

**FAUNISTICAL AND BIO-ECOLOGICAL STUDY OF RHOPALOCERA SPECIES
(ORD. LEPIDOPTERA) OF MUNCELU MIC-MUNCELU MARE-POIENIȚA
TOMII-FEREGI ZONE (POIANA RUSCA MOUNTAINS, ROMANIA)**

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Abstract

Faunistical and bio-ecological study of Rhopalocera species (Ord. Lepidoptera) of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi zone (Poiana Ruscă Mountains, Romania)

The author presents the faunistical and bio-ecological study concerning Rhopalocera species (Ord. Macrolepidoptera) of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi zone. This zone is situated in the northern part of Poiana Ruscă Mountains (Western Carpathians, Romania). Two of these localities, Poienița Tomii and Feregi are situated in the Pădureni Countryside, an isolated region with special geographic conditions where was developed one of the most original and archaic popular civilizations of Romania.

The researches concerning the fauna of Lepidoptera (S. Ord. Rhopalocera) have been accomplished in the period of April-October 2008.

80 butterflies' species were recorded from the habitats of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi zone.

The checklist of the species and data about the ecological exigencies, the frequency, the fly period and host plant of larvae are presented. The analysis of the ecological exigencies, the frequency of the species and trophic structure of larvae is given.

On the basis of our personal researches 59 plant species were identified as nectar source for adults. The most visited plant species by butterflies are *Dianthus carthusianorum*, *Hypericum perforatum*, *Epilobium angustifolium*, *Mentha longifolia*, *Eupatorium cannabinum*, *Digitalis grandiflora*, *Potentilla reptans*, *Lotus corniculatus*, *Medicago sativa*, *Vicia faba*, *Sambucus racemosa*, *Sambucus nigra*, *Leucanthemum vulgare*, *Telekia speciosa* and *Tanacetum vulgare*. Other species like *Inachis io*, *Vanessa atalanta*, *Apatura iris* prefer dung, sap trees and fermenting fruits.

Species with a high frequency (>15 individuals/day) in this area are: *Pieris rapae*, *Pieris nape*, *Clossiana dia dia*, *Clossiana euphrosyne euphrosyne*, *Clossiana selene selene*, *Maniola jurtina*, *Aphantopus hyperanthus hyperanthus*, *Melanargia galathea*, *Argynnis paphia paphia*, *Argynnis adippe adippe*, *Vanessa cardui*. Rare and very rare species are *Maculinea arion*, *Maculinea alcon* and *Maculinea teleius*, *Satyrium w-album*, *Thecla betulae* and *Chazara briseis*.

Key words: Rhopalocera, Muncelu Mic- Muncelu Mare-Poienița Tomii-Feregi zone, faunistical, bio-ecological study

Rezumat

Studiu faunistic și bio-ecologic al speciilor de Rhopalocera (Ord. Lepidoptera) din zona Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi (Munții Poiana Ruscă, România)

Autorul prezintă studiul faunistic și bio-ecologic al speciilor de Rhopalocera (Ord. Lepidoptera) din zona Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi. Această zonă este situată în partea nordică a Munților Poiana Ruscă (Carpații Occidentali, România). Două dintre localități, Poienița Tomii și Feregi sunt situate în Ținutul Pădurenilor, o regiune izolată, cu condiții geografice particulare în care s-a dezvoltat una dintre cele mai originale și arhaice civilizații populare din România.

Cercetările privind fauna de lepidoptere (S. ord. Rhopalocera) au fost efectuate în perioada aprilie-octombrie 2008.

80 de specii de fluturi diurni au fost semnalate în zona Muncelu Mic-Poienița Tomii-Feregi.

Lista sistematică a speciilor precum și date despre cerințele ecologice, frecvența speciilor, perioada de zbor a adulților și plantele gazdă ale larvelor sunt prezentate. Este prezentată analiza exigențelor ecologice, frecvența speciilor și structura trofică a larvelor.

Pe baza cercetărilor noastre au fost identificate 59 de specii de plante ca sursă de nectar pentru adulți. Cele mai vizitate plante cu flori de către fluturii de zi sunt *Dianthus carthusianorum*, *Hypericum perforatum*, *Epilobium angustifolium*, *Mentha longifolia*, *Eupatorium cannabinum*, *Digitalis grandiflora*, *Potentilla reptans*, *Lotus corniculatus*, *Medicago sativa*, *Vicia faba*, *Sambucus racemosa*, *Sambucus nigra*, *Leucanthemum vulgare*, *Telekia speciosa* și *Tanacetum vulgare*. Alte specii ca *Inachis io*, *Vanessa atalanta*, *Apatura iris* preferă dejecțiile animale, seva arborilor și fructele fermentate.

Pieris rapae, *Pieris nape*, *Clossiana dia dia*, *Clossiana euphrosyne euphrosyne*, *Clossiana selene selene*, *Maniola jurtina*, *Aphantopus hyperanthus hyperanthus*, *Melanargia galathea*, *Argynnis paphia paphia*, *Argynnis adippe adippe*, *Vanessa cardui* au o frecvență ridicată în zona cercetată (>15 exemplare/zi). Specii rare în zona cercetată sunt *Maculinea arion*, *Maculinea alcon* și *Maculinea teleius*, *Satyrium w-album*, *Thecla betulae* și *Chazara briseis*.

Cuvinte cheie: Rhopalocera, Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi zone, studiu faunistic, bio-ecologic

Introduction

The aim of this study is to present the Rhopalocera species (Ord. Lepidoptera) recorded from the habitats of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi zone. This area is one of the important roads to the Pădureni Countryside, a high tableland of the eastern part of Poiana Ruscă Mountains (KRAUTNER 1984). In Pădureni Countryside 30 villages as Poienița Tomii and Feregi are located on the top of the mountains (fig. 14). Here, various habitats are intermixed (meadows, pastures, deciduous forests, cultivated areas). A suggestive presentation of Pădureni Countryside is given by IȘVĂNONI (2006): “up there, on the peaks, there is the village surrounded by vegetable gardens and orchards; going down there are the

fields of cereals arranged in terraces like some huge benches; beneath these fields there is the hay land belt then the pastures lands and finally, at the bottom, the forests”.

The Valley of Muncel tributary to Dobra River crosses this region from Vețel locality to Poienița Tomii and Feregi localities situated in the tableland of Poiana Ruscă Mountains.

The relief is represented by hills with 500 m-700 m altitude. The highest altitude is in Muncelu Hill (1149 m) situated in the western part of the Poiana Ruscă Mountains.

Geological substratum is formed by crystalline schists.

Climate. The annual average of temperature is about 5-6⁰C. The annual average of precipitations is 600-800 mm.

Flora and vegetation: As. *Carpino-Fagetum* PAUCĂ 1941 is the principal association that built up the beech forests of the studied area (fig. 12). Isolated specimens of *Quercus petraea*, *Ulmus glabra* and *Tilia cordata* were observed. At the edge of the forests shrubs associations represented by *Pruno spinosae-Crataegetum* (SOÓ 1927) HUECK 1931, *Euonymo-Sambucetum nigrae* MOOR 1967 and *Sambucetum racemosae* OBERD. 1973 are prevailing. *Calamagrostio-Betuletum pendulae* RESMERIȚĂ & CSÜRÖS 1966 is built up in the mountainous region. Beech forests are interrupted in some places by rocks with mesophilous vegetation. Meadows are built up by *Festuco rubrae-Agrostetum capillaris* HORV. 1951 and *Galio veri-Festucetum rubrae* RESMERIȚĂ (1965) 1980 (Fig. 13), *Festucetum pratensis* SOÓ (1938), 1955, 1969, *Agrostio stoloniferae-Deschampsietum caespitosae* UJVÁROSI 1947 associations. In the valley of the river *Aegopodio-Alnetum glutinosae* KARPATI & JURKO 1961 and *Salici capreae-Sambucetum racemosae* SOÓ 1960 are prevailing. It was also studied the high herbaceous vegetation with *Epilobium angustifolium* that grows up in the valley of Muncel River (As. *Epilobietum angustifolii* RÜBEL 1930).

