

**BUTTERFLIES (S.ORD. RHOPALOCERA) OF THE PROTECTED AREA
THE LAWNS OF SĂLAȘU DE SUS
(HUNEDOARA COUNTY, ROMANIA)**

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Abstract:

Butterflies (S.ord. Rhopalocera) of the protected area *The lawns of Sălașu de Sus* (Hunedoara County, Romania)

The paper presents the checklist of the Macrolepidoptera species (S. ord. Rhopalocera, Ord. Lepidoptera) recorded from the protected area *The Lawns of Sălașu de Sus* located in Hațeg Basin (Hunedoara County). An endemic association *Peucedanum (rocheliani) – Molinietum coeruleae* Boșcaiu 1965 edifies the coenoses of this area. Actually the natural reserve is part of the natural park known as *The Geopark of Dinosaurs-Hațeg Country*. A total of 83 species have been recorded from this protected area. In this lawns, *Euphydryas aurinia*, *Maculinea arion*, *Maculinea teleius* and *Maculineaalcon* find favorable conditions for their life-cycle.

Key words: Macrolepidoptera, checklist, The lawns of Sălașu de Sus

Rezumat

Fluturi de zi (S. ord. Rhopalocera, Ord. Lepidoptera) din aria protejată *Fânațele de la Sălașu de Sus* (Județul Hunedoara, România)

Lucrarea prezintă lista sistematică a speciilor de Macrolepidoptere diurne identificate în aria naturală protejată *Fânațele cu narcise de la Sălașu de Sus* (Județul Hunedoara). Cenozele din această rezervație sunt edificate de asociația endemică *Peucedanum (rocheliani) – Molinietum coeruleae* Boșcaiu 1965. În prezent, rezervația face parte din parcul natural cunoscut ca Geoparcul Dinozaurilor-Țara Hațegului. 83 specii de Macrolepidoptere diurne au fost identificate din această arie protejată. În aceste fânețe, *Euphydryas aurinia*, *Maculinea arion*, *Maculinea teleius* și *Maculineaalcon* găsesc condiții favorabile pentru dezvoltarea ciclului lor biologic.

Cuvinte cheie: Macrolepidoptera, lista sistematică, Fânațele de la Sălașu de Sus

Introduction

The Lawns of Sălașu de Sus is the only natural reserve of Hunedoara County in which *Narcissus stellaris* is protected. This species forms beautiful coenoses together with other species of *Peucedanum (rocheliani) – Molinietum coeruleae* BOȘCAIU 1965 association. At present, this protected area, situated from geographically point of view in the Basin of Hațeg,

is included in the natural park known as *The Geopark of Dinosaurs-Hațeg Country*. The Retezat Mountains border the southern part of this natural reserve. It covers an area of 20 ha widespread between two localities: Sălașu de Sus and Nușoara.

The scientific and fitogeographical importance of this association is due to the presence of *Peucedanum rochelianum*, an endemic species, occurring on both banks of the Danube but with an extremely limited range. The conenoses of the association have a mesophilous character but hygrophilous and mesohygrophilous species are also present, especially near Sălaș Valley. Besides the two dominant species *Peucedanum rochelianum* and *Molinia caerulea* other 137 species form the inventory of the vascular plants (mono and dicotyledonata) of this association. In spring (May-June), the flowers of *Narcissus stellaris*, *Orhis morio* and *Iris sibirica* are abundant. In July and August, *Gladiolus imbricatus*, *Gentiana pneumonanthe*, *Dianthus carthusianorum*, *Peucedanum rochelianum*, *Sanguisorba officinalis* and *Scabiosa ochroleuca* give the color of these lawns.

If this protected area is known from a botanical point of view, fauna and especially Macrolepidoptera fauna was not published.

During 2005-2008 we have collected and identified the butterfly's species (S. ord. Rhopalocera) of this area.

The aim of this paper is to present the checklist of the species of butterflies accompanied by data about their frequency, fly period, adults and caterpillars plant resources.

Material and methods

Butterflies were collected every year, from May to September, using an entomological net. Samples were made both in the lawns with *Narcissus stellaris* but also in the habitats of Sălaș Valley that borders the protected area.

The identification of the species was made after NICULESCU (1961, 1963, 1965), STILL (1996), FELTWELL (2001), TOLMAN & LEWINGTON (2007). The nomenclature and the systematic of species used in this paper are those published by RÁKOSY (2002) and SZÉKELY (2008).

Results and conclusions

The habitats of the protected area of Sălașu de Sus offer favourable conditions for Lepidoptera fauna, especially for butterflies. In 2005-2008 we have identified 83 species of

butterflies. The checklist of the species is accompanied by data about the flying period, ecological exigencies, the frequency of species, and larval and adult plant resources (Tab. 2).

The frequency of the species is established according RÁKOSY & VIEHMANN (1991) classification.

The majority of the species identified in this area belongs to Nymphalidae (40 species) and Lycaenidae families (26 species) (Tab. 1).

