
18	<i>Colias erate</i> (Esper, 1803)		2	2	1	10	15	30	mxth.	Sib.-EEu.	C	NT
19	<i>Colias hyale</i> (Linnaeus, 1758)	1	3	2	5	8	13	32	m.	Sib.-Eu.	VC	LC
20	<i>Gonepteryx rhamni</i> (Linnaeus, 1758)		4	1	2	11	5	23	m.	Pal.	C	LC
	Fam. RIODINIDAE											
	Subfam. Riodininae											
21	<i>Hamearis lucina</i> (Linnaeus, 1758)	1	3	1	4	5	2	16	m.	Eu.	C	LC
	Fam. LYCAENIDAE											
	Subfam. Lycaeninae											
22	<i>Lycaena dispar</i> (Haworth, 1803)					2	1	3	h.	Sib.-Eu.	RC	VU
23	<i>Lycaena phlaeas</i> (Linnaeus, 1761)		1	1	2	3	1	8	m.	Hol.	C	LC
24	<i>Lycaena thersamon</i> Esper, 1784	2	3	3		1	1	10	m.	WAs.-EEu.	RC	VU
25	<i>Lycaena tityrus</i> (Poda, 1761)					2	2	4	mhig.	Cent.As.-Eu.	C	NT
	Subfam. Theclinae											

No.	Taxon	Zigoneni Lake	Vâlcele Lake	Budeasa Lake	Bascov Lake	Pitești Lake	Golești Lake	Sum	Ecological character	Biogeographical distribution	Frequency	Conservation statute
26	<i>Callophrys rubi</i> (Linnaeus, 1758)		5		2	3	1	11	mxth.	Pal.	C	LC
	Subfam. Polyommatainae											
27	<i>Cupido argiades</i> (Pallas, 1771)	1	5	2	4	3	6	21	mhig.	Sib.-Eu.	C	LC
28	<i>Celastrina argiolus</i> (Linnaeus, 1758)	2	1	4	6	11	7	31	m.	Hol.	VC	LC
29	<i>Plebeius argus</i> (Linnaeus, 1758)	3	5	2	6	8	2	26	m.	Sib.-Eu.	VC	LC
30	<i>Aricia agestis</i> (Denis & Schiffermüller, 1775)	2	3	2	5	4	7	23	m.	TPal.	VC	LC
31	<i>Polyommatus icarus</i> (Rottemburg, 1775)	3	5	4	8	11	6	37	ub.	Pal.	VC	LC
	Fam. NYMPHALIDAE											
	Subfam. Heliconiinae											
32	<i>Argynnis paphia</i> (Linnaeus, 1758)		1		2	3	1	7	m.	TPal.	C	LC
33	<i>Issoria lathonia</i> (Linnaeus, 1758)	2	3	2	1	5	8	21	ub.	As.-Eu.	C	LC
34	<i>Boloria dia</i> (Linnaeus, 1767)	1	4	3	1	6	5	20	mxth.	Cent.As.-Eu.	VC	LC
35	<i>Boloria selene</i> (Denis & Schiffermüller, 1775)	1	3	1	2	3	2	12	mhig.	Hol.	C	LC
	Subfam. Nymphalinae											
36	<i>Vanessa atalanta</i> (Linnaeus, 1758)	1	4	2	1	8	5	21	ub.	Hol.	C	LC
37	<i>Vanessa cardui</i> (Linnaeus, 1758)	1	3	1	3	9	12	29	ub.	Cos.	C	LC
38	<i>Inachis io</i> (Linnaeus, 1758)	1	2	1	1	5	7	17	ub.	Sib.-Eu.	C	LC
39	<i>Aglais urticae</i> (Linnaeus, 1758)	2	3	4	2	1	6	18	ub.	As.-Eu.	C	LC
40	<i>Polygonia c-album</i> (Linnaeus, 1758)		2	1	1	5	3	12	m.	TPal.	VC	LC
41	<i>Araschnia levana</i> (Linnaeus, 1758)	1	2		1	3	1	8	mhig.	TPal.	VC	LC
42	<i>Nymphalis antiopa</i> (Linnaeus, 1758)	1						1	m.	Hol.	C	LC
43	<i>Nymphalis polychloros</i> (Linnaeus, 1758)						2	2	m.	WPal.	R	VU