Material and methods

Butterflies have been collected with an entomological net in six habitats of the studied area:

1. **Mesophilous meadows** situated in the northern part of Muncelu Mic locality and in the southern part of Muncelu Mare locality;
2. **Mesohygrophilous meadows** situated along the Muncelu Valley between Muncelu Mic and Muncelu Mare localities;

3. **Rocks** with mesophilous vegetation (As. *Asplenio trichomani-Poetum nemoralis* BOȘCAIU 1971) widespread especially in the hilly zone of the area between Muncelu Mic and Muncelu Mare;

4. **The edge of the deciduous forests** (beech forests) widespread along the Muncelu River, between Muncelu Mic and Feregi localities;

5. **The shrub associations** with *Sambucus nigra*, *Sambucus racemosa*, *Prunus spinosa*, *Rosa canina* and *Crataegus monogyna* (identified along Muncelu Valley and at the edge of the beech forests);

6. **The high herbaceous vegetation** with *Epilobium angustifolium* of Muncelu Valley. Specimens were sampled from early May to October 2008.

Species were identified in laboratory using different papers published by NICULESCU (1961, 1963, 1965), HIGGINS & RILEY (1984), STILL (1996), FELTWELL (2001), TOLMAN & LEWINGTON (2007).

The frequency of the Rhopalocera species was established following RÁKOSY & VIEHMANN (1991) classification. The classes of frequency are: VR-Very Rare species (1-4 individuals/generation); R-Rare species (5-10 individuals/generation); VF-Very frequent species (>15 individuals /day); RF- Relative frequent species (5-10 individuals/day); F-Frequent species (10-15 individuals/day)

The ecological exigencies of the species have been established using the classification proposed by RÁKOSY (1993): M- Mesophilous species; Mh-Mesohygrophilous species; Mt-Mesothermophilous species; Mxt- Mesoxerothermophilous species; Mht-Mesohygrothermophilous species; Xt-Xerothermophilous species; Hg- Hygrophilous species.

The larval food is presented on the basis of our personal researches and various lepidopterological papers (NICULESCU 1961, 1963, 1965; STILL 1996, TOLMAN & LEWINGTON 2007).

For each butterfly it was registered the flowering plants they visit during the period of our researches. Other non-floral food of the adults, including dung, tree sap, rotting fruits is also presented. Plants were determined using *The Encyclopaedia of Plants* (PÂRVU 2002, 2003, 2004, 2005).

All collected specimens are kept in the collection of the Museum of Dacian and Roman Civilisation of Deva town (Hunedoara County, Romania).

The checklist of the species has been drawn out by using the actual nomenclature and systematic published by RÁKOSY (2002), RÁKOSY, GOIA & KOVÁCS (2003).

Results and discussions

A total of 80 species of Rhopalocera (Ord. Lepidoptera) have been recorded from Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi region of Poiana Ruscă Mountains.

Most of the species were identified in the hilly zone covered by deciduous forests and crossed by Muncelu River. 80, respective 77 species were sampled in the natural habitats situated in the neighbourhood of the localities Muncelu Mare and Muncelu Mic (Table 2). In the high tableland of Pădureni Countryside characterized by an anthropized landscape (degraded pastures), we have collected only 54 species at Poienița Tomii and 45 species at Feregi village.

Tab. 2- Sites of sampling and the number of species

SITES	NUMBER OF SPECIES
Muncelu Mic	78
Muncelu Mare	80
Poienița Tomii	54
Feregi	45

From the total of the species 40 species are belonging to Nymphalidae and 19 species to Lycaenidae (Tab. 3). Pieridae and Hesperidae are represented each other by 8 species.

Tab. 3 – Rhopalocera families and number of species collected in the area of Muncelu Mic-Poienița Tomii-Feregi (Poiana Ruscă Mountains)

FAMILIES	NUMBER OF SPECIES
HESPERIIDAE	8
PAPILIONIDAE	2
PIERIDAE	8
LYCAENIDAE	21
NYMPHALIDAE	41
TOTAL SPECIES	80

The checklist of the butterflies (S.ord. Rhopalocera) identified in the mountainous area of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi is given. Data about their ecological exigencies, fly period of the adults, larval food, adult resources and frequency of the species are included in Table 3.

Tab. 3- Checklist of Rhopalocera species identified in the hilly region of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi (Poiana Ruscă Mountains)

Taxa	FP	EE	LF	AR	F
HESPERIIDAE					
<i>Erynnis tages tages</i> (LINNAEUS, 1758)	VI-VIII	M	Oligophagous: Fabaceae	<i>Medicago lupulina</i> , <i>Ajuga reptans</i> , <i>Trifolium campestre</i> , <i>Hypericum perforatum</i> , <i>Leucanthemum vulgare</i> , <i>Dianthus carthusianorum</i>	VF
<i>Pyrgus carthami</i> (HÜBNER, 1813)	V-IX	M	<i>Potentilla</i> , <i>Alchemilla</i> , <i>Malva</i>	<i>Potentilla reptans</i> , <i>Viola tricolor</i> , <i>Hypericum perforatum</i>	F
<i>Pyrgus malvae malvae</i> (LINNAEUS, 1758)	VII-VIII	M	Oligophagous: Rosaceae (<i>Fragaria</i> , <i>Potentilla</i>)	<i>Hypericum perforatum</i> , <i>Linum catharticum</i> , <i>Potentilla reptans</i> , <i>Salvia nemorosa</i> , <i>Galium verum</i> , <i>Senecio vulgaris</i>	VF
<i>Carterocephalus palaemon</i> (Pallas, 1777)	V-VI	M	Oligophagous: Poaceae	<i>Sambucus racemosa</i> , <i>Urtica dioica</i> , <i>Potentilla reptans</i> , <i>Trifolium repens</i>	RF
<i>Thymelicus lineola</i> (OCHSENHEIMER, 1808)	VI-VIII	M	Oligophagous: Poaceae	<i>Sambucus racemosa</i> , <i>Leucanthemum vulgare</i> , <i>Potentilla reptans</i> , <i>Senecio vulgaris</i> , <i>Filipendula hexapetala</i> , <i>Aster amellus</i> , <i>Scabiosa ochroleuca</i> , <i>Hypericum perforatum</i> , <i>Rubus caesius</i>	F
<i>Thymelicus sylvestris</i> (PODA, 1761)	V-VIII	M	Oligophagous: Poaceae	<i>Hypericum perforatum</i> , <i>Geranium robertianum</i> , <i>Inula hirta</i> , <i>Senecio vulgaris</i> , <i>Leucanthemum vulgare</i> , <i>Salvia nemorosa</i> , <i>Melilothus officinalis</i> , <i>Galium verum</i> , <i>Vicia faba</i> , <i>Viola tricolor</i> , <i>Potentilla reptans</i>	F
<i>Hesperia comma</i> (LINNAEUS, 1758)	VI-IX	M	Oligophagous: Poaceae (<i>Festuca</i>)	<i>Aster amellus</i> , <i>Leucanthemum vulgare</i> , <i>Viola tricolor</i> , <i>Mentha longifolia</i> , <i>Tanacetum vulgare</i> , <i>Lotus corniculatus</i> , <i>Vicia faba</i> , <i>Sedum hispanicum</i> , <i>Stellaria holostea</i> , <i>Silene nutans</i> , <i>Dianthus carthusianorum</i> , <i>Rubus caesius</i> , <i>Filipendula hexapetala</i>	VF