Tab. 1 – The structure of Rhopalocera families and the number of species recorded from Sălașu de Sus protected area

Family	Number of species
Hesperiidae	7
Papilionidae	2
Pieridae	8
Lycaenidae	26
Nymphalidae	40

The majority of the species are characteristic for the habitats of the mesophilous and mesohygrophilous meadows, but many species were collected at the edge of the alder coenoses which are widespread in the valley of the river. Like in other studies we try to identify the plants used as nectar resources by butterflies. *Dianthus carthusianorum*, *Filipendula ulmaria*, *Vicia cracca*, *Viola tricolor*, *Narcissus stellaris*, *Veronica chamaedrys*, *Senecio vulgaris*, *Sanguisorba officinalis*, *Medicago sativa*, *Origanum vulgare*, *Urtica dioica*, *Centaurea pannonica*, *Hypericum perforatum*, *Inula hirta*, *Potentilla erecta*, *Tanacetum vulgare*, *Telekia speciosa*, *Trifolium repens*, *Trifolium pratense*, *Galium verum*, *Gentiana pneumonanthe*, *Aster amellus*, *Scabiosa ochroleuca*, *Scabiosa columbaria*, *Gladiolus imbricatus*, *Thymus serpyllum*, *Leucanthemum vulgare*, *Cytisus nigricans*, *Cirsium canum*, *Lotus corniculatus*, *Ranunculus repens*, *Lathyrus pratensis*, *Prunella vulgaris*, *Stachys recta*, *Chamaespartium sagitale*, *Cichorium intybus*, *Tanacetum vulgare*, *Sambucus racemosa*, *Solidago virgaurea*, *Sambucus racemosa*, *Knautia arvensis*, *Crataegus monogyna*, *Rubus caesius*, *Rosa canina*, *Linum hirsutum*, *Peucedanum rochelium* and *Achillea ptarmica* are the studied flowering plants as nectar resources.

Tab. 2- Checklist of butterflies (Ord. Lepidoptera, S. ord. Rhopalocera) identified in the protected area *Lawns of Sălașu de Sus* (Hunedoara County, Romania)

Taxa	FP	E.E	LHP	Pf-Ns	F
HESPERIIDAE					
<i>Erynnis tages tages</i> (LINNAEUS, 1758)	V- VIII	M	Fabaceae	<i>Lotus corniculatus</i> , <i>Ranunculus repens</i> , <i>Galium verum</i> , <i>Lathyrus pratensis</i> , <i>Prunella vulgaris</i>	VF
<i>Carcharodus floccifera floccifera</i> (Zeller, 1847)	V- VI; VII- VIII	Mh	<i>Stachys</i> sp.	<i>Stachys recta</i> , <i>Telekia speciosa</i> , <i>Narcissus stellaris</i>	VR
<i>Pyrgus carthami</i> (HÜBNER, 1813)	V- VI; VII- VIII	M	<i>Potentilla</i> sp., <i>Alchemilla</i> sp., <i>Malva</i> sp.	<i>Lotus corniculatus</i> , <i>Filipendula ulmaria</i> , <i>Narcissus stellaris</i> , <i>Linum catharticum</i> , <i>Prunella vulgaris</i>	F
<i>Pyrgus malvae malvae</i> (LINNAEUS, 1758)	V- VI; VII- VIII	M	<i>Fragaria vesca</i> , <i>Potentilla recta</i> , <i>Agrimonia eupatoria</i> , <i>Rubus fruticosus</i>	<i>Vicia cracca</i> , <i>Achillea millefolium</i> , <i>Cichorium intybus</i> , <i>Inula hirta</i> , <i>Chamaespartium sagittale</i>	VF
<i>Carterocephalus palaemon</i> (PALLAS, 1771)	VI	M	Poaceae	<i>Potentilla reptans</i> , <i>Galium verum</i>	F
<i>Thymelicus sylvestris</i> (PODA, 1761)	VII- VIII	M	Poaceae	<i>Hypericum perforatum</i> , <i>Inula hirta</i> , <i>Senecio vulgaris</i> , <i>Leucanthemum vulgare</i> , <i>Salvia nemorosa</i> , <i>Galium verum</i> , <i>Vicia faba</i> , <i>Tanacetum vulgare</i> , <i>Viola canina</i> , <i>Potentilla erecta</i>	F
<i>Thymelicus lineola lineola</i> (Ochsenheimer, 1808)	VI- VII	M	Poaceae	<i>Galium verum</i> , <i>Gentiana pneumonanthe</i> , <i>Chamaespartium sagittale</i> , <i>Hypericum perforatum</i> , <i>Centaurea pannonica</i> , <i>Achillea ptarmica</i> , <i>Achillea millefolium</i> , <i>Gladiolus imbricatus</i> , <i>Trifolium pratense</i> , <i>Scabiosa ochroleuca</i> , <i>Salvia pratensis</i>	F
<i>Hesperia comma</i> (LINNAEUS, 1758)	VII- VIII	M	Poaceae: <i>Festuca</i>	<i>Aster amellus</i> , <i>Leucanthemum vulgare</i> , <i>Viola tricolor</i> , <i>Mentha longifolia</i> , <i>Gentiana pneumonanthe</i> , <i>Tanacetum vulgare</i> , <i>Lotus corniculatus</i> , <i>Vicia cracca</i>	VF
<i>Ochlodes venatus faunus</i> (TURATI, 1905)	VII- VIII	Mt	Poaceae	<i>Hypericum perforatum</i> , <i>Aster amellus</i> , <i>Leucanthemum vulgare</i> , <i>Trifolium pratense</i> , <i>Trifolium repens</i> , <i>Gentiana pneumonanthe</i> , <i>Chamaespartium sagittale</i> , <i>Thymus</i> sp.	VF