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No.	Taxon	Zigoneni Lake	Vâlcele Lake	Budeasa Lake	Bascov Lake	Pitești Lake	Golești Lake	Sum	Ecological character	Biogeographical distribution	Frequency	Conservation statute
	Subfam. Apaturinae											
44	<i>Apatura ilia</i> (Denis & Schiffermüller, 1775)				1	1		2	m.	Sib.-Eu.	RC	VU
	Subfam. Limenitinae											
45	<i>Limenitis populi</i> (Linnaeus, 1758)	1				1	1	3	m.	Sib.-Eu.	RC	VU
46	<i>Neptis rivularis</i> (Scopoli, 1763)		1		2	3	5	11	m.	Sib.-Eu.	C	LC
	Subfam. Melitaeinae											
47	<i>Melitaea athalia</i> (Rottemburg, 1775)	1	2	1	2	5	7	18	ub.	Sib.-Eu.	VC	LC
48	<i>Melitaea cinxia</i> (Linnaeus, 1758)			2	1	3	1	7	m.	WPal.	C	LC
49	<i>Melitaea didyma</i> (Esper, 1778)		1		1	2	1	5	mxth.	WPal.	C	LC
	Subfam. Satyrinae											
50	<i>Pararge aegeria</i> Butler, 1867	2		4	3	2	5	16	m.	WPal.	C	LC
51	<i>Lasiommata maera</i> (Linnaeus, 1767)		1	1	2	5	3	12	xth.	TPal.	C	LC
52	<i>Lasiommata megera</i> (Linnaeus, 1767)			2	1	1	3	7	xth.	WPal.	C	LC
53	<i>Coenonympha glycerion</i> Borkhausen, 1788		1			2	1	4	m.	WPal.	C	LC
54	<i>Coenonympha pamphilus</i> (Linnaeus, 1767)	2	6	3	5	9	6	31	m.	TPal.	VC	LC
55	<i>Aphantopus hyperantus</i> (Linnaeus, 1758)	1	3	1	4	8	6	23	m.	Sib.-Eu.	C	LC
56	<i>Maniola jurtina</i> (Linnaeus, 1767)	1	2	1	7	11	8	30	m.	WPal.	VC	LC
57	<i>Melanargia galathea</i> Fruhstorfer, 1917	2	1	1	3	4	2	13	m.	WAs.-Eu.	VC	LC

Legend: h. – hygrophilous, m. – mesophilous, mhig. – mesohygrophilous, mxth – mesoxerothermophilous, xth. – xerothermophilous, ub. – ubiquitous; As.-Eu. – Asian-European, Cent.As.-Eu. – Central Asian-European, Cos. – Cosmopolitan, Eu. – European, Hol. – Holarctic, Pal. – Palearctic, Sib.-EEu. – Siberian-East European, Sib.-Eu. – Siberian-European, TPal. – Trans Palearctic, WAs.-EEu. – West Asian- East European, WAs.-Eu. – West Asian- European, WAs.-Med. – West Asian-Mediterranean, WPal. – West Palearctic; C – common, R – rare, RC – relatively common, VC – very common; LC – Least Concern, NT – Near Threatened, VU – Vulnerable.

Most of the identified species belong to the family Nymphalidae (45.61%), including Satyrinae subfamily, followed by the families: Pieridae (19.30%), Lycaenidae (17.54%) and Hesperidae (12.28%).

In terms of the number of individuals identified 36.65% belonged to the family Pieridae, followed by the families: Nymphalidae (34.11%), Lycaenidae (16.96%) and Hesperidae (9.16%).

The remaining families of diurnal lepidopteran had weightings smaller than 5%, regarding both the number of species and the number of individuals (Fig. 2).