Taxa	FP	EE	LF	AR	F
Ochlodes sylvanus (ESPER, 1777)	VI-VIII	Mt	Oligophagous: Poaceae	Hypericum perforatum, Aster amellus, Leucanthemum vulgare, Trifolium pratense, Trifolium repens, Vicia faba, Coronilla varia, Hippocrepis comosa, Polygala vulgaris, Cardamine pratensis, Centaurea cyanus	F
PAPILIONIDAE					
Iphiclides podalirius podalirius (LINNAEUS, 1758)	V-VIII	Mxt	Oligophagous: Prunus	Epilobium angustifolium, Eupatorium cannabinum, Mentha longifolia, Aster amellus	F
Papilio machaon (LINNAEUS, 1758)	VI-VIII	M	Oligophagous: Umbelliferae	Cirsium vulgare, Telekia speciosa, Verbascum thapsus, Dipsacus fullonum, Epilobium angustifolium, Sambucus racemosa, Rosa canina, Rubus caesius	RF
PIERIDAE					
Leptidea sinapis sinapis (LINNAEUS, 1758)	IV-IX	M	Oligophagous: Fabaceae	Lotus corniculatus, Salvia pratensis, Trifolium pratense, Aster amellus, Scabiosa columbaria, Eupatorium cannabinum, Mentha longifolia, Leucanthemum vulgare, Galium verum, Filipendula vulgaris	VF
Pieris brassicae brassicae (LINNAEUS, 1758)	IV-IX	M	Oligophagous: Brassicaceae	Leucanthemum vulgare, Telekia speciosa, Carduus nutans, Tanacetum vulgare, Dianthus carthusianorum, Trifolium pratense, Rubus caesius, Crataegus monogyna, Rosa canina, Sambucus racemosa	RF
Pieris rapae (LINNAEUS, 1758)	IV-IX	M, Eu	Oligophagous: Brassicaceae	Hypericum perforatum, Leucanthemum vulgare, Inula hirta, Dianthus carthusianorum, Trifolium repens, Urtica dioica	VF
Pieris napi napi (LINNAEUS, 1758)	IV-IX	M	Oligophagous: Brassicaceae	Trifolium campestre, Lotus corniculatus, Dianthus carthusianorum, Epilobium angustifolium, Mentha arvensis, Telekia speciosa	VF

Taxa	FP	EE	LF	AR	F
<i>Pontia edusa</i> (FABRICIUS, 1777)	IV-IX	M	Oligophagous: Brassicaceae	Trifolium, repens, Lotus corniculatus, Genista sagitalis	F
<i>Colias croceus</i> (FOURCROY, 1758)	V-VI; VI-IX	Mxt	Oligophagous: Fabaceae	Lotus corniculatus, Trifolium pratense, Leucanthemum vulgare, Tanacetum vulgare, Dianthus carthusianorum, Telekia speciosa, Hippocrepis comosa, Origanum vulgare, Thymus serpyllum, Scabiosa ochroleuca, Galium verum, Filipendula hexapetala	RF
<i>Colias hyale</i> (LINNAEUS, 1758)	IV-X	M	Oligophagous: Fabaceae	Scabiosa ochroleuca, Telekia speciosa, Leucanthemum vulgare, Senecio arvensis, Dianthus carthusianorum, Trifolium pratense, Trifolium, repens, Sanguisorba officinalis	F
<i>Gonepteryx rhamni</i> (LINNAEUS, 1758)	V-IX	M	Oligophagous: Rhamnaceae	Carduus nutans, Origanum vulgare, Solidago virgaurea, Scabiosa ochroleuca, Centaurea cyanus, Sambucus racemosa, Rosa canina, Crataegus monogyna, Rubus caesius	RF
LYCAENIDAE					
<i>Hamearis lucina</i> (LINNAEUS, 1758)	V-VIII	M	Oligophagous: Primula sp.	Taraxacum officinale, Fragaria vesca, Salvia pratensis	VF
<i>Lycaena phlaeas phlaeas</i> (LINNAEUS, 1761)	VI-VIII	M	Oligophagous: Polygonaceae	Salvia pratensis, Scabiosa ochroleuca, Trifolium pratense, Leucanthemum vulgare, Filipendula hexapetala, Mentha longifolia	RF
<i>Lycaena dispar rutila</i> (WERNEBURG, 1864)	VII-VIII	Hg	Oligophagous: Polygonaceae	Epilobium anustifolium, Menta longifolia, Eupatorium cannabinum, Sambucus racemosa	F
<i>Lycaena virgaureae virgaureae</i> (LINNAEUS, 1758)	VI-VIII	M	Solidago virgaurea, Rumex acetosa	Eupatorium cannabinum, Epilobium angustifolium, Achillea millefolium Mentha longifolia,	VF
<i>Thecla betulae</i> (LINNAEUS, 1758)	VI-VIII	Mt	Prunus spinosa (Pupae are tended by ants)	Rarely on fruits of Sambucus racemosa	VR

Taxa	FP	EE	LF	AR	F
<i>Callophrys rubi</i> (LINNAEUS, 1758)	V-VI	Mt	Various herbaceous plants	<i>Lotus corniculatus</i> , <i>Medicago sativa</i> , <i>Geranium robertianum</i> , <i>Trifolium arvense</i> , <i>Trifolium pratense</i> , <i>Chamaespartium sagittale</i> , <i>Taraxacum officinale</i>	RF
<i>Satyrium w-album</i> (KNOCH, 1782)	VI-VII	M	<i>Ulmus glabra</i>	Rarely on <i>Sambucus nigra</i> , <i>Sambucus racemosa</i> (fruits)	R
<i>Satyrium pruni</i> (Linnaeus, 1758)	VI-VII	M	<i>Prunus</i> sp.	Rarely on <i>Rubus caesius</i> , <i>Crataegus monogyna</i> , <i>Sambucus racemosa</i>	R
<i>Satyrium spini</i> (Denis & Schiffermuller, 1775)	VI-VII	M	<i>Rhamnus</i> , <i>Prunus</i>	Rarely on <i>Sambucus racemosa</i>	R
<i>Cupido minimus minimus</i> (FUESSLY, 1775)	IV-VI; VI-IX	Mt	Oligophagous: Fabaceae Myrmecophilous species (Larvae are tended by ants)	<i>Viola tricolor</i> , <i>Hypericum perforatum</i> , <i>Lotus corniculatus</i>	RF
<i>Everes argiades</i> (PALLAS, 1771)	V-VI; VI-VII	M	Oligophagous: Fabaceae	<i>Tanacetum vulgare</i> , <i>Potentilla reptans</i> , <i>Trifolium campestre</i>	RF
<i>Celastrina argiolus</i> (LINNAEUS, 1758)	IV-VI; VII-VIII	M	Various herbaceous plants Myrmecophilous species	<i>Tanacetum vulgare</i> , <i>Potentilla reptans</i> , <i>Trifolium campestre</i> , <i>Origanum vulgare</i> , <i>Scabiosa ochroleuca</i>	RF
<i>Scoliantides orion lariana</i> FRUHSTORFER, 1910	V-VI	Xt	Oligophagous: Sedum	<i>Hieracium pilosella</i> , <i>Sedum hispanicum</i> , <i>Lotus corniculatus</i>	VF
<i>Glaucopsyche alexis</i> (PODA, 1761)	V-VII	M	Oligophagous: Fabaceae Myrmecophilous species (Larvae are tended by ants)	<i>Lotus corniculatus</i> , <i>Medicago sativa</i> , <i>Potentilla reptans</i> , <i>Hypericum perforatum</i>	RF
<i>Maculinea arion</i> (LINNAEUS, 1758)	VII-VIII	Mht	<i>Thymus serpyllum</i> Myrmecophilous (Larvae are tended by ants)	<i>Filipendula vulgaris</i> , <i>Agrimonia eupatoria</i> , <i>Leucanthemum vulgare</i> , <i>Linum flavum</i> , <i>Thymus serpyllum</i>	R
<i>Maculinea alcon</i> (DENIS & SCHIFFERMÜLLER, 1775)	VI-VIII	Mh	<i>Gentiana pneumonanthe</i> Myrmecophilous (Larvae are tended by ants)	<i>Teucrium chamaedrys</i> , <i>Mentha aquatica</i> , <i>Galium verum</i> , <i>Aster amellus</i> , <i>Centaurea cyanus</i> , <i>Cardamine pratensis</i> , <i>Arabis hirsuta</i>	VR