Taxa	FP	E.E	LHP	Pf-Ns	F
PAPILIONIDAE					
Iphiclides podalirius (LINNAEUS, 1758)	VI- VIII	Mxt	Prunus sp.	Rosa canina, Gladiolus imbricatus, Achillea ptarmica, Centaurea pannonica, Crataegus monogyna	F
Papilio machaon (LINNAEUS, 1758)	IV- VIII	M	Umbelliferae	Cirsium canum, Telekia speciosa, Achillea ptarmica, Crataegus monogyna, Rosa canina, Sambucus nigra, Leucanthemum vulgare, Sambucus racemosa, Scabiosa ochroleuca,	RF
PIERIDAE					
Leptidea sinapis sinapis (LINNAEUS, 1758)	IV- IX	M	Fabaceae	Lotus corniculatus, Salvia pratensis, Trifolium pratense, Aster amellus, Scabiosa columbaria, Mentha longifolia, Leucanthemum vulgare, Gentiana pneumonanthe, Sambucus racemosa, Dianthus carthusianorum	VF
Anthocharis cardamines (LINNAEUS, 1758)	V	M	Brassicaceae	Narcissus stellaris, Viola canina	VF
Pieris rapae (LINNAEUS, 1758)	IV- IX	M, Eu	Brassicaceae	Hypericum perforatum, Leucanthemum vulgare, Linum hirsutum, Inula hirta, Dianthus carthusianorum, Trifolium pratense, Trifolium repens, Lotus corniculatus, Chamaespartium sagittale, Epilobium hirsutum, Thymus serpyllum, Cytisus nigricans	VF
Pieris napi napi (LINNAEUS, 1758)	IV- IX	M	Brassicaceae	Trifolium campestre, Lotus corniculatus, Dianthus carthusianorum, Narcissus stellaris, Mentha arvensis, Mentha longifolia, Telekia speciosa	VF
Pontia edusa (Fabricius, 1777)	IV- IX	M	Brassicaceae	Trifolium campestre, Lotus corniculatus, Chamaespartium sagittale, Aster amellus, Leucanthemum vulgare, Dianthus carthusianorum, Narcissus stellaris, Origanum vulgare, Scabiosa ochroleuca	VF
Colias croceus (FOURCROY, 1758)	IV- IX	Mxt	Fabaceae	Lotus corniculatus, Chamaespartium sagittale, Trifolium pratense, Leucanthemum vulgare, Tanacetum vulgare, Dianthus carthusianorum, Telekia speciosa, Narcissus stellaris	RF

Taxa	FP	E.E	LHP	Pf-Ns	F
<i>Colias hyale</i> (LINNAEUS, 1758)	IV-IX	M	Fabaceae	Scabiosa ochroleuca, Telekia speciosa, Leucanthemum vulgare, Senecio arvensis, Dianthus carthusianorum, Trifolium pratense, Trifolium repens, Sanguisorba officinalis, Lotus corniculatus, Vicia cracca, Narcissus stellaris	F
<i>Gonepteryx rhamni</i> (LINNAEUS, 1758)	IV-IX	M	Rhamnaceae	Origanum vulgare, Solidago virgaurea, Scabiosa columbaria, Centaurea pannonica, Sambucus nigra, Sambucus racemosa, Rosa canina, Gentiana pneumonanthe, Rubus caesius, Crataegus monogyna	RF
LYCAENIDAE					
<i>Hamearis lucina</i> (LINNAEUS, 1758)	V-VIII	M	<i>Primula vulgaris</i> , <i>P. veris</i>	Taraxacum officinale, Fragaria vesca, Salvia pratensis, Narcissus stellaris, Viola canina, Galium verum, Chamaespartium sagittale	VF
<i>Lycaena phlaeas phlaeas</i> (LINNAEUS, 1761)	VI-VIII	M	Polygonaceae: <i>Rumex acetosella</i> , <i>R. acetosa</i>	Salvia pratensis, Trifolium arvense, Trifolium repens, Leucanthemum vulgare	RF
<i>Lycaena dispar rutila</i> (WERNEBURG, 1864)	VI-VIII	Hg	Polygonaceae: <i>Rumex</i> sp.	<i>Epilobium montanum</i> , <i>Epilobium angustifolium</i> , <i>Menta longifolia</i> , <i>Gentiana pneumonanthe</i>	VF
<i>Lycaena virgaureae virgaureae</i> (LINNAEUS, 1758)	VI-VIII	M	<i>Rumex acetosa</i>	<i>Eupatorium cannabinum</i> , <i>Mentha longifolia</i> , <i>Thymus serpyllum</i> , <i>Gentiana pneumonanthe</i> , <i>Gladiolus imbricatus</i> , <i>Leucanthemum vulgare</i>	VF
<i>Lycaena alciphron</i> (Rottemburg, 1775)	VI-VII	Mh	<i>Rumex acetosa</i>	<i>Epilobium angustifolium</i> , <i>Menta longifolia</i> , <i>Scabiosa ochroleuca</i> , <i>Sanguisorba officinalis</i> , <i>Mentha longifolia</i>	RF
<i>Thecla betulae</i> (LINNAEUS, 1758)	VI-VIII	Mt	<i>Prunus spinosa</i> ; Chrysalides attended by <i>Lasius niger</i>	<i>Sambucus nigra</i> (fruits); Sweet and sticky honey-dew from aphids (STILL, 1996)	VR
<i>Callophrys rubi</i> (LINNAEUS, 1758)	VI-VIII	Mt	<i>Genista tinctoria</i> , <i>Cytisus scoparius</i> , <i>Anthyllis vulneraria</i>	<i>Lotus corniculatus</i> , <i>Medicago sativa</i> , <i>Geranium robertianum</i> , <i>Trifolium arvense</i> , <i>Scabiosa ochroleuca</i>	RF
<i>Satyrrium w-album</i> (KNOCH, 1782)	VI-VIII	M	<i>Rhamnus catharticum</i>	Rarely on <i>Geranium robertianum</i> , <i>Sambucus nigra</i> , <i>Sambucus racemosa</i> fruits, <i>Rubus caesius</i> fruits.	R