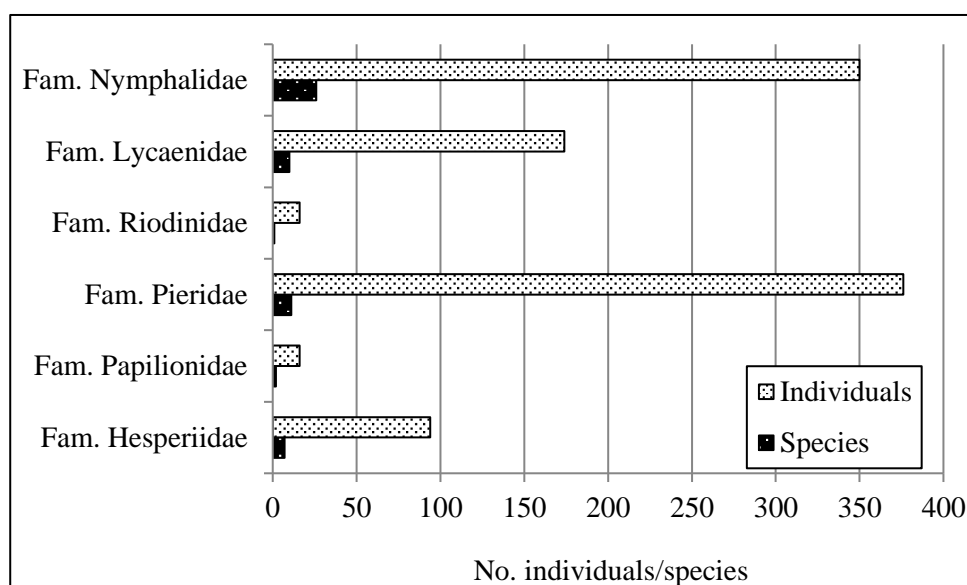


Figure 2 - The distribution on the families of the number of species and individuals of diurnal lepidopteran identified in the perimeter of Important Bird Area ROSPA0062 - The Storage Lakes on the Argeş.

The most identified specimens belonged to the species: *Pieris rapae* (7.60%), *Pieris napi* (5.75%) and *Aporia crataegi* (4.39%), all from the family Pieridae. The remaining species had weightings smaller than 4% of all the identified individuals.

In the southern part of the site the most species and specimens were identified, around the lakes Piteşti (94.74% for species and 28.36% for individuals) and Goleşti (94.74% for species and 26.51% for individuals). The other extreme was represented by Zigoneni Lake, located in the northern part of the site, here the percentage being 64.91% for species and 5.85% for individuals (Fig. 3).

Except Budeasa Lake, we observed an increase of the number of species and individuals from north to south probably because the diversification of habitats around the lakes also correlated to the opening of the Argeş Valley.

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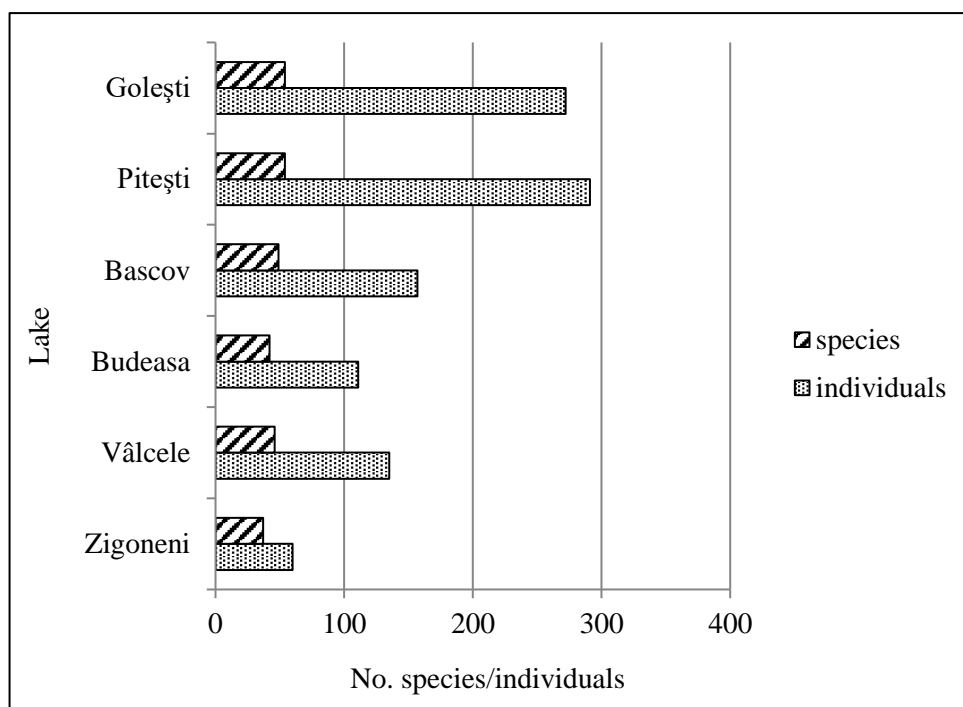


Figure 3 - The distribution on the storage lakes of the number of species and individuals of diurnal lepidopteran identified in the perimeter of Important Bird Area ROSPA0062 - The Storage Lakes on the Argeș.

From the ecological point of view, the 57 diurnal lepidopteran species, identified in the Important Bird Area ROSPA0062 - The Storage Lakes on the Argeș, were grouped into 6 ecological categories (Székely, 2008; Rákossy, 2013).