Taxa	FP	EE	LF	AR	F
Maculinea teleius (Bergstrasser, 1779)	VI-VIII	Mh	Sanguisorba officinalis Myrmecophilous (Larvae are tended by ants)	Galium verum, Filipendula vulgaris, Dianthus carthusianorum, Leucanthemum vulgare	VR
Plebeius argus argus (LINNAEUS, 1758)	V-VI; VII-VIII	Mh	Oligophagous: Fabaceae Myrmecophilous (Larvae are tended by ants)	Lotus corniculatus, Potentilla reptans, Viola tricolor, Medicago lupulina, Mentha longifolia, Chamaespartium sagittale, Galium verum, Lotus corniculatus	F
Aricia agestis agestis (DENIS & SCHIFFERMÜLLER, 1775)	V-VI; VII-IX	Mxt	Helianthemum sp. Geranium sp. Myrmecophilous (Larvae are tended by ants)	Lotus corniculatus, Medicago sativa, Trifolium pratense, Trifolium repens, Mentha arvensis, Chamaespartium sagittale, Potentilla reptans, Origanum vulgare, Galium verum, Filipendula vulgaris, Centaurea cyanus	F
Polyommatus semiargus semiargus (ROTTEMBURG, 1775)	VI-VIII	M	Various herbaceous plants Myrmecophilous (Larvae are tended by ants)	Medicago sativa, Hypericum perforatum, Lotus corniculatus, Potentilla reptans, Leucanthemum vulgare, Solidago virgaurea, Senecio vulgaris, Aster amellus, Vicia faba, Filipendula vulgaris	RF
Polyommatus icarus (ROTTEMBURG, 1775)	V-IX	M	Various herbaceous plants Myrmecophilous (Larvae are tended by ants)	Genista tinctoria, Lotus corniculatus, Trifolium repens, Aster amellus, Viola tricolor, Potentilla recta, Leucanthemum vulgare, Origanum vulgare, Scabiosa ochroleuca, Solidago virgaurea, Achillea millefolium	VF
NYMPHALIDAE					
Argynnis paphia paphia (LINNAEUS, 1758)	VII-VIII	M	Oligophagous: Viola sp.	Carduus nutans, Cirsium arvense, Tanacetum vulgare, Leucanthemum vulgare, Centaurea cyanus, Telekia speciosa, Eupatorium cannabinum, Origanum vulgare, Aster amellus, Mentha longifolia, Epilobium angustifolium	VF

Taxa	FP	EE	LF	AR	F
Argynnis aglaja (LINNAEUS, 1758)	VI- VIII	M	Oligophagous: Viola sp.	Leucanthemum vulgare, Telekia speciosa, Tanacetum vulgare, Solidago virgaurea, Senecio vulgaris, Mentha longifolia, Scabiosa ochroleuca, Origanum vulgare, Carduus nutans, Cirsium arvense, Filipendula vulgaris, Artemisia austriaca, Eupatorium cannabinum, Aster amellus, Sambucus racemosa	VF
Argynnis adippe (DENIS & SCHIFFERMÜLLER, 1775)	VI- VIII	Mt	Oligophagous: Viola sp.	Leucanthemum vulgare, Artemisia austriaca, Telekia speciosa, Sambucus racemosa, Aster amellus, Senecio vulgaris, Solidago virgaurea, Mentha longifolia, Epilobium angustifolium, Filipendula vulgaris	VF
Argynnis niobe niobe (LINNAEUS, 1758)	VI- VIII	M	Viola, Plantago	Leucanthemum vulgare, Telekia speciosa, Aster amellus, Scabiosa ochroleuca, Solidago virgaurea, Dianthus carthusianorum, Sambucus racemosa	VF
Issoria lathonia (LINNAEUS, 1758)	V- VIII	M	Oligophagous: Viola sp.	Leucanthemum vulgare, Telekia speciosa, Aster amellus, Senecio nemorensis, Senecio vulgaris, Solidago virgaurea, Tanacetum vulgare, Dianthus carthusianorum, Sambucus racemosa, Sambucus nigra, Scabiosa ochroleuca, Filipendula vulgaris	VF
Brenthis daphne (DENIS & SCHIFFERMÜLLER, 1775)	VI- VIII	Xt	Oligophagous: Rubus fruticosus, R. idaeus	Aster amellus, Leucanthemum vulgare, Dianthus carthusianorum, Tanacetum vulgare, Linum tenuifolium, Clematis recta	RF
Brenthis hecate (DENIS & SCHIFFERMÜLLER, 1775)	VI- VII	M	Filipendula ulmaria	Lotus corniculatus, Medicago sativa, Dianthus carthusianorum, Hypericum perforatum, Leucanthemum vulgare, Sambucus racemosa	R

Taxa	FP	EE	LF	AR	F
<i>Boloria euphrosyne</i> (LINNAEUS, 1758)	V-VI; VII-IX	M	Oligophagous: Viola sp.	Lotus corniculatus, Medicago sativa, Dianthus carthusianorum, Mentha longifolia, Hypericum perforatum, Leucanthemum	VF
<i>Boloria selene</i> (DENIS & SCHIFFERMÜLLER 1775)	V-VI; VII-IX	M	Oligophagous: Viola sp.	Leucanthemum vulgare, Senecio vernalis, Coronilla varia, Lamium purpureum, Hesperis tristis, Galium verum, Scabiosa ochroleuca, Achillea millefolium, Medicago sativa, Potentilla recta, Lotus corniculatus, Solidago virgaurea	VF
<i>Boloria dia dia</i> (LINNAEUS, 1767)	V-VI; VII-VIII	M	Viola, Rubus	Veronica chamaedrys, Potentilla recta, Medicago lupulina, Taraxacum officinale, Trifolium pratense, Leucanthemum vulgare, Origanum vulgare, Dianthus carthusianorum	VF
<i>Vanessa atalanta</i> (LINNAEUS, 1758)	VI-IX	U, Mg	Oligophagous: Urtica sp.	Dung, fermenting fruits	F
<i>Vanessa cardui</i> (LINNAEUS, 1758)	VI- VIII	U, Mg	Carduus, Urtica	Carduus nutans, Cirsium arvense, Telekia speciosa, Eupatorium cannabinum, Dipsacus fullonum	VF
<i>Inachis io</i> (LINNAEUS, 1758)	VI-X	M, Eu	Oligophagous: Urtica	Telekia speciosa, dung, fermenting fruits	VF
<i>Aglais urticae</i> (LINNAEUS, 1758)	VI; VII- VIII	M, Mg	Oligophagous: Urtica	Carduus nutans, Cirsium arvense, Hypericum perforatum, Urtica dioica, Rubus caesius	VF
<i>Polygonia c- album</i> (LINNAEUS, 1758)	V-VI; VII- VIII	M	Ribes, Urtica, Salix, Corylus	Urtica dioica, Mentha longifolia, Leucanthemum vulgare, Eupatorium cannabinum, Telekia speciosa, Hieracium pilosella, Dipsacus fullonum, Rubus caesius, Sambucus racemosa	VF
<i>Araschnia levana</i> (LINNAEUS, 1758)	V; VII- VIII	Mh	Oligophagous: Urtica sp.	Telekia speciosa, Aster amellus, Urtica dioica, Hypericum perforatum	VF
<i>Nymphalis antiopa</i> (LINNAEUS, 1758)	V- VIII	Mh	Oligophagous: Salicaceae	Rarely on Sambucus nigra	RF