Taxa	FP	E.E	LHP	Pf-Ns	F
<i>Satyrium pruni</i> (LINNAEUS, 1758)	V- VII	Mt	<i>Prunus spinosa</i>	Rarely on <i>Rubus caesius</i>	R
<i>Cupido minimus minimus</i> (FUESSLY, 1775)	VI- VIII	Mt	<i>Anthyllis vulneraria</i> ; Larvae attended by <i>Lasius niger</i> , <i>Formica fusca</i> , <i>Myrmica rubra</i>	<i>Potentilla erecta</i> , <i>Viola tricolor</i> , <i>Hypericum perforatum</i> , <i>Tanacetum vulgare</i> , <i>Trifolium pratense</i> , <i>Lotus corniculatus</i> , <i>Scabiosa ochroleuca</i>	RF
<i>Everes argiades</i> (PALLAS, 1771)	VI- VIII	M	Fabaceae	<i>Tanacetum vulgare</i> , <i>Potentilla erecta</i> , <i>Trifolium campestre</i> , <i>Senecio jacobaea</i>	RF
<i>Celastrina argiolus</i> (LINNAEUS, 1758)	V- VI; VII- VIII	M	<i>Rubus fruticosus</i> , <i>R. idaeus</i> , <i>Filipendula ulmaria</i> , <i>Astragalus glycyphyllos</i> , <i>Medicago sativa</i> , <i>Melilotus officinalis</i> , <i>Frangula alnus</i> , etc.	<i>Linum catharticum</i> , <i>Potentilla erecta</i> , <i>Trifolium campestre</i> , <i>Dianthus carthusianorum</i>	RF
<i>Glaucopsyche alexis</i> (PODA, 1761)	V- VII	M	Fabaceae; Larvae attended by <i>Lasius alienus</i> , <i>Formica pratensis</i> , <i>Camponotus aethiops</i> , etc.	<i>Lotus corniculatus</i> , <i>Medicago sativa</i> , <i>Potentilla erecta</i> , <i>Hypericum perforatum</i>	RF
<i>Maculinea arion</i> (LINNAEUS, 1758)	VII- VIII	Mht	<i>Thymus serpyllum</i> ; Larvae and chrysalids attended by <i>Myrmica sabuleti</i>	<i>Filipendula ulmaria</i> , <i>Agrimonia eupatoria</i> , <i>Leucanthemum vulgare</i> , <i>Linum flavum</i> , <i>Potentilla erecta</i> , <i>Lotus corniculatus</i>	R
<i>Maculineaalcon</i> (DENIS & SCHIFFERMÜLLER, 1775)	VII- VIII	Mh	<i>Gentiana pneumonanthe</i> , Larvae attended by <i>Myrmica rubra</i>	<i>Centaurea pannonica</i> , <i>Cardamine pratensis</i> , <i>Achillea ptarmica</i> , <i>Leucanthemum vulgare</i>	F
<i>Maculinea teleius</i> (BERGSTRASSER, 1779)	VI- VIII	Mh	<i>Sanguisorba officinalis</i> ; Larvae attended by <i>Myrmica sabuleti</i> , <i>M. Rubra</i> , <i>M. scabrinodis</i>	<i>Achille ptarmica</i> , <i>Prunella vulgaris</i> , <i>Leucanthemum vulgare</i> , <i>Scabiosa ochroleuca</i>	VR
<i>Plebeius argus argus</i> (LINNAEUS, 1758)	VI- VIII	Mh	Fabaceae; Cistaceae; larvae attended by <i>Lasius niger</i>	<i>Lotus corniculatus</i> , <i>Potentilla erecta</i> , <i>Viola tricolor</i> , <i>Medicago lupulina</i> , <i>Trifolium repens</i> , <i>Trifolium campestre</i> , <i>Polygala vulgaris</i> , <i>Filipendula ulmaria</i> , <i>Vicia cracca</i> , <i>Genista sagittalis</i>	F
<i>Plebejus argyrognomon</i> (BERGSTRASSER, 1779)	V- VI; VI- VII	M	<i>Astragalus glycyphyllos</i> ; Larvae attended by <i>Lasius niger</i> , <i>Myrmica sabuleti</i>	<i>Lotus corniculatus</i> , <i>Vicia cracca</i> , <i>Medicago sativa</i> , <i>Trifolium pratense</i> , <i>Mentha arvensis</i> , <i>Knautia arvensis</i>	RF