Approximate half of the identified species were classified as mesophilous species (49.12%), followed by the ubiquitous species (24.56%) and mesoxerothermophilous species (10.53%). The share of other ecological category was less than 10% (Fig. 4).

The large share of species that may be met in many types of habitats (hayfields, meadows, thickets, clearings and selvedges, parks, gardens, crops, ruderal areas), except the subalpine and alpine habitats, widely distributed species, indicates that the diurnal lepidoptera fauna that is found around the accumulation lakes comes, mainly, from adjacent areas, i.e. agricultural crops, ruderal areas, thickets and selva forest. In this context, we can notice the large number of ubiquitous species, which penetrate the riparian zones from crops and ruderal areas located in the immediate vicinity of the storage lakes.

Also it is worth mentioning the small number of species mesohygrophilous/hygrophilous; these represent only 8.77% from the identified species. *Lycaena dispar* (Haworth, 1803) is the only hygrophile species,

accompanied by the 4 mesohygrophilous species: *Lycaena tityrus* (Poda, 1761), *Cupido argiades* (Pallas, 1771), *Boloria selene* (Denis & Schiffermüller, 1775) and *Araschnia levana* (Linnaeus, 1758). These species may be also found in other habitats (more dry), but with a lower frequency. The ratio between the xerothermophilous/mesoxerothermophilous and hygrophilous/mesohygrophilous species is 2/1, which indicates a domination of species related to relatively hot and dry habitats.

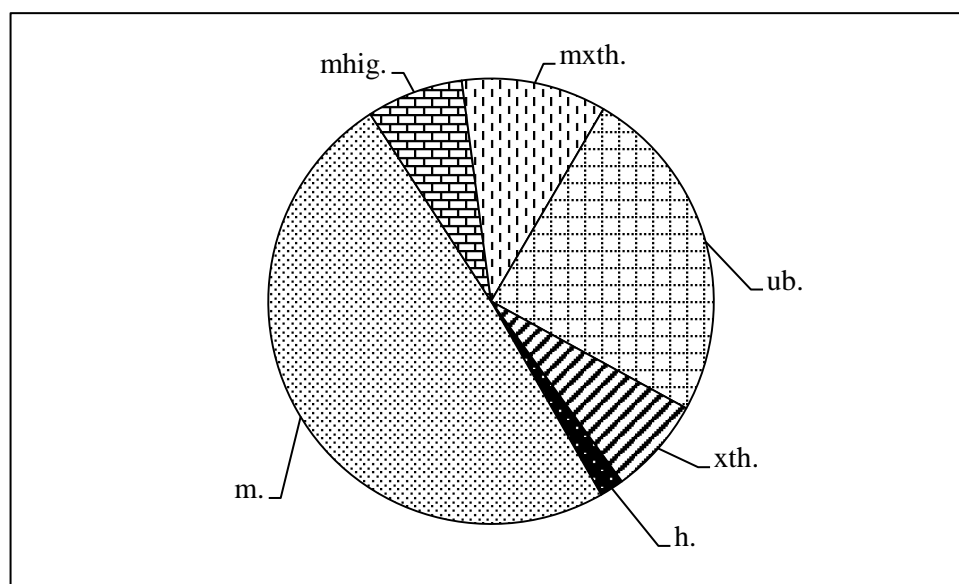


Figure 4 - The distribution of the diurnal lepidopteran on the ecological categories (h. – hygrophilous, m. – mesophilous, mhig. – mesohygrophilous, mxth – mesoxerothermophilous, xth. – xerothermophilous, ub. – ubiquitous).

There are several causes that generate this situation: the existence, around the lakes, of large wetland areas, with palustre vegetation, dominated by reed and cattail and of the scrublands with *Salix* sp., practically “free” of diurnal lepidopteran; very small surface of the hygrophilous and mesohygrophilous grasslands, that are periodically flooded; the presence, in the immediate vicinity of the lakes, of ruderal plants associations, from where the xero- and mesoxerothermophilous butterfly species penetrate in the riparian area.

Zoogeographical structure of the diurnal lepidopteran fauna from the perimeter of Important Bird Area ROSPA0062 - The Storage Lakes on the Argeș is dominated by widespread species, most species having Siberian-European spreading (21.05%), followed by the: Holarctic and West Palearctic (15.79%, each), Palearctic and Trans Palearctic (10.53%, each) species, accounting for 73.68% of all identified species. The other zoogeographical categories had weightings smaller than 10% (Fig. 5). The endemic species were missing and the ratio of the southern elements was low. From this point of view, the daytime

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lepidoptera fauna of the studied area are more similar to that of the surrounding hills than to that of the plain wet zones, but with a strong anthropogenic influence.