Taxa	FP	EE	LF	AR	F
<i>Melitaea cinxia</i> <i>cinxia</i> (LINNAEUS, 1758)	V- VIII	Mt	Oligophagous: Plantago	Lotus corniculatus, Medicago sativa, Hypericum perforatum, Trifolium pratense, Leucanthemum vulgare, Tanacetum vulgare, Cichorium intybus	VF
<i>Melitaea phoebe</i> (DENIS & SCHIFFERMÜLLER, 1758)	V-VI; VII- VIII	Mt	Scabiosa columbaria, Cirsium sp.	Lotus corniculatus, Leucanthemum vulgare, Tanacetum vulgare	VF
<i>Melitaea didyma</i> <i>didyma</i> (ESPER, 1778)	V- VII; VIII- IX	Mxt	Various herbaceous plants	Lotus corniculatus, Medicago sativa, Hypericum perforatum, Taraxacum officinale, Leucanthemum vulgare, Tanacetum vulgare	VF
<i>Melitaea athalia</i> <i>athalia</i> (ROTTEMBURG, 1775)	V- VIII	M	Oligophagous: Plantago sp.	Lotus corniculatus, Medicago sativa, Hypericum perforatum, Leucanthemum vulgare, Tanacetum vulgare, Galium verum, Dianthus carthusianorum, Thymus serpyllum, Cichorium intybus, Centaurea cyanus	VF
<i>Neptis hylas</i> (LINNAEUS, 1758)	V-VI; VII- VIII	Mh	Monophagous: Lathyrus vernus	Rarely on flowers of Cirsium arvense, Sambucus racemosa	F
<i>Apatura ilia ilia</i> (DENIS & SCHIFFERMÜLLER 1775)	VII- VIII	Mh	Oligophagous: Salicaceae	Dung	RF
<i>Apatura iris</i> (LINNAEUS, 1758)	VI- VIII	Mh	Oligophagous: Salicaceae	Dung	RF
<i>Pararge aegeria</i> <i>tircis</i> BUTLER, 1867	V-IX	M	Oligophagous: Poaceae	Telekia speciosa, Tanacetum vulgare, Inula hirta, Leucanthemum vulgare	VF
<i>Lasiommata</i> <i>megera megera</i> (LINNAEUS, 1767)	V- VIII	M	Oligophagous: Poaceae	Rarely on Urtica dioica, Leucanthemum vulgare, and Telekia speciosa. It prefers the edge of the forests where it rests on leaves.	VF
<i>Lasiommata</i> <i>maera maera</i> (LINNAEUS, 1758)	V- VIII	M	Oligophagous: Poaceae	Urtica dioica, Leucanthemum vulgare, Tanacetum vulgare, Ranunculus repens, Telekia speciosa	VF

Taxa	FP	EE	LF	AR	F
<i>Coenonympha arcania arcania</i> (LINNAEUS, 1761)	V-VIII	M	Oligophagous: Poaceae	<i>Achillea millefolium</i> , <i>Trifolium pratense</i> , <i>T. repens</i> , <i>Vicia faba</i> , <i>Dianthus carthusianorum</i> , <i>Centaurea cyanus</i> , <i>Medicago lupulina</i> , <i>Lotus corniculatus</i> , <i>Veronica spicata</i>	VF
<i>Coenonympha glycerion glycerion</i> (BORKHAUSEN, 1788)	VI-VIII	M	Oligophagous: Poaceae	<i>Trifolium repens</i> , <i>Centaurea cyanus</i> , <i>Medicago lupulina</i> , <i>Lotus corniculatus</i> , <i>Veronica spicata</i> , <i>Vicia faba</i> , <i>Genista tinctoria</i> , <i>Dianthus carthusianorum</i> , <i>Leucanthemum vulgare</i>	RF
<i>Coenonympha pamphilus</i> (LINNAEUS, 1758)	V-IX	M	Oligophagous: Poaceae	<i>Leucanthemum vulgare</i> , <i>Dianthus carthusianorum</i> , <i>Hypericum perforatum</i>	VF
<i>Pyronia tithonus tithonus</i> (LINNAEUS, 1767)	VII-VIII	Xt	Oligophagous: Poaceae	<i>Dianthus carthusianorum</i> , <i>Aster amellus</i> , <i>Leucanthemum vulgare</i>	R
<i>Aphantopus hyperantus</i> (LINNAEUS, 1758)	V-IX	M	Oligophagous: Poaceae	<i>Leucanthemum vulgare</i> , <i>Dianthus carthusianorum</i> , <i>Telekia speciosa</i> , <i>Rubus caesius</i> , <i>Sambucus racemosa</i>	VF
<i>Maniola jurtina jurtina</i> (LINNAEUS, 1758)	V-IX	M	Oligophagous: Poaceae	<i>Epilobium angustifolium</i> , <i>Telekia speciosa</i> , <i>Carduus nutans</i> , <i>Centaurea cyanus</i> , <i>Lotus corniculatus</i> , <i>Cirsium arvense</i> , <i>Origanum vulgare</i> , <i>Scabiosa ochroleuca</i> , <i>Dianthus carthusianorum</i> , <i>Leucanthemum vulgare</i>	VF
<i>Hyponephele lycaon</i> (Rottemburg, 1775)	VI-VIII	M	Oligophagous: Poaceae	<i>Dianthus carthusianorum</i> , <i>Origanum vulgare</i> , <i>Cirsium vulgare</i> , <i>Scabiosa ochroleuca</i>	VR
<i>Erebia aethiops aethiops</i> (ESPER, 1777)	VII-VIII	M	Oligophagous: Poaceae	<i>Geranium sanguineum</i> , <i>Senecio nemorensis</i> , <i>Aster amellus</i> , <i>Leucanthemum vulgare</i>	F
<i>Erebia medusa psodea</i> (HUBNER, 1804)	VII-VIII	M	Oligophagous: Poaceae	<i>Filipendula vulgaris</i> , <i>Galium verum</i> , <i>Galium verum</i> , <i>Digitalis grandiflora</i> , <i>Leucanthemum vulgare</i>	RF
<i>Melanargia galathea</i> (LINNAEUS, 1758)	V-IX	M	Oligophagous: Poaceae	<i>Leucanthemum vulgare</i> , <i>Galium verum</i> , <i>Dianthus carthusianorum</i> , <i>Salvia pratensis</i> , <i>Filipendula vulgaris</i>	VF

Taxa	FP	EE	LF	AR	F
Minois dryas (SCOPOLI, 1763)	VII- VIII	Xt	Oligophagous: Poaceae	Fruits of Sambucus nigra and Sambucus racemosa	VF
Hipparchia fagi (SCOPOLI, 1763)	VI- VIII	Mt	Oligophagous: Poaceae	Hypericum perforatum, Digitalis grandiflora	VF
Brintesia circe pannonica FRUHSTORFER, 1911	VII- VIII	Xt	Oligophagous: Poaceae	Rarely on Verbascum phlomoides, Hypericum perforatum, Telekia speciosa	F
Chazara briseis briseis (LINNAEUS, 1764)	VII- VIII	Xt	Oligophagous: Poaceae	Rarely on fruits of Sambucus nigra and Cirsium arvense	R

Abbreviation: EE=Ecological Exigences: M-Mesophilous; Mt-Mesothermophilous; Xt-Xerothermophilous; Mh-Mesohygrophilous species; Mxt – Mesoxerothermophilous species; Hg- Hygrophilous species; U-Ubiqvist; Eu-Euritope; **LF**- Larval Food; **AR**= Adult nectar resources; **F**= Frecquency: F- Frequent species (10-15 individuals/day); RF- Relativ frequent species (5-10 individuals/day); FF-Very Frequent species (>15 individuals&day); R-Rare species (5-10 individuals/generation); VR- Very Rare species (1-4 individuals/generation) (After RÁKOSY & VIEHMANN 1991 classification); **FP**= Fly period of the adults

All the identified species are widespreading in the hilly zone of Poiana Ruscă Mountains.

Most of the species prefer flowery and grassy meadows, woodland clearings, flowery hillsides and deciduous forest edges. If forest is not hospitable for adult butterflies, the edge of the forest is the most populated habitat. A lot of species as *Inachis io*, *Araschnia levana*, *Maniola jurtina*, *Argynnis paphia*, *Lycaena phlaeas* (fig. 16), *Polygonia c-album* also prefer the habitats of alder woods with high herbaceous vegetation (*Telekia speciosa*, *Epilobium angustifolium*, *Eupatorium cannabinum*). *Minois dryas* was observed in dry habitats as grassy meadows but also prefers the edge of the forests. Some species depend on shrub habitats as *Thecla betulae*, *Gonepteryx rhamni*, *Pyrgus malvae*, *Brenthis daphne* (fig. 18), *Brintesia circe pannonica* and *Satyrrium w-album*. Mesophylous meadows are preferred by *Melitaea athalia*, *Erynnis tages* and *Erebia medusa medusa* (fig. 17, 19, 20). Mesohygrophilous meadows are the preferred habitats of the common species *Lycaena virgaureae* (fig. 15).