Taxa	FP	E.E	LHP	Pf-Ns	F
<i>Aricia agestis agestis</i> (DENIS & SCHIFFERMÜLLER, 1775)	VI-VIII	Mxt	Herbaceous plants; Larvae attended by <i>Lasius niger</i> , <i>L. alienus</i> , <i>Myrmica sabuleti</i>	<i>Lotus corniculatus</i> , <i>Medicago sativa</i> , <i>Trifolium campestre</i> , <i>Mentha arvensis</i> , <i>Genista sagittalis</i> , <i>Potentilla erecta</i> , <i>Tanacetum vulgare</i>	F
<i>Polyommatus semiargus semiargus</i> (ROTTEMBURG, 1775)	VI-VIII	M	<i>Trifolium pratense</i> ; Larvae attended by <i>Lasius niger</i>	<i>Medicago sativa</i> , <i>Hypericum perforatum</i> , <i>Lotus corniculatus</i> , <i>Potentilla reptans</i> , <i>Leucanthemum vulgare</i> , <i>Solidago virgaurea</i> , <i>Senecio vulgaris</i> , <i>Aster amellus</i>	RF
<i>Polyommatus icarus</i> (ROTTEMBURG, 1775)	V-IX	M	Fabaceae; Larvae attended by <i>Lasius alienus</i> , <i>L. niger</i>	<i>Genista tinctoria</i> , <i>Aster amellus</i> , <i>Viola tricolor</i> , <i>Potentilla recta</i> , <i>Lathyrus pratensis</i> , <i>Lotus corniculatus</i> , <i>Achillea millefolium</i> , <i>Trifolium campestre</i> , <i>Leucanthemum vulgare</i>	VF
NYMPHALIDAE					
<i>Argynnis paphia paphia</i> (LINNAEUS, 1758)	VII-VIII	M	<i>Viola</i> sp.	<i>Carduus nutans</i> , <i>Cirsium arvense</i> , <i>Tanacetum vulgare</i> , <i>Leucanthemum vulgare</i> , <i>Centaurea cyanus</i> , <i>Cychorium intybus</i> , <i>Scabiosa ochroleuca</i> , <i>Gladiolus imbricatus</i>	VF
<i>Argynnis aglaja</i> (LINNAEUS, 1758)	VI-VII	M	<i>Viola</i> sp.	<i>Leucanthemum vulgare</i> , <i>Aster amellus</i> , <i>Solidago virgaurea</i> , <i>Origanum vulgare</i> , <i>Scabiosa ochroleuca</i> , <i>Thymus</i> sp.	VF
<i>Argynnis adippe</i> (DENIS & SCHIFFERMÜLLER, 1775)	VI-VIII	Mt	<i>Viola</i> sp.	<i>Leucanthemum vulgare</i> , <i>Knautia arvensis</i> , <i>Telekia speciosa</i> , <i>Aster amellus</i> , <i>Hieracium umbellatum</i> , <i>Solidago virgaurea</i> , <i>Gladiolus imbricatus</i>	VF
<i>Argynnis niobe niobe</i> (LINNAEUS, 1758)	VI-VIII	M	<i>Viola</i> , <i>Plantago</i>	<i>Leucanthemum vulgare</i> , <i>Knautia arvensis</i> , <i>Telekia speciosa</i> , <i>Aster amellus</i> , <i>Hieracium umbellatum</i> , <i>Solidago virgaurea</i> , <i>Mentha longifolia</i> , <i>Gladiolus imbricatus</i>	VF
<i>Issoria lathonia</i> (LINNAEUS, 1758)	V-VIII	M	<i>Viola</i> sp.	<i>Leucanthemum vulgare</i> , <i>Telekia speciosa</i> , <i>Aster amellus</i> , <i>Solidago virgaurea</i> , <i>Gladiolus imbricatus</i> , <i>Tanacetum vulgare</i> , <i>Dianthus carthusianorum</i>	VF
<i>Brenthis daphne</i> (DENIS & SCHIFFERMÜLLER, 1775)	VI-VIII	Xt	<i>Rubus fruticosus</i> , <i>R. idaeus</i>	<i>Aster amellus</i> , <i>Leucanthemum vulgare</i> , <i>Dianthus carthusianorum</i> , <i>Peucedanum rochelium</i> , <i>Chamaespartium sagittale</i>	RF

Taxa	FP	E.E	LHP	Pf-Ns	F
<i>Brenthis hecate</i> (DENIS & SCHIFFERMÜLLER, 1775)	VI-VIII	M	<i>Filipendula ulmaria</i>	<i>Leucanthemum vulgare</i> , <i>Telekia speciosa</i> , <i>Aster amellus</i> , <i>Inula hirta</i> , <i>Senecio vulgare</i> , <i>Solidago virgaurea</i> , <i>Sanguisorba officinalis</i>	RF
<i>Boloria euphrosyne</i> (LINNAEUS, 1758)	V-VIII	M	<i>Viola</i> sp.	<i>Lotus corniculatus</i> , <i>Medicago sativa</i> , <i>Dianthus carthusianorum</i> , <i>Leucanthemum vulgare</i> , <i>Peucedanum rochelianum</i> , <i>Achillea ptarmica</i>	VF
<i>Boloria selene</i> (DENIS & SCHIFFERMÜLLER, 1775)	V-VIII	M	<i>Viola</i> sp.	<i>Leucanthemum vulgare</i> , <i>Galium verum</i> , <i>Achillea ptarmica</i> , <i>Solidago virgaurea</i> , <i>Vicia cracca</i> , <i>Silene vulgaris</i> , <i>Stellaria holostea</i> , <i>Cirsium arvense</i>	VF
<i>Boloria dia dia</i> (LINNAEUS, 1767)	V-VIII	M	<i>Viola</i> , <i>Rubus</i>	<i>Potentilla erecta</i> , <i>Medicago lupulina</i> , <i>Trifolium pratense</i> , <i>Trifolium repens</i> , <i>Leucanthemum vulgare</i> , <i>Linaria vulgaris</i> , <i>Origanum vulgare</i> , <i>Senecio jacobaea</i> , <i>Prunella grandiflora</i>	VF
<i>Vanessa atalanta</i> (LINNAEUS, 1758)	VI-IX	U, Mg	<i>Urtica</i> sp.	<i>Carduus nutans</i> , <i>Cirsium arvense</i> , rotten fruits	F
<i>Vanessa cardui</i> (LINNAEUS, 1758)	VII-VIII	U, Mg	<i>Carduus</i> , <i>Cirsium</i>	<i>Carduus nutans</i> , <i>Carduus candicans</i> , <i>Centaurea pannonica</i> , <i>Cirsium arvense</i> , <i>Telekia speciosa</i>	VF
<i>Inachis io</i> (LINNAEUS, 1758)	VI-IX	M, Eu	<i>Urtica</i> sp.	Fermeting fruits, <i>Telekia speciosa</i> , <i>Leucanthemum vulgare</i> , <i>Scabiosa ochroleuca</i>	VF
<i>Aglais urticae</i> (LINNAEUS, 1758)	VI-VIII	Eu, Mg	<i>Urtica</i> sp.	<i>Carduus nutans</i> , <i>Cirsium arvense</i> , <i>Hypericum perforatum</i> , <i>Urtica dioica</i> , <i>Salvia nemorosa</i>	VF
<i>Polygonia c-album</i> (LINNAEUS, 1758)	V-VIII	M	<i>Ribes</i> , <i>Urtica</i> , <i>Salix</i> , <i>Corylus</i>	<i>Urtica dioica</i> , <i>Mentha longifolia</i> , <i>Leucanthemum vulgare</i> , <i>Telekia speciosa</i> , <i>Hieracium umbellatum</i> , <i>Dipsacus fullonum</i> , <i>Succisa pratensis</i> , <i>Rubus caesius</i>	VF
<i>Araschnia levana</i> (LINNAEUS, 1758)	VI-VIII	Mh	<i>Urtica</i>	<i>Telekia speciosa</i> , <i>Urtica dioica</i> , <i>Hypericum perforatum</i>	VF
<i>Nymphalis antiopa</i> (LINNAEUS, 1758)	V-VIII	Mh	Salicaceae	Rarely on <i>Sambucus nigra</i> but a lot of adults have been seen on <i>Salix cinerea</i>	RF
<i>Euphydryas aurinia aurinia</i> (Rottemburg, 1775)	V	Mh	<i>Knautia arvensis</i> , <i>Succisa pratensis</i> , <i>Scabiosa ochroleuca</i>	Rarely on <i>Narcissus stellaris</i> , <i>Viola canina</i> ; Many individuals have been seen resting on <i>Carex</i>	F