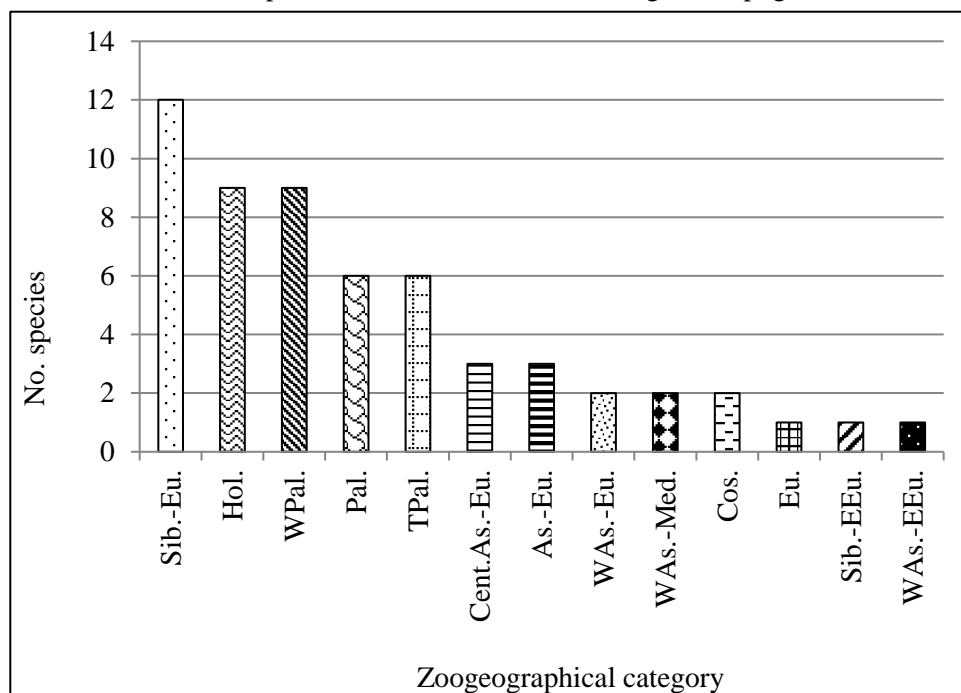


Figure 5 - The zoogeographical structure of the diurnal lepidopteran fauna from the perimeter of Important Bird Area ROSPA0062 - The Storage Lakes on the Argeş (As.-Eu. – Asian-European, Cent.As.-Eu. – Central Asian-European, Cos. – Cosmopolitan, Eu. – European, Hol. – Holarctic, Pal. – Palearctic, Sib.-EEu. – Siberian-East European, Sib.-Eu. – Siberian-European, TPal. – Trans Palearctic, WAs.-EEu. – West Asian- East European, WAs.-Eu. - West Asian- European, WAs.-Med. - West Asian-Mediterranean, WPal. – West Palearctic).

The majority of identified species are common or very common species found in two or more types of habitats. The weighting of these species reach to approximately 90%, (Fig. 6). Some of them are migratory species (21 species), nearly half of them (42.86%) being ubiquitous species. In these conditions we can speak of a “generalist” diurnal lepidopteran fauna.

The similarity between the diurnal lepidopteran faunas from the six studied areas was quantified using the Jaccard index. High values of the similarity index, more than 70%, were obtained for all groups. From the analysis of the dendrogram built based on Jaccard similarity index values (Fig. 7), appears that diurnal lepidopteran fauna around the Lake Zigoneni differs from that of other studied areas. The similarity values were by 71.61%. The highest values of similarity index were obtained between the lakes Piteşti and Goleşti, reaching almost 93%. This similarity was expected, since they are very close.