The most adult butterflies prefer nectar of flowers because its sugar content (sucrose, glucose, fructose). Its total sugar content amounts to about 40 percent, though it can fluctuate widely among different species. For instance, *Origanum vulgare* has a high concentration of sugar (76%). Other substances are present in relatively small amounts as amino acids, proteins, organic acids, phosphates, vitamins and enzymes (BARTH 1991).

Flowers of 59 species of herbaceous plants and shrubs were studied. *Leucanthemum vulgare*, *Dianthus carthusianorum*, *Galium verum*, *Filipendula hexapetala*, *Cirsium arvense*, *Carduus nutans*, *Telekia speciosa*, *Eupatorium cannabinum*, *Epilobium angustifolium*, *Aster amellus*, *Thymus serpyllum*, *Lotus corniculatus*, *Mentha longifolia*, *Solidago virgaurea*,

Urtica dioica, *Sambucus racemosa*, *Sambucus nigra*, *Trifolium pratense*, *Rubus caesius*, *Tanacetum vulgare* were the most visited flowery plants. Especially Asteraceae are very important for adults of Nymphalidae, Pieridae and some Lycaenidae species while the larvae of the same species may use totally different host-plants. Other species rarely visit flowers like *Neptis hylas* and *Lasiommata megera*. *Minois dryas*, *Chazara briseis* and *Thecla betulae* have been seen on fruits of *Sambucus racemosa* and *Sambucus nigra*. The presence of dung on the road attracts *Inachis io*, *Apatura iris*, *Neptys hylas* and *Vanessa atalanta*.

The analysis of the voltinisme points out the dominance of the monovoltine species as *Pyrgus malvae*, *Pyrgus carthami*, *Erynnis tages*, *Thymelicus sylvestris*, *Hesperia comma*, *Papilio machaon*, *Iphiclides podalirius*, *Aporia crataegi*, *Gonepteryx rhamni*, *Thecla betulae*, *Lycaena dispar rutila*, *Lycaena virgaureae*, *Maculinea arion*, *Maculinea alcon*, *Maculinea teleius*, *Scoliantides orion*, *Apatura iris*, *Apatura ilia*, *Argynnis paphia*, *Melanargia galathea*, etc. Bivoltine species are *Everes argiades*, *Cyaniris semiargus*, *Celastrina argiolus*, *Plebejus argus*, *Aricia agestis*, *Neptis hylas*, *Polygonia c-album*, *Melitaea didyma*, *Melitaea phoebe*, *Boloria selene*, *Boloria dia*, *Araschnia levana*, *Lasiommata maera*, *Lasiommata megera*, etc. Polyvoltine species, especially trivoltine are *Pieris rapae*, *Pieris napi*, *Pontia edusa*, *Colias hyale*, *Lycaena phlaeas* and *Coenonympha pamphilus*.

The analysis of ecological exigencies emphasizes the dominance of mesophilous species (60%) with moderate exigencies concerning the temperature and the humidity, followed by mesohygrophilous species (10%) mesothermophilous species (9%) and mesoxerothermophilous species (7%) (Fig.1).

Xerothermophilous species (8%) are *Pyronia tithonus*, *Minois dryas*, *Brinthesia circe pannonica*, *Chazara briseis*, *Brenthis daphne* and *Scoliantides orion*.

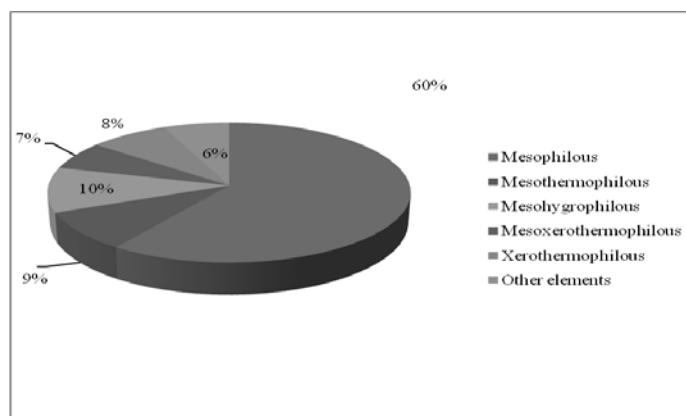


Fig. 1 – Spectrum of the ecological exigencies of Rhopalocera species recorded from Muncelu Mic-Poienița Tomii-Feregi (Poiana Ruscă Mountains)

In the area of Muncelu Mic-Poienița Tomii-Feregi, 59 species are oligophagous (Fig. 2). *Erynnis tages*, *Leptidea sinapis*, *Colias croceus*, *Colias hyale*, *Everes argiades*, *Glaucopsyche alexis* and *Plebejus argus* are feeding on various Fabaceae. *Gonepteryx rhamni* prefers Rhamnaceae. Brassicaceae are food-plants for *Pieris brassicae*, *Pieris napi* and *Pontia edusa*. Various Rosaceae, especially *Prunus* sp., *Rubus* sp. are preferred by *Iphiclides podalirius* and *Brenthis daphne*. *Nymphalis antiopa*, *Apatura iris* and *Apatura ilia* feed on Salicaceae (*Salix* and *Populus*). Larvae of *Vanessa atalanta*, *Inachis io*, *Aglais urticae* and *Araschnia levana* feed on *Urtica* species. *Argynnis paphia*, *Argynnis aglaja*, *Issoria lathonia*, *Boloria euphrosyne* and *Boloria dia* feed on *Viola* species. Satyrinae species and some Hesperidae as *Carterocephalus palaemon*, *Thymelicus lineola*, *Thymelicus sylvestris*, *Hesperia comma* and *Ochlodes venatus faunus* feed on Poaceae.

Monophagous species are *Thecla betulae*, *Satyrrium w-album*, *Maculinea arion*, *Maculinea alcon*, *Maculinea teleius*, *Brenthis hecate* and *Neptis hylas*.

Larvae of 12 species are polyphagous, feeding on various herbaceous plants as *Pyrgus carthami*, *Callophrys rubi*, *Celastrina argiolus*, *Lycaena virgaureae*, *Plebejus semiargus*, *Polyommatus icarus*, *Aricia agestis*, *Melitaea didyma*, *Melitaea phoebe*, etc.

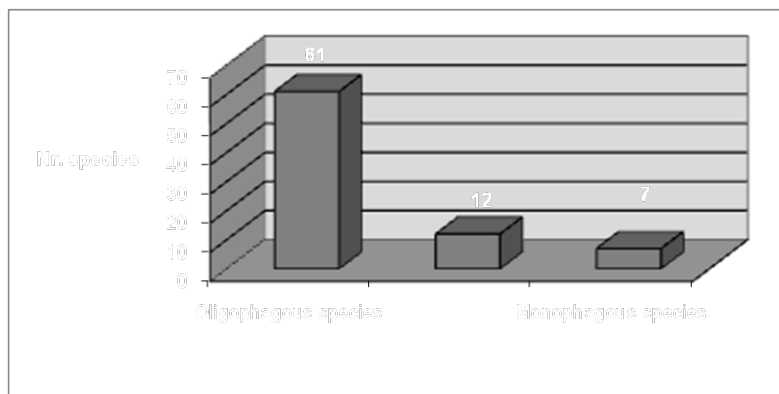


Fig. 2 – Spectrum of the trophic structure of larvae

The majority of Lycaenids have associations with ants that can be facultative or obligate and range from mutualism to parasitism. Larvae spend their first stage on various herbaceous plants and after they are attended by ants. Lycaenid larvae and pupae employ complex chemical and acoustical signals to manipulate ants (PIERCE et. al. 2002). Myrmecophilous species as *Maculinea alcon*, *Maculinea arion*, *Thecla betulae*, *Maculinea teleius*, *Celastrina argiolus*, *Glaucopsyche alexis*, *Cupido minimus*, *Aricia agestis*,

Polyommatus semiargus, *Polyommatus icarus*, *Plebejus argus* have been recorded from the Muncelu Valley and its meadows.