Taxa	FP	E.E	LHP	Pf-Ns	F
Melitaea cinxia cinxia (LINNAEUS, 1758)	V-VIII	Mt	Plantago	Lotus corniculatus, Medicago sativa, Hypericum perforatum, Leucanthemum vulgare, Tanacetum vulgare, Dianthus armeria	VF
Melitaea phoebe (DENIS & SCHIFFERMÜLLER, 1758)	VI-VIII	Mt	Scabiosa columbaria, Cirsium arvense	Lotus corniculatus, Medicago sativa, Hypericum perforatum, Leucanthemum vulgare, Inula hirta, Achillea ptarmica	VF
Melitaea trivia (DENIS & SCHIFFERMÜLLER, 1775)	VI-VIII	M	Verbascum sp.	Hypericum perforatum, Leucanthemum vulgare, Gladiolus imbricatus	VR
Melitaea didyma didyma (ESPER, 1778)	V-VIII	Mxt	Primula, Plantago	Lotus corniculatus, Hypericum perforatum, Leucanthemum vulgare, Achillea ptarmica	VF
Melitaea athalia (ROTTEMBURG, 1775)	V-VIII	M	Plantago	Lotus corniculatus, Medicago sativa, Leucanthemum vulgare	VF
Neptis hylas (LINNAEUS, 1758)	V-VIII	Mh	Lathyrus vernus, L. niger	Rarely on Cirsium arvense	VF
Neptis rivularis (Scopoli, 1763)	VI-VIII	M	Filipendula ulmaria	It has been seen resting on leaves of different shrubs	R
Apatura ilia (DENIS & SCHIFFERMÜLLER, 1775)	VII-VIII	Mh	Salicaceae	Damp ground, tree-sap, carrion	F
Apatura iris (LINNAEUS, 1758)	VII	Mh	Salicaceae	Carrion, dung and tree-sap	F
Pararge aegeria tircis BUTLER, 1867	V-IX	M	Poaceae	Telekia speciosa, Tanacetum vulgare, Inula hirta, Leucanthemum vulgare	VF
Lasiommata megera megera (LINNAEUS, 1767)	V-VIII	M	Poaceae	Rarely on Urtica dioica, Leucanthemum vulgare, Tanacetum vulgare, Lotus corniculatus	VF
Lasiommata maera maera (LINNAEUS, 1758)	V-VIII	M	Poaceae	Urtica dioica, Leucanthemum vulgare, Tanacetum vulgare, Lotus corniculatus, Taraxacum officinale, Ranunculus repens	VF
Coenonympha arcania arcania (LINNAEUS, 1761)	V-VIII	M	Poaceae	Achillea ptarmica, Trifolium pratense, Trifolium repens, Centaurea pannonica, Medicago sativa, Lotus corniculatus, Veronica chamaedrys, Vicia cracca, Senecio jacobaea	VF
Coenonympha glycerion glycerion (BORKHAUSEN, 1788)	VI-VIII	M	Poaceae	Trifolium repens, Centaurea pannonica, Medicago lupulina, Lotus corniculatus, Veronica chamaedrys	RF