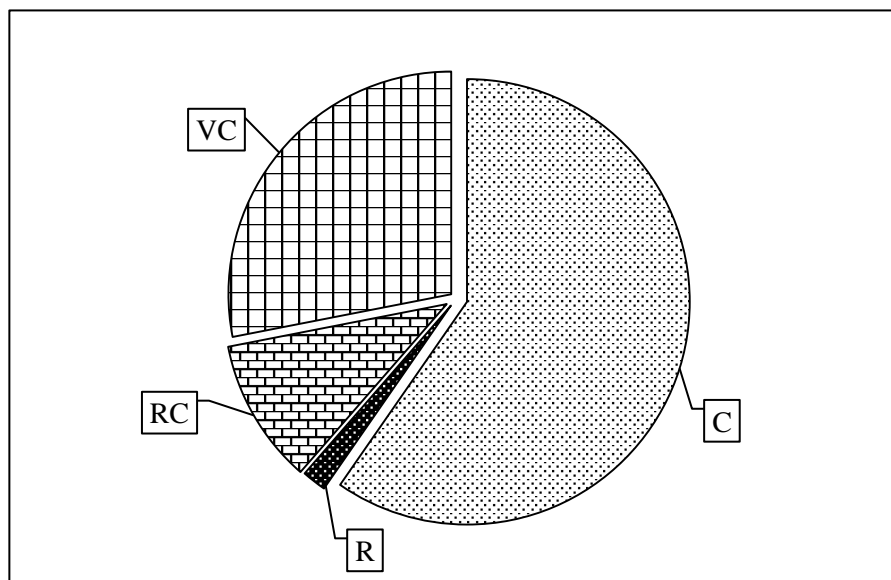


Figure 6 - The grouping of the diurnal lepidopteran fauna from the perimeter of Important Bird Area ROSPA 0062 - The Storage Lakes on the Argeș according to the frequency at national level.

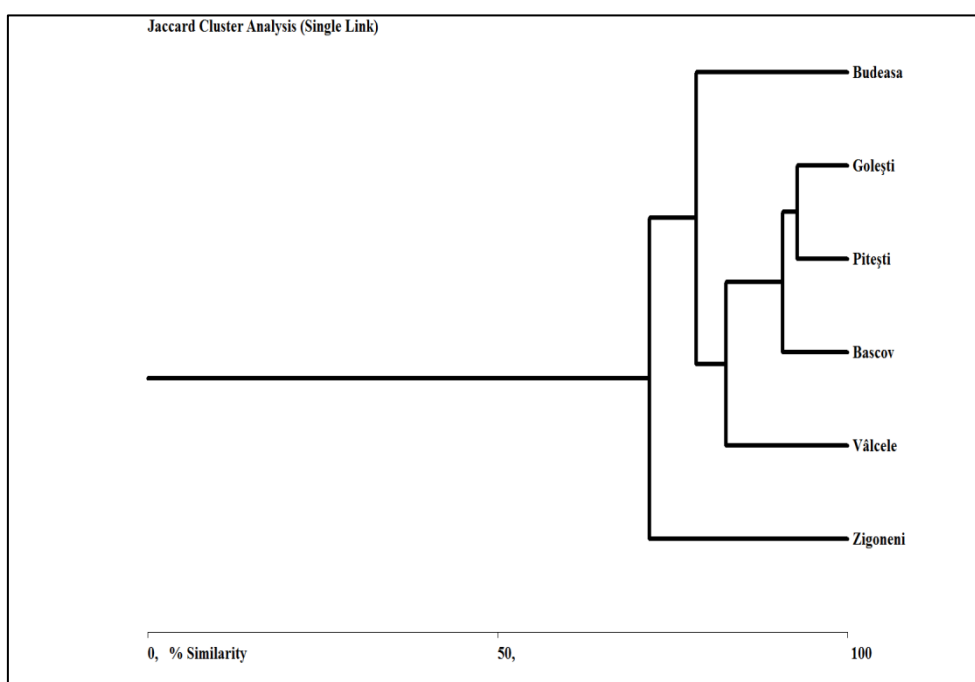


Figure 7 - Dendrogram of clustering of habitat depending on diurnal lepidopteran fauna of the Important Bird Area ROSPA 0062 - The Storage Lakes on the Argeș.

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A low gradient of the similarity among the studied areas was observed; it increases from north to south. The exception is represented by the diurnal lepidoptera fauna around the Budeasa Lake. This, although is very close to Bascov Lake, presents, around the lake, a diurnal lepidopteran fauna slightly different, more similar to the diurnal butterfly fauna stationed around the lake Zigoneni.

From the conservative point of view the study revealed the presence of 5 vulnerable (VU) species and 4 near threatened (NT) species (Fig. 8). Most species (84.21%) have entered the category least concern (LC).