The analyse of the frequency emphasizes the dominance of very frequent species (37,48%), followed by relative frequent species (17,22%) and frequent species (14,18%) (Fig. 3).

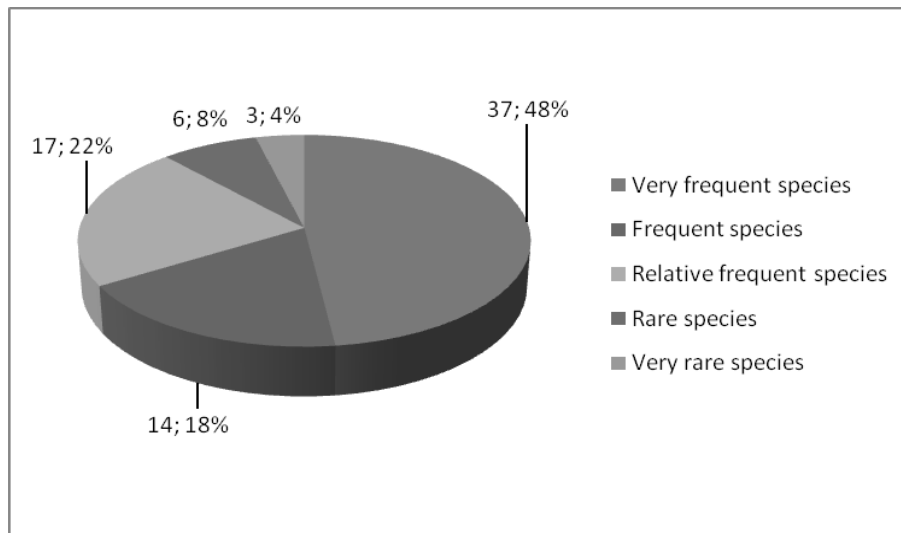


Fig. 3 - The spectrum of the frequency of the Rhopalocera species in the area of Muncelu Mic-Poienița Tomii-Feregi (Poiana Ruscă Mountains)

In June-August some species as *Argynnis paphia*, *Argynnis adippe*, *Argynnis aglaja*, *Maniola jurtina*, *Aphantopus hyperanthus*, *Melitaea athalia* (pl.), *Melitaea didyma*, *Coenonympha pamphilus*, *Coenonympha arcania*, *Erynnis tages*, *Polyommatus icarus*, *Pyrgus malvae*, *Pieris rapae*, *Pieris napi* have a high frequency (more than 15 individuals/day).

Rare species, concerning the frequency of the individuals are *Satyrrium w-album*, *Maculinea arion*, *Brenthis hecate*, *Nymphalis antiopa*, *Pyronia tithonus* and *Chazara briseis*. Very rare species are *Thecla betulae*, *Maculinea alcon* and *Maculinea teleius*.

Important species concerning their biology and behaviour are:

Maculinea arion (LINNAEUS, 1758). It is a rare species in the studied area. Monovoltine species (Fig. 4). Adults fly in June-July but they were also seen in the first decade of August. They prefer mesophilous and mesohygrophilous meadows. They visit especially *Filipendula vulgaris*, *Agrimonia eupatoria*, *Leucanthemum vulgare*, *Linum flavum* and *Thymus serpyllum*.

Larvae feed on *Thymus serpyllum* in the early stages and then they are feeding on ant larvae when they are taken undergrounds by ants (STILL 1996). This species is included in the 4 Annexe of The Emergency Ordinance of the Romanian Government no. 57/2007.

	I	F	M	A	M	J	J	A	S	O	N	D
Egg							■					
Larva	■	■	■	■	■			■	■	■	■	■
Pupa						■	■					
Imago							■	■				

Fig. 4. - *Maculinea arion* life cycle

Maculinea alcon (DENIS & SCHIFFERMÜLLER, 1775) is widespread in Europe and Northern Asia. In Romania it is a rare and local species. It can be seen flying in July-August. Like some other species of Lycaenidae, its larva stage depends on support by certain ants (myrmecophilous species). Female lays its eggs onto the *Gentiana pneumonanthe*. Larvae leave the food plant when they have grown sufficiently (4th instar) and wait on the ground below to be discovered by ants (*Myrmica scabrinodis*, *Myrmica ruginodis* or *Myrmica rubra*). Pupation takes place in June and butterflies hatch from the pupae in the beginning of July (Fig. 5). This species is vulnerable in all the Europe. It is included in the Red List of Butterflies of Romania as an endangered species (RÁKOSY 2002). *Maculinea alcon* is a species of national interest that need a strict protection (4B Annexe of the Emergency Ordinance of the Romanian Government no. 57/2007).

	I	F	M	A	M	J	J	A	S	O	N	D
Egg												
Larva	■	■	■	■	■			■	■	■	■	■
Pupa						■	■					
Imago							■	■				

Fig.5 – *Maculinea alcon* life cycle

Maculinea teleius (BERGSTRÄSSER, 1779). Adults fly from July to the beginning of August, especially in mesohygrophilous meadows with *Sanguisorba officinalis*, *Lythrum salicaria* and *Molinia coerulea* (Fig. 6). These kinds of meadows are situated along Muncelu Valley. This species is obligatory myrmecophilous. Larvae have a socially parasitic life-cycle. They start their development by feeding on seeds in the flower heads of the host plant *Sanguisorba officinalis*. In their last, fourth instars', they descend to the ground and wait to be adopted by ants of *Myrmica scabrinodis*. In the ant nest larvae are predators of the ant brood (TARTALLY & VARGA 2008). *Maculinea teleius* is listed in the Red List of Butterflies of Romania as an endangered species (RÁKOSY 2002). It is also a protected species included in the annexes of the Emergency Ordinance of the Romanian Government no. 57/2007.

	I	F	M	A	M	J	J	A	S	O	N	D
Egg							■					
Larva	■	■	■	■	■			■	■	■	■	■
Pupa						■						
Imago							■	■				

Fig. 6 – *Maculinea teleius* life cycle

Thecla betulae (LINNAEUS, 1758). This is a local species found at the edge of the forests and in the shrub habitats. The adults fly in July-August and visit *Fraxinus excelsior* and *Sambucus racemosa*. Female lays her eggs on *Prunus spinosa* in August Eggs overwinter. Larvae emerge from the eggs in spring and feed on *Prunus spinosa* leaves. Pupation takes place in leaf litter on the ground in late June or early July (Fig. 7). Pupae are attractive to ants (*Lasius niger*) (www.ukbutterflies.co.uk/species; <http://en.wikipedia.org/>).

	I	F	M	A	M	J	J	A	S	O	N	D
Egg	■	■	■	■				■	■	■	■	■
Larva					■							
Pupa						■	■					
Imago							■	■	■			

Fig. 7- *Thecla betulae* life cycle

Satyrium w-album KNOCH, 1782 – It prefers the edge of the deciduous forests wherever elm trees grow. Adults fly in June-July and visit *Rubus fruticosus* and *Sambucus racemosa* (Fig. 8). It hibernates as egg. Larvae feed in the early stages on flowers and leaves of *Ulmus glabra* and later they are attended by ants (STILL 1996).

	I	F	M	A	M	J	J	A	S	O	N	D
Egg	■							■				
Larva			■									
Pupa					■							
Imago						■						

Fig. 8- *Satyrium w-album* life cycle

Chazara briseis (LINNAEUS, 1764) is widespread in South Europe, east of Asia and North Africa. In the studied area it is a rare species. Monovoltine species (Fig. 9). The adults fly in July-August in dry grasslands and rarely visit *Sambucus nigra* and *Scabiosa ochroleuca*. Larvae feed on various Poaceae and hibernate in different stages.