Taxa	FP	E.E	LHP	Pf-Ns	F
Coenonympha pamphilus (LINNAEUS, 1758)	V-IX	M	Poaceae	Leucanthemum vulgare, Dianthus carthusianorum, Hypericum perforatum, Achillea ptarmica, Inula hirta, Senecio jacobaea	VF
Pyronia tithonus (LINNAEUS, 1767)	VII-VIII	Xt	Poaceae	Dianthus carthusianorum Aster amellus, Filipendula vulgaris, Galium verum, Centaurea pannonica	RF
Aphantopus hyperantus (LINNAEUS, 1758)	V-IX	M	Poaceae	Leucanthemum vulgare, Dianthus carthusianorum, Aster amellus, Cirsium arvense, Lotus corniculatus, Origanum vulgare, Hypericum perforatum Filipendula vulgaris, Galium verum	VF
Maniola jurtina (LINNAEUS, 1758)	V-IX	M	Poaceae	Centaurea pannonica, Lotus corniculatus, Cirsium arvense, Origanum vulgare, Filipendula ulmaria, Galium verum	VF
Erebia aethiops aethiops (Esper, 1777)	VII-VIII	M	Poaceae	Scabiosa ochroleuca, Gladiolus imbricatus, Centaurea pannonica, Leucanthemum vulgare	VF
Melanargia galathea (LINNAEUS, 1758)	VI-VIII	M	Poaceae	Sanguisorba officinalis, Leucanthemum vulgare, Aster amellus, Galium verum, Dianthus carthusianorum, Salvia pratensis, Lotus corniculatus Origanum vulgare, Lathyrus pratensis, Achillea ptarmica	VF
Minois dryas (SCOPOLI, 1763)	VII-VIII	Xt	Poaceae	Fruits of Sambucus nigra	VF
Hipparchia fagi (SCOPOLI, 1763)	VII-VIII	Mt	Poaceae	Rarely on Telekia speciosa	VF
Hipparchia semele (LINNAEUS, 1758)	VII-VIII	M	Poaceae	Rarely on Sambucus, Cirsium sp., Telekia speciosa	F
Brintesia circe pannonica FRUHSTORFER, 1911	VII-VIII	Xt	Poaceae	Rarely on Verbascum phlomoides, Telekia speciosa	R

Abbreviations: **EE**= Ecological exigencies: M-Mezofilous species; Mt-Mezotermofilous species; Xt-Xerotermofilous species, U-Ubiquist; Eu- Euritope; Mg- Migratory Species; **STL**- Larval Food Plants; **PF-NS**=Plant flowers-Nectar Source; F= Frequency: VF= Very Frequent species (over 16 individuals/day); RF= Relativ frequent species (5-10 individuals/day); F=Frequent species (10-15 individuals/day); R= Rare species; VR= Very Rare species (1-4 individuals/generation) (after RÁKOSY & VIEHMANN 1991); **FP**= Fly Period

Concerning the frequency (according to RÁKOSY & VIEHMANN 1991 classification), the majority of the species are very frequent and represent 53% from the total of the species

(Fig. 1). 21% of the species are relative frequent and 16% are frequent species. Rare and very rare species are represented each other by 5% from the total of the species.

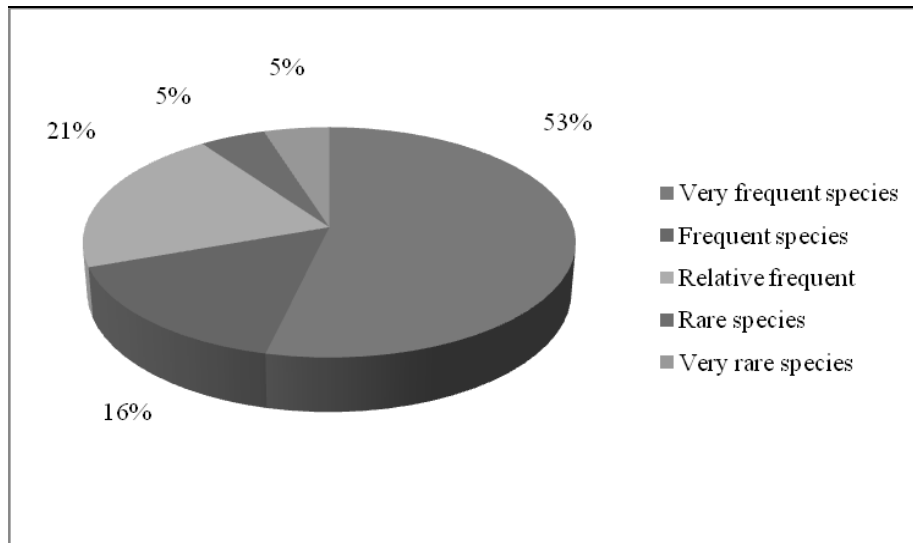


Fig. 1 – The frequency of the Macrolepidoptera species of Sălașu de Sus protected area of Sălașu de Sus

In this protected area a wide variety of the flowering plants are visited by butterflies for searching nectar. The most visited flowering plants are: *Dianthus carthusianorum*, *Filipendula ulmaria*, *Vicia cracca*, *Viola tricolor*, *Narcissus stellaris*, *Veronica chamaedrys*, *Senecio vulgaris*, *Sanguisorba officinalis*, *Medicago sativa*, *Origanum vulgare*, *Urtica dioica*, *Centaurea pannonica*, *Hypericum perforatum*, *Inula hirta*, *Potentilla erecta*, *Tanacetum vulgare*, *Telekia speciosa*, *Trifolium repens*, *Galium verum*, *Gentiana pneumonanthe*, *Aster amellus*, *Scabiosa ochroleuca*, *Lotus corniculatus*, *Gladiolus imbricatus*, *Leucanthemum vulgare*, *Peucedanum rochelium* and *Achillea ptarmica*. The choice of the flowering plants depends on various factors: the colour preferences, the depth of corolla, the length of the proboscis. Bivoltine or multivoltine species may change their preferences due to seasonal variation in available flowers (BAKOWSKI & BORÓN 2005). The quality of nectar and its concentration in sucrose are also important in the relationship butterflies-flowering plants (RUSTERHOLZ & ERHARDT 1997). Nectars of butterfly-pollinated flower tend to have higher concentrations of amino acids than do flowers pollinated by bees and many other animals, suggesting that amino acids are important attractants of butterflies to flowers (ALM, OHNMEISS, LANZA & VRIESENKA 1990). MEVI-SCHUTZ & ERHARDT (2003) show that the preference for nectar amino acids varies between different groups of pollinators. Females of several butterfly species have shown a clear preference for nectar mimics containing amino acids over nectar void of amino acids. Tests carried out showed that females of *Araschnia levana* raised on the low quality larval diet were smaller and showed a significant preference

for the nectar mimic with amino acids, whereas females raised on the high quality diet were larger and showed no preference. Larval food quality did not affect male mass, and male butterflies were indifferent to nectar amino acids. Consequently, female butterflies may compensate for poor larval nutrition by selectively feeding on nectar containing amino acids. These results demonstrate the nutritional plasticity of holometabolous insects and the potential evolutionary significance of nectar amino acids for both plants and their pollinators.