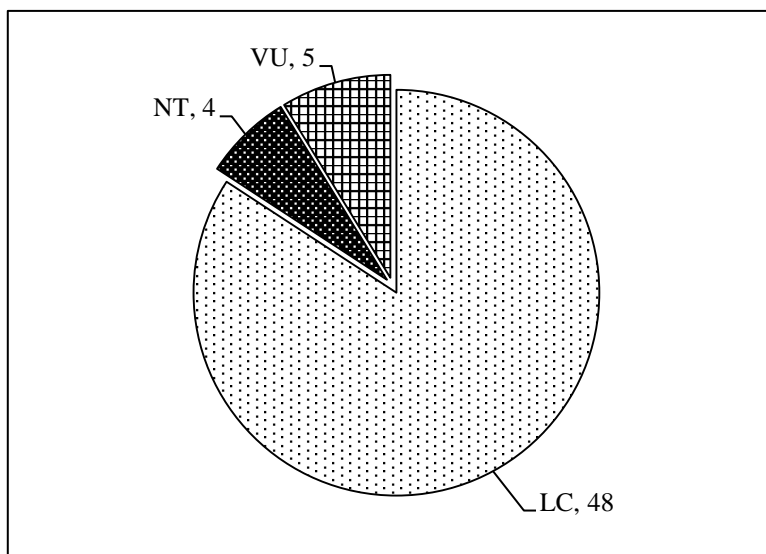


Figure 8 - The grouping of the diurnal lepidopteran fauna from the perimeter of Important Bird Area ROSPA 0062 - The Storage Lakes on the Argeş according to the conservative status (VU – vulnerable, NT – near threatened, LC – least concern).

Was identified only one species protected at national and European level *Lycaena dispar* (Haworth, 1803), species of conservation interest, recorded in: the Habitats Directive 92/43 / EEC (Annex II); OUG 57/20.06.2007, Annex 3 (plant and animal species whose conservation requires the designation of Special Areas of Conservation and Special Protection Areas) and Annex 4A (species of Community interest, species of animals and plants that require strict protection). Due to protection measures taken at European level, IUCN has changed its status from vulnerable species (VU) to potentially threatened (NT). In the past, the species, disappeared from Denmark and the United Kingdom (in UK was reintroduced the continental subspecies). She is declining in many countries in Western Europe. A better situation was recorded for Central and Eastern Europe (Balint, 1993a; Van Swaay et al., 2010). For Romania, the species is listed as vulnerable at nationally level (Székely, 2008; Tatole et al., 2009, Rákossy, 2013) or potentially threatened, even critically endangered at regional level (Székely, 2008, Rákossy, 2013).

Have been recorded three copies. Two specimens were observed on Lake Pitești, on the left shore, in an area with abundant vegetation and a copy has been identified on Lake Golești at tail lake. It is possible that the species to be identified and in other locations of the perimeter of the Important Bird Area - The Storage Lakes on Argeș.

Also, from the point of view of conservation can be mentioned other 8 species: *Iphiclides podalirius* (Linnaeus, 1758), *Papilio machaon* (Linnaeus, 1758), *Colias erate* (Esper, 1803), *Lycaena tityrus* (Poda, 1761), *Lycaena thersamon* Esper, 1784, *Nymphalis polychloros* (Linnaeus, 1758), *Apatura ilia* (Denis & Schiffermüller, 1775) and *Limenitis populi* (Linnaeus, 1758), that nationally, but especially at the regional level, are considered potentially threatened, threatened or vulnerable (Székely, 2008). Two of these: *Limenitis populi* (Linnaeus, 1758) and *Nymphalis polychloros* (Linnaeus, 1758), are listed in the category near threatened respectively vulnerable species, according to the IUCN Red List Category (EU27) (https://cmsdata.iucn.org/downloads/european_red_list_butterflies_new.pdf).

CONCLUSIONS

57 species of diurnal lepidopteran (28.07% of all species identified in Romania) represented by 1,026 individuals were identified in the perimeter of the Important Bird Area ROSPA 0062 - The Storage Lakes on the Argeș. Diurnal lepidopteran fauna was dominated, as regards the number of species and individuals, by the families Nymphalidae and Pieridae; they represent together almost 65% of the identified species, respectively 71% of all the individuals. The most identified specimens belong to the genre *Pieris*.

The data provided by ecological and zoogeographical analysis and the frequency at nationally level of the identified lepidopteran species show that, the diurnal lepidopteran fauna from the perimeter of the Important Bird Area ROSPA 0062 - The Storage Lakes on the Argeș is not specific to wetland zones. Most species have penetrated the riparian area of the neighboring habitats, in their majority being species with wide ecological valence. The high values of Jaccard index, more than 70%, shows that the situation is similar for all investigated areas.