	I	F	M	A	M	J	J	A	S	O	N	D
Egg							■					
Larva	■								■			
Pupa						■						
Imago							■					

Fig. 9- *Chazara briseis* life cycle

Hyponphele lycaon (ROTTEMBERG, 1775) – Euroasiatic species widespread from the southern and eastern part of Europe to Central Asia (STILL 1996; TOLMAN & LEWINGTON 2007). Monovoltine species (Fig.10). The adults fly in June-August and prefer the edge of the deciduous forests and grassy meadows. Larvae breed on various Poaceae and hibernating. In the Red List of Romanian butterflies it is mentioned as a vulnerable species (RÁKOSY 2002).

	I	F	M	A	M	J	J	A	S	O	N	D
Egg							■					
Larva	■	■	■	■	■				■	■	■	■
Pupa					■							
Imago						■	■	■				

Fig.10 - *Hyponephele lycaon* life cycle

Other species recorded from this area as *Lycaena dispar rutila*, *Brenthis daphne*, *Brenthis hecate*, *Neptis hylas*, *Apatura iris* and *Apatura ilia* are included in the Red List of Butterflies of Romania as vulnerable species.

In keeping with the Emergency Ordinance of the Romanian Government no. 57/2007 concerning the regime of the protected areas, preserved habitats and wild flora and fauna of Romania, *Maculinea teleius*, *Maculinea arion* and *Lycaena dispar rutila* are species of community interest that need a strict protection (4A Annexe).

Lycaena dispar rutila (WERNEBURG, 1864) is a frequent species in the area of wet meadows of Muncelu Mic. It is a bivoltine species (Fig. 11). The adults fly in June and in July until the beginning of August. They visit the flowers of *Eupatorium cannabinum*, *Epilobium angustifolium*, *Mentha aquatica* and *Sambucus racemosa*. Eggs are laid on the foodplant (*Rumex* sp.). In this area larvae feed on *Rumex acetosa*.

	I	F	M	A	M	J	J	A	S	O	N	D
Egg							■	■				
Larva	■	■	■	■	■			■	■	■	■	■
Pupa						■	■	■				
Imago						■	■	■				

Fig. 11 – *Lycaena dispar rutila* life cycle.

Maculinea alcon and *Neptis hylas* are species of national interest that need a strict protection (4B Annexe of the Emergency Ordinance of the Romanian Government no. 57/2007).

Conclusions

Rhopalocera species of Muncelu Mic-Muncelu Mare-Poienița Tomii-Feregi zone are characteristic of hilly level of Poiana Ruscă Mountains. Most of species prefer the flowery meadows and the edge of the deciduous forests.

Concerning the frequency, most of species are frequent and very frequent but some species as *Maculinea arion*, *Maculinea teleius*, *Maculinea alcon*, *Thecla betulae*, *Chazara briseis* and *Hyponephele lycaon* are rare or very rare in this area.

Literature cited

- BARTH F.G. 1991. Insects and flowers. A biology of a partnership. Princeton Univ. Pr. 309 pp.
- FELTWELL J. 2001. The illustrated encyclopedia of butterflies. Chartwell Books. Ed. New Jersey.
- HIGGINS L.G. & RILEY N. D. 1984. A Field Guide to the Butterflies of Britain and Europe. Collins Publishers, London.
- IȘVĂNONI R. 2006. Pădureni Hunedoarei. Ed. Mirabilis, București.
- KRAUTNER H. G. 1984. Munții Poiana Ruscă. Ghid turistic. Ed. Sport - Turism, București, 150 p.
- NICULESCU E.V. 1961. Lepidoptera. Familia Papilionidae. Fauna R.P.R., Edit. Acad. R.P.R., București, **11**(5):1-103
- NICULESCU E.V. 1963. Lepidoptera. Familia Pieridae. Fauna R.P.R., Edit. Acad. R.P.R., București, **11**(6): 1-202.
- NICULESCU E.V. 1965. Lepidoptera. Familia Nymphalidae. Fauna R.S.R., Edit. Acad. Rom., București, **11**(7): 1-362.
- PÂRVU C. 2002. Enciclopedia plantelor. Plante din flora României. Vol. I. 1040 p.
- PÂRVU C. 2003. Enciclopedia plantelor. Plante din flora României. Vol. II. 820 p.
- PÂRVU C. 2004. Enciclopedia plantelor. Plante din flora României. Vol. III. 1054 p.
- PÂRVU C. 2005. Enciclopedia plantelor. Plante din flora României. Vol. IV. 1086 p.
- PIERCE NAOMI E., BRABY M. F., HEATH A., LOHMAN D.J., MATHEW J., RAND D.B., TRAVASSOS M.A. 2002. The ecology and evolution of ant association in the Lycaenidae (Lepidoptera). *Annual Review of Entomology*, **47**: 733-771.
- RÁKOSY L. 1993. Macrolepidoptere din Parcul Național Retezat. În: Parcul Național Retezat. Studii ecologice, Edit. West-Side, Brașov, 254-280.

- RÁKOSY L. 2002. Lista roșie pentru fluturii diurni din România. Bul. inf. Soc. lepid. Rom., Cluj-Napoca, **13**(1-4): 9-26.
- RÁKOSY L. & VIEHMANN J. 1991. Arguments for the Tur Gorges nature reserve. Ocrot. Nat. Med. Inconj., Ed. Acad. Rom., București, **35** (1-2): 15-25.
- STILL J. 1996. Butterflies & Moths. Collins Wild Guide. Harper Collins Publishers. London.
- TARTALLY A. & VARGA Z. 2008. Host ant use of *Maculinea teleius* in the Carpathian basin (Lepidoptera: Lycaenidae). Acta Zoologica, Academiae Scientiarum Hungaricae, **54**(3): 257-268.
- TOLMAN T. & LEWINGTON R. 2007. Guide des papillons d'Europe et d'Afrique du Nord. Ed. Delachaux et Niestlé, Paris, 320 p.
- xxx Ordonanța de urgență a Guvernului României nr. 57/2007 privind regimul ariilor naturale protejate, conservarea habitatelor naturale, a florei și faunei sălbatice.
- <http://en.wikipedia.org/>
- www.ukbutterflies.co.uk/species

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Fig. 12. Beech forests of Muncelu Mic (As. Carpino-Fagetum PAUCA 194)



Fig. 13. - Medadows of Muncelu Mic (As. Galio veri-Festucetum rubrae RESMERIȚĂ (1965) 1980))



Fig. 14. Landscape of Feregi locality in Pădureni Countyside



Fig. 15. *Lycaena virgaureae* on *Achillea millefolium*



Fig. 16. *Lycaena phlaeas* on *Mentha longifolia*

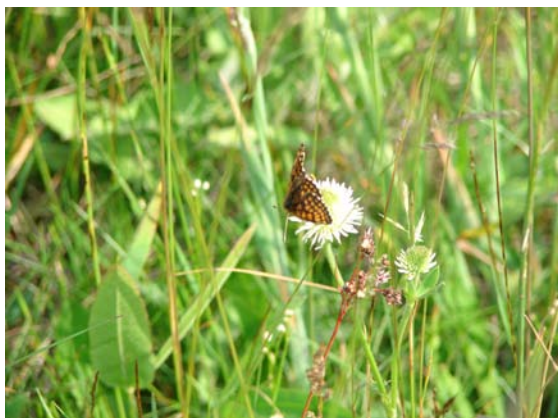


Fig. 17. *Melitaea athalia* on *Trifolium repens*



Fig. 18. *Brenthis daphne* on *Clematis recta*



Fig. 19. *Erynnis tages* on *Ajuga reptans*

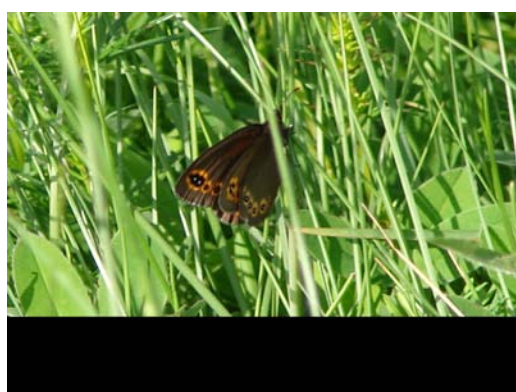


Fig. 20 – *Erebia medusa* resting on herbaceous plants