Some species of nymphalids only exceptionally visit flowers and feed instead on tree sap, juice of rotting fruits and other decaying substances. For instance, *Apatura iris* feeds on honezdew produced by aphids as well as tree sap. Males visit the ground on occasion, in order to obtain salts from dung or from the surfaces of roads. *Apatura ilia* has been seen on animal droppings. *Vanessa atalanta* and *Inachis io* prefers fermenting fruits, sap flows on trees, dung and visits flowers only when these are not available.

The following species are rare and very rare in this protected area:

Maculinea arion (LINNAEUS, 1758) – 3♂♂ 22.06.2006, 1♂ 18.06.2007 at Sălașu de Sus lawns. This species prefers dry habitats of Sălașu de Sus natural reserve. Females lay their eggs on flowers of *Thymus serpyllum*. Younger larvae eat pollen and seeds of *Thymus* and then drop to the ground. They are attractive to *Myrmica sabuleti*. Pupation takes place in the nest of ants. Adults emerge the following summer and live about three or four weeks. The adults fly in June-August and visit *Achillea ptarmica*, *Scabiosa ochroleuca*, *Filipendula vulgaris* and *Dianthus carthusianorum*.

Maculinea teleius (BERGSTRÄSSER, 1779) – 1♂ 15.07.2007; 2♂♂ 22.07.2008; 1♂ 3.08.2008. It is a rare species in this protected area. Adults fly from July to the beginning of August, especially in wet meadows and visit *Achillea ptarmica*, *Prunella vulgaris*, *Leucanthemum vulgare* and *Scabiosa ochroleuca*. In their early stages larvae breed on *Sanguisorba officinalis*. In their last, fourth instars', they are adopted by a species of *Myrmica*. It is listed in the Red List of Butterflies of Romania as an endangered species (RÁKOSY, 2002). It is also a protected species and listed as a species of national interest in the 4 Annexe of the Emergency Ordinance of the Romanian Government no. 57/2007.

Carcharodus floccifera floccifera (Zeller, 1847) - It is a relatively rare and localized species in Romania fauna. Adults fly in May-June and visit *Stachys recta*, *Telekia speciosa* and *Narcissus stellaris*. Larval food plant is *Stachys recta*.

It is listed as near threatened-Vulnerable taxon in The Red List of the Butterflies of Romania (RÁKOSY 2002).

Concerning *Maculinea alcon alcon* (DENIS & SCHIFFERMÜLLER, 1775), many individuals (more than 10 individuals/day) were observed especially in June and July in a damp habitat near Sălaș Valley. The adults especially visit *Centaurea pannonica*, *Cardamine pratensis*, *Achillea ptarmica* and *Leucanthemum vulgare*. Larvae breed on *Gentiana pneumonanthe* and finish their stage in the ant nests. *Maculinea alcon* is listed as a species of national interest in the 4 Annexes of the Emergency Ordinance of the Romanian Government no. 57/2007.

Neptis hylas (LINNAEUS, 1758), listed as a species of national interest in the 4B Annexe of the Emergency Ordinance of the Romanian Government no. 57/2007, is very common in the protected area. The adults fly in July-August at the edge of the forests and rarely visit *Cirsium arvense*. Larvae feed on *Lathyrus* sp.

Euphydryas aurinia aurinia (ROTTEMBERG, 1775) is a common species in this area. Concerning the frequency, more than 10 individuals were seen each day in the second decade of May, resting on *Carex* sp. Larvae feed on *Knautia arvensis*, *Succisa pratensis* and *Scabiosa ochroleuca*.

Brenthis hecate hecate (DENIS & SCHIFFERMÜLLER, 1775): 1♂ 15.07.2007; ♀ 20.07.2007; 2♂♂ 22.07.2008. It is listed as vulnerable species in the Red list of Romanian Butterflies (RÁKOSY 2002). In the protected area of Sălașu de Sus this species is relatively frequent. The adults fly from the middle of June to the middle of August and visit *Leucanthemum vulgare*, *Telekia speciosa*, *Aster amellus*, *Inula hirta*, *Senecio vulgare*, *Solidago virgaurea* and *Sanguisorba officinalis*.

Brintesia circe pannonica FRUHSTORFER, 1911: 1♂ 22.07.2008. It is a rare species in this area. The adults fly in July-August at the edge of the forests. Larvae feed on *Bromus erectus* and *Festuca ovina* (SZÉKELY 2008).

Conclusions

The diversity of the flowering plants and the local climate of the protected area are favourable for the butterflies' communities. Most of the species from Sălașu de Sus have a high frequency but some species are rare and very rare such as: *Thecla betulae*, *Carcharodus floccifera*, *Satyrrium w-album*, *Satyrrium pruni*, *Brintetia circe pannonica*, *Maculinea arion*, *Maculinea teleius* and *Melitaea trivia*.

Euphydryas aurinia and *Maculinea alcon*, both of them protected in Romania and frequent species in this protected area, find favorable conditions for their life-cycle.

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