From a conservative point of view, the diurnal lepidopteran fauna of the Important Bird Area ROSPA 0062 - The Storage Lakes on the Argeș is dominated by species included in the least concern category. There was identified only one species protected at national and European levels, *Lycaena dispar* (Haworth, 1803). Other 8 species: *Iphiclides podalirius* (Linnaeus, 1758), *Papilio machaon* (Linnaeus, 1758), *Colias erate* (Esper, 1803), *Lycaena tityrus* (Poda, 1761), *Lycaena thersamon* Esper, 1784, *Nymphalis polychloros* (Linnaeus, 1758), *Apatura ilia* (Denis & Schiffermüller, 1775), *Limenitis populi* (Linnaeus, 1758), may be included, at national or regional level, in the category of species to be protected.

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REFERENCES

- BARCO Aurelia, NEDELCU E., 1974. *Județul Argeș*. Ed. Academiei R.S.R. București. 168 p.
- KUDRNA O., 1986 - *Aspects of the conservation of European butterflies*. Butterflies of Europe. Wiesbaden. **8**:18-64.
- BALINT Z., 1993a - *The threatened lycaenids of the Carpathian Basin, east-central Europe*. 105-111. In New T. R. (ed): Conservation biology of Lycaenidae (butterflies). IUCN. Gland. Switzerland.
- NICULESCU E.V., 1961 - *Fauna R.P.R. Insecta. Lepidoptera. Familia Papilionidae*. Ed. Academiei R.P.R. București. **11** (5): 5-103.
- NICULESCU E.V., 1963 - *Fauna R.P.R. Insecta. Lepidoptera. Familia Pieridae*. Ed. Academiei R.P.R. București. **11** (6): 1-202.
- NICULESCU E.V., 1965 - *Fauna R.P.R. Insecta. Lepidoptera. Familia Nymphalidae*. Ed. Academiei R.P.R. București. **11** (7): 1-358.
- RÁKOSY L., GOIA M., KOVÁCS Z., 2003 - *Catalogul lepidopterelor României*. Societatea Lepidopterologică Română, Cluj-Napoca. 456 p.
- RÁKOSY L., 2013 - *Fluturii diurni din România. Cunoaștere, protecție și conservare*. Ed. Mega. Cluj-Napoca. 42-352.
- SWAAY VAN CHRIS, BRERETON T., KIRKLAND P., WARREN M., 2012 - *Manual for Butterfly Monitoring*. De Vlinderstichting, Wageningen. Netherlands. 1-14.
- SZÉKELY L., 2008 - *Fluturii de zi din România*. Ed. Brastar Print. Brașov. 42-304.
- TATOLE Victoria, IFTIME Al., STAN Melania, IORGU Elena-Iulia, IORGU I., OȚEL V., 2009 - *Speciile de animale Natura 2000 din România*. Tipar: Imperium Print. București. 174 p.
- TOLMAN T., 1997 - *Butterflies of Europe*. Ed. Princeton Press. New Jersey. 38-351.
- VAN SWAY C. A., M., WARREN M. S., 1999 - *Red Data Book of European Butterflies*. Nature and Environment. Council of Europe Publishing, Strasbourg. No.99.
- *** Butterfly Conservation Europe, IUCN Species Programme, IUCN Regional Office for Pan-Europe. *European Red List of Butterflies*. Online at: https://cmsdata.iucn.org/downloads/european_red_list_butterflies_new.pdf (accessed September 2015).
- *** Clearinghouse Mechanism for the Rio Conventions. Implementation in Romania. *Natura2000 - Lacurile de acumulare de pe Argeș (ROSPA0062)*. Online at: http://biodiversitate.mmediu.ro/rio/natura2000/view?doc_id=ROSPA0062 (accessed September 8, 2014).
- *** Moths and Butterflies of Europe and North Africa. *Moths and Butterflies of Europe and North Africa*. Online at: <http://www.leps.eu>; <http://www.leps.it>. (accessed November 12, 2013).
- *** Natura 2000. *Natura2000.eea.europa*. On line at: <http://natura2000.eea.europa.eu/Natura2000/SDFPublic.aspx?site=ROSPA0062> (accessed September 9, 2014).
- *** UK Butterflies. *UK Butterflies*. On line at: <http://www.ukbutterflies.co.uk>. (accessed September 17, 2